

Landscapes: the Arts, Aesthetics, and Education 31

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# Learning and Teaching in the Music Studio

*A Student-Centred Approach*

 Springer

# **Landscapes: the Arts, Aesthetics, and Education**

Volume 31

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Editors


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Chapters “[The Psychology of Music Learning](#)”, “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”, “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, and “[Student-Centred Music Education: Principles to Improve Learning and Teaching](#)” are licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>). For further details see license information in the chapters. This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

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# Preface

This book is the product of almost twenty years of interdisciplinary work by the *Grupo de Investigación en Adquisición del Conocimiento Musical* (Musical Knowledge Acquisition Research Group, GIACM for its initials in Spanish) from the Faculty of Psychology of the Universidad Autónoma de Madrid. This group has served as a meeting place for musicians, music teachers, psychologists interested in learning and teaching, and even several people who combine both education in music and psychology. Throughout these years we have been dedicated to studying problems or situations which were of interest to those concerned with improving teaching music on an everyday basis and for those who from the opposite side of the fence were apparently interested in finding out what psychological processes were involved in learning something as complex and sophisticated as instrumental music. As well as looking for a meeting place for these common problems, we have also tried to ensure this shared enterprise will always be sustained by investigation, by generating new knowledge that could be useful to anyone whether they be music researcher, teacher or student. In short, anyone sharing these concerns. Opposed to the idea that each teacher has their own personal method of teaching music, that “one size doesn’t fit all”, we are convinced that genuine dialogue and investigation on these diverse methods, often based on intuition and rarely substantiated by shared theoretical language, is the only way to find answers to the questions which have haunted us for so long.

Although time and the natural development of each member of the group has resulted in the different authors being dispersed over different countries, continents and institutions, this journey of almost twenty years has ended up taking us further afield than our initially distinct education periods, to sail through the same seas, and arrive at the same shores.

These interlinking outlooks, interests and mind sets have enabled us, through shared reading, questions, practices and reflections, and particularly through research, to become driven to improving music education, based on psychological and musical knowledge, the fruit of which is the book the reader is holding or in his or her hands or reading on a screen. Many of our cases, situations, didactic proposals and theoretical analyses presented in this book are the result of several research projects,

numerous doctoral theses and final master's or undergraduate's projects within the GIACM framework.

For better or for worse, this book is not a collection or compendium of disjointed proposals. On the contrary, all the chapters share a common perspective or focus by a research team with a shared history in studying music learning from a psychological perspective. As a consequence, all the chapters share the same theoretical and methodological principles. They all speak the same language based partly on contributions from the recent cognitive psychology of learning and partly on educational research of conceptions and practices in musical learning and teaching. This shared approach will be explained in detail in Chaps. “[The Psychology of Music Learning](#)” and “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”.

Notwithstanding, however much the voices in the choir or the instruments in the orchestra are coordinated, they remain recognisable and this common outlook cannot nor should not obscure the existence of different opinions or nuances (with the reader being the one to identify them). Furthermore, often what unites us more are the questions rather than the answers. The questions are shared by many researchers beyond our group and we wish to convey them to the reader or remind the reader, establishing a dialogue with him or her about the problems and difficulties in instrumental music learning and teaching.

Also, it is our belief that these problems have a lot in common with general learning and teaching problems in many areas of knowledge beyond music. Thus, for instance, all authors who are part of this book assume that teaching can be effective and meaningful when it starts from the knowledge of the learners. Teaching should, then help learners develop tools and strategies that could facilitate them to become the principal actors of their learning and their decisions. This idea is repeated in different chapters of the book and will ensure that the different chapters could be read more or less separately by readers with diverse interests and learning and professional paths—thus allowing them to find their own reading routes. Given the origins of this book, it will not be possible to find theoretical analyses or methodological proposals covering each and every problem and issue relating to instrumental music. This is not a handbook or a manual with an exhaustive vocation aimed at providing answers to all the problems faced by instrumental music teaching. Neither does it contain different outlooks and solutions. Thus, this book is based on a on a cognitive constructivist approach that, as has been said, is common to all chapters. We are aware that there are other alternative perspectives to understand music studio teaching and learning—such as the sociocultural, which emphasises the social interactions from which the ways of teaching and learning are generated, or the neurocognitive, which focuses on analysing the restrictions and changes that take place at the level of the underlying neural networks. In the case of our book, we focus on studying the representations that educational agents have of learning and teaching and how the design of new musical learning practices by teachers can make students take control of their own learning.

Moreover, most of the aspects we cover are also guided by this common viewpoint which has served to analyse instrumental music classes and where it is easy to recognise their relationship with constructive theories on learning, and very particularly the role played by the conceptions of both collective and individual learning to give meaning (i.e. making sense and also providing feeling) to what is happening in music classrooms. This then is the third characteristic adopted by this book where most of what happens falls within the framework of an instrumental music class, albeit in a conservatory or any other space culturally designed to this end. We are particularly, but not exclusively, pinpointing our attention on music teachers in different educational spaces and levels. But we are also aiming at advanced level music students and researchers who are interested in music education in any of its branches. Although there are many other dimensions (organisational, institutional, historical, musicological) where music education may be reconsidered, and which are touched on in the book, we have deliberately attempted to approach these problems from the reality of the classroom, or from instrumental learning in other contexts. We have no wish to detract from the significance of the other previously mentioned aspects, and particularly when it is the explicit proposal of this book to contribute to regenerating what happens in the classrooms.

## Book Structure and Contents

The book's overall, integrative structure comprises three parts that are related to different aims. The aim of Part I is to justify and explain this theoretical framework our group constructed and which the remaining chapters are built upon. To do this we begin with the idea that the teaching of instrumental music, as we know it, is undergoing a profound crisis. This demands new forms of organization but, above all, for our purposes, new ways of learning and teaching are the main aim. Chapter "[Learning and Teaching Music in the 21st Century](#)" purports to trace the main traits of this crisis, with inspiration drawn from different research teams, associations and institutions. These, on both a national and international level, are demanding radical, profound regeneration of musical education in different dimensions (the development of a professional musicians' career, social changes affecting musicians with audiences) to which music education should have an answer. However, above all, due to the previously mentioned characteristics, we are interested in probing the crisis of the traditional model of musical learning and teaching, which we could call the conservatory model, and this is analysed in detail in Chap. "[Teaching Music: Old Traditions and New Approaches](#)". Here we suggest an alternative, based on focusing music education on the development of the students' own musical skills and more specifically promoting their capacity to use music as a preferred form of communicating and sharing emotions. We call this music education focus expressivist, but we will not yet reveal its content to avoid a *spoiler* and to keep the reader on tenterhooks as much as possible.



From this angle we believe music teaching, like any other area, should focus on the actual student so that the true goal of the teachers should not be to teach music or chemistry but to transform the people under their charge through the learning of music or chemistry. To do this the purpose of Chap. “[The Psychology of Music Learning](#)” will be to present the contributions of cognitive psychology of learning, a pioneering science in research and innovation, which may help us understand how students learn music and also how to teach them (i.e., how we can help them to learn it).

These contributions from the psychology of learning can help us to learn about the difficulties students have in learning, and the limitations of the traditional teaching approaches (reflected in this “conservatory model”) which exacerbate these difficulties to a large extent. Despite all the curricular changes that have occurred in the last few decades—particularly in Spain, where a great part of the research presented in this book has been carried out—and the mishmash of successive laws on education which have attempted to consolidate these changes, one of the central arguments of this book is that in music classroom things have changed very little during this whole time and definitely much less than necessary. One of the reasons for this resistance to change is that what happens in the classrooms is not wholly dependent on these laws, although they doubtless have an impact. It depends on the conceptions teachers and students have about what it means to learn and teach music, which is developed in detail in Chap. “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”. Changing these conceptions cannot materialise by changing laws or even the curriculum. The latter is necessary but the mentalities and practices sustaining them have to be altered too. To do so it is necessary to be familiar with them. Chapter “[How to Know and Analyse Conceptions on Learning and Teaching](#)” provides a detailed account of the methodologies which may be used in research, innovation or teaching training, to probe into these conceptions and unveil them. In turn, Chap. “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, which is the last chapter in Part I of the book, presents the system of analysis for instrumental learning and teaching practices (SAPEA) developed by the research group itself (GIACM) and aims at being a tool for outlining these practices better, and especially for reconstructing them.

Once this theoretical and methodological framework is exposed, which the whole book is based on, the chapters of Part II are shorter and more specific, aimed at presenting different experiences or proposals for remodelling music education in different contexts through the theoretical and methodological framework presented in Part I. Many of the experiences presented here not only share the same theoretical framework but are supported by an analysis of the practices based on the before-mentioned SAPEA.

Most of these chapters present a story or anecdote to the reader that is based on real events. The aim of these stories is to elicit reflection among readers about diverse teaching practices displayed in real scenarios, and also to activate the readers’ previous knowledge on a particular learning situation in the music studio. The stories have been partly built on some of the authors’ experiences as practitioners in the

music studio, but mostly on the data generated through the research we have undertaken across the years at doctoral, postdoctoral and professor levels—and that are consequently narrated and referred to throughout the book. Once each story has been raised and the nature of its pedagogical problem and related questions have been made explicit, most of the chapters show how we can answer the questions or solve the problems from our experience and our epistemological position explained in Chaps. “[The Psychology of Music Learning](#)”, “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)” and “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”.

Part II begins with Chap. “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)” which demonstrates how small children between the ages of 4 and 7 years, without the need to study music, are already musicians, intuitive musicians and are able to use sounds to manage their emotions and communicate primary emotions to others. It is argued that this intuitive musicality should be the starting point of musical education. However, for many students of instrumental music, music lessons begin with reading sheet music, mastering a code which is considered to be the requisite for making music. Chapter “[Reading Music. The Use of Scores in Music Learning and Teaching](#)” analyses how students learn to decode these musical scores from the simplest to the most complex (or most knowledge based). It is also shown how and why superficial reading of musical scores tends to predominate but also what type of practices promote a more in-depth processing of them.

Returning to the impact of teacher and student perceptions in this resistance to change (e.g., how to read musical scores or which priority to give to this reading compared to the expression of emotions through music), Chap. “[The Impact of Teaching Conceptions and Practices in Elementary Level Musical Instrument Learning](#)” shows how teachers’ perceptions impact the learning perceptions and practices of their students. This means that when traditional teaching predominates, the students tend to learn in a more or less traditional form too, with pretty poor results, according to research on the subject. However, the chapter also shows that by regenerating teaching practices with student-centred processes, changes occur in how they learn music, how they read musical scores, etc. achieving more complex levels and improved learning.

Again, without wishing to offer the reader a *spoiler*, we would say that one of the strategies our new focus defends is in keeping with recent strategies in psychology of music and musical education and is that the goal should be not the technical mastery of the instrument but the explicit expression and communication of emotions through actions made with the body on the instrument itself. According to this idea, which is explained and illustrated with numerous classroom examples in Chap. “[Instrument Mastery Through Expression: Learning Instrumental Technique](#)”, the technique and the instrument are a means of expressing emotions in the audience and in the actual interpreter, not the be all and end all of instrumental teaching. They act as leverage in these mediums. The true instrument that needs regulating and mastering is the body itself. This same expressivist model is illustrated in Chap. “[Learning Music by Composing: Redescribing Expressive Goals While Writing Them](#)”, with the case history of a girl who learns music at quite an early age, through musical composition.

The girl wishes to compose a work which expresses a very specific sensation (not to be revealed here either!), but for this, she needs to acquire musical knowledge (including writing music) that will allow her to self regulate and approach the goal she herself has fixed. Her teacher must mediate but limits herself to guiding this process instead of imposing it. In one apparently different scenario but guided by the same logic, Chap. “[Learning Music Through ICT](#)” describes several classroom situations which use ICT (Information and Communication Technologies) as a music learning and teaching resource. Another syndrome of music education resistance to new waves in society is that ICT still play a very marginal role in the classrooms (not only in music but in fact in all classrooms). But for ICT to help improve learning it is not enough to just include them, they have to be used with new goals or functions. In this chapter, an experience based on the use of the mobile phone, and specifically *WhatsApp* is described to promote teaching aimed at the self-regulation of students at different ages.

Another trait in instrumental teaching which has hardly changed in conservatories, and further afield in the other musical education spaces, is that learning is mostly done through individual practice, in dyadic relationships between teacher and student. However, very few musicians will be soloists and during their professional career, they will almost always be practicing and interpreting with other people. Chapter “[From Individual to Cooperative Learning](#)” states the reasons for this individualist tradition and proposes the alternative promotion of cooperative learning spaces, which are so effectively being used in many other educational environments. Notwithstanding, it also shows that for the students to learn to cooperate it is not enough to put them to work in groups; they require explicit instruction in cooperative strategies.

Many of the aspects contained in the before-mentioned chapters will be hard pushed to change learning and teaching practices but they will change a vital dimension: the way in which students are assessed. Chapter “[Re-thinking How to Assess Students of Musical Instruments](#)” is a critical analysis of traditional assessment in instrumental teaching and proposes several alternatives to help rethink not only the methods used for evaluation but also the assessment goals themselves. These should aim not at selecting students within an elitist culture framework but mostly help them to learn.

In practically all the chapters mentioned, the examples and situations described refer to learning a musical instrument outside the human body (violin, piano, trumpet, trombone, flute etc.). Chapter “[The Choir Conductor: Interpreter or Maestro?](#)”, however, focuses on learning the most primary musical instrument, the one that forms part of the in-built cognitive team we almost all have since birth: our own voice. This chapter revolves around teaching song within a group, a choir and shows how different styles of choral conducting in musical teaching contexts lead to clearly different learnings with regards to the perceptions and practices deployed by each conductor.

The last chapter of Part II is also different from the prototypical spaces dealt with by the other chapters. Each of the other chapters, in one way or another, revolves around formal learning spaces for music, within the environment of the

conservatories and to a lesser extent music school, synonymous with classical music. Chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)” compares forms of learning in three distinct musical cultures: classical, jazz and flamenco, identifying the characteristic patterns of each of them, but mostly showing how, here as well, the fusion of the different musical cultures may lead to new forms of learning and teaching to enrich each one of these spaces.

As we have already said before, the presentation of all these cases and scenarios is quite unable to exhaust the wealth and variety of the problems confronting musical education. Thus, the book is completed with Part III, comprising two very distinct chapters to the previous ones. Since throughout the whole book the intention has been to demonstrate that any change in music education requires a change in teaching mentalities and practices, it goes without saying that Chap. “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the 21st Century](#)” should extensively and thoroughly reflect on the training and selection systems of teaching still applicable today in instrumental music. With support from recent innovative experiences in different countries this chapter puts forward different strategies for renewing this instrumental music teacher training and selection processes, with the aim always being to promote student-centred teaching, giving rise to improved learning.

The book’s closing Chap. “[Student-Centred Music Education: Principles to Improve Learning and Teaching](#)” uses principles to summarise some of the main ideas developed. The purpose of this final chapter is not to provide the readers with a shortcut summary of the texts they have not read, but to help them contrast with their own personal summary what the authors of this book were proposing. Furthermore, this final chapter intends not to close but to unlock new doors to other subjects (the social responsibility of the institutions that train musicians, the professional identity of the musicians, the music teachers or music students, etc.) which, for the reasons expressed initially, have been dedicated less space in this book than they undoubtedly deserve. Let it be clear that we, as authors who have a passion for the book’s topic, would of course love the readers to read through the entire book. With the explanations we have offered above, the reader can already ascertain which parts or chapters might be more interesting for them, but the integrative vision of our approach to student-centeredness in the music studio might be better achieved by covering all chapters. However, different readers have different backgrounds, needs and available time. For instance, some of them might come from faculties of educational sciences where the theoretical and methodological approaches taken in this book are rather familiar and, thus, they might want to skip some chapters. Others might be carrying out PhDs for which the theoretical or methodological chapters might actually be the most interesting. And for music practitioners, they might favor the stories and potential solutions for problems above everything else.

## Acknowledgments

As stated, this book is the result of many years of eagerly and highly productively working together as part of this research group, the GIACM. At some time or another during their career path all of the book's authors have participated to greater or lesser extent in the group work. Although we always run the risk of forgetting someone's name, and for which we beg forgiveness, we wish to give thanks to Elsa Perdomo-Guevara, Mónica Braga, Óscar Lecuona, Oihane Gulina, Esteban Algora, Marisa Ponce, Macarena Garesse, who at one time or another participated in GIACM activities. At times we have also received support from other researchers who have participated or advised on some of these studies, including Nora Scheuer, María José de Dios, Asunción López-Manjón, Yolanda Postigo and Ruth Campos.

Apart from the generous contributions of these people who helped us to learn and to grow as a group, our research projects have been possible thanks to the support received from different institutions (Ministerio de Educación, Ministerio de Universidades e Investigación, en sus títulos sucesivos, Universidad Autónoma de Madrid o Comunidad Autónoma de Madrid [Ministry of Education, Ministry of Universities and Research, in their successive titles, Autonomous University of Madrid or Autonomous Community of Madrid]) to researcher training or university lecturer contracts or grants which made many of the doctoral theses undertaken through GIACM possible. A very particular mention should also be made of the subsidies received continuously over the years for the undertaking of projects these studies involved. In fact, both the original writing in Spanish and the translation into English and editing of this book was largely possible thanks to the support of the Project "Learning and Instruction in Specific Domains: The Role of Embodiment and External Representations", financed by the Spanish Ministry of Innovation and Science (EDU2017-82243-C2-1-R), currently in effect. Equally, the participation of Guadalupe López-Íñiguez as author and editor of this book has benefited from financing by the Academy of Finland, through project 315378 "Transforming Musicianship", and from the support of the Centre for Educational Research and Academic Development in the Arts (CERADA) of the University of the Arts Helsinki, Finland. We would also like to thank the Spanish Society for Music Psychology and Musical Performance (AEPMIM) for their support with language editing costs. We thank our translator, Krystyna Sleziak, for her professionalism, excellent work and support.

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music classes, explicitly aimed at achieving a portrait of themselves ever more vivid, colourful and passionate. Let the music begin.

Madrid, Spain  
Madrid, Spain  
Helsinki, Finland  
Málaga, Spain

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# **A New Mindset for Learning and Teaching Music**

# Learning and Teaching Music in the Twenty-First Century



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## 1 Introduction: Waking Up from a Deep Sleep

Some years ago, in an analysis on what is happening in primary and secondary education classrooms, one of us (Pozo, 2006) referred to the film “The Sleeper” directed by Woody Allen in 1973, to serve as a metaphor for the educational situation. Many readers and particularly the younger ones may not be familiar with this film. It is a comical narration of how, after hibernating for 200 years after forced cryogenic storage, Miles Monroe, a clarinetist, played by Woody Allen himself, wakes up in USA, his home country, finding himself in a police state with its citizens under surveillance. Leaving aside other more political aspects of the film (and of Allen himself) which coincide with other, perhaps better known dystopias such as “1984”, we wish to emphasize that Miles Monroe, the clarinetist stumbles upon situations which hilariously illustrate what changes have occurred in the most everyday culture and habits that Miles does not know how to respond or adapt to, giving rise to multiple comical situations. In this future, Miles the clarinetist does not go to any music classes to update his musical knowledge, but if he had, we would fear that his reaction would have been totally different because beyond shallow appearances and the presence of new artefacts and technologies, the ways of learning and teaching would have changed very little.

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It has become a cliché to say that musical education is crisis-ridden and that the ways of teaching in conservatories and music classrooms in general have not adapted to social and cultural changes nor helped students to develop the skills and tools required for this new millennium. In fact, all the analyses carried out in recent years on the state of instrumental music teaching, many of them centred on conservatories but also encompassing other teaching environments, agree that it has reached a serious crossroads (e.g., Sarath et al., 2014; Tregear et al., 2016). For example, one report undertaken a few years ago which aimed at tracing the upgrading of the curriculum in North American conservatories categorically stated that “significant change is essential [in musical education] if we are to bridge the gap between academic music study and the musical world into which our students and the students of our future will graduate” (Sarath et al., 2014, p. 11).

Several authors (e.g., López-Íñiguez & Bennett, 2020, 2021; Tregear et al., 2016) agree with the insights of this report. It purports that the gap between the musical education being provided for future musicians and the competences they will need to deploy in their professional and personal future is increasingly broader and deeper. A similar gap exists between the “musician in the academy” and the “musician in the real world” (Sarath et al., 2014, p. 2) and as a result the report advocates radical or paradigmatic changes, to intensely rethink the suppositions, goals and methods of this type of musical education.

Many factors are involved in widening these gaps, some of which will be analysed in this chapter and some in the next. Improving the quality of education in musical interpretation beyond mere cosmetic changes in the periphery of the curriculum which characterises the new curricular proposals, means undertaking genuine paradigmatic change (Sarath et al., 2014), to overcome the traditional conservatory model (Burwell, 2005; Musumeci, 2002; Tregear et al., 2016). Jørgensen (2000, p. 68) describes this tradition as the arrangement “where the teacher is generally looked upon as a model to follow and a source of identification for the student, and where the dominant learning mode of the student is imitation”. The student is therefore, “the one who observes, listens, imitates and seeks [the] approval [from the teacher]” (Uzler, 1992, p. 584). This particular type of didactic relationship between teacher and learner (see Chapter “[Teaching Music: Old Traditions and New Approaches](#)” and also Burwell, 2012, 2016; Persson, 2000) inhibits the development of the autonomy of future musicians as learners, and the development of artistic identity (Gaunt, 2008, 2010, 2011).

However, it is not just the personal development of the learner that is limited by traditional teaching. The social function of music as a cultural activity is also encased in models which appear to respond, in a similar nature as that which occurred with Miles Monroe, some 200 years ago. This more or less corresponds to the foundation of the first conservatories we had, and not with today where we should be waking up to a new reality. Society which surrounds and sustains the conservatories is completely different from that which induced its first foundations, and the ‘social contract’ between society and the centres of musical education is therefore also burnt out, with the commitment between them in need of updating and modifying (Tregear et al., 2016).

Neither is the music which is taught and learned in the conservatories, for good or for bad, the same as that which is listened to and participated in within most social spaces. There is also a widening chasm between music which fills conservatory classrooms and its potential listeners, its public, who nobody bothers to train. It is increasingly necessary that conservatories work to promote attentive listening from their citizens.

Maybe the problem of passive audiences in concert halls, invoked with such frequency, is due to the fact that the embodied part of the musical experience has become irrelevant and yet the embodied element of music is central to the listening experience. (Tregear et al., 2016, p. 10)

Recognition of this gap or possibly now chasm, therefore, has a good many dimensions which do not peter out in the relationships taking place in the classroom between teacher, student and music, often determined by a specific instrument. Although this book precisely centres on how to improve or radically change these forms of making music and learning it and teaching it in classrooms, we believe it is necessary in this first chapter to also point out other dimensions that in our opinion are also essential for defining a new educational culture in conservatories and in general in music education spheres. We will therefore identify three pillars or essential dimensions in this chapter, as we shall see in the following subsections. These appear to be intertwined into current research on new musical educational culture, which both researchers and a growing number of music teachers appear to be pursuing in recent decades, and also with the professional practices and educational policies of institutions where music is taught and learnt:

- The *integrating aspect* of musical education, by which holistic competences are defined that expand instrumental mastery, since they are required for the musicians to find their professional function in an increasingly changing society.
- The *social function* of musical education and interpretation, as the organising centre of musical practices and musical education which benefit people in many aspects of life, particularly the diversity of existing cultural expressions.
- The *restructuring element* inherent to music through which autonomous, open, creative, expressive and flexible learning and teaching practices are brought about. Also, as explained in this and successive chapters of the book, there is a need for this restructuring element to acquire greater presence in institutional curriculums, instructional practices and education policies.

## **2 Comprehensive Preparation in Music Education: Towards Professionalism in Higher Level Instrument Studies**

The need to accept restructuring instruction in formal musical education contexts, which is the very kernel of this book is strongly connected to more general research studies on education and psychology that define effective learning as that which

promotes autonomy but also resilience and competencies to confront new problems (Biggs & Tang, 2011; Boud, 2012; Pozo & Pérez Echeverría, 2009; Yeager & Dweck, 2012). This wouldn't be a bad thing for our clarinetist Miles Monroe as a learner in a society which is so impacting for him. However, teachers usually have difficulties in accepting these ideas, both theoretically and practically, (see Chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”) and the same occurs with students who seem to be particularly focused on the instrumental issues (Gaunt, 2010; Presland, 2005), forgetting that in order to develop their careers they also need other, different skills (Burwell, 2005; Carey, 2008; Gaunt, 2008, 2010; Gaunt et al., 2012; Jørgensen, 2000; López-Íñiguez & Bennett, 2020, 2021; Mills, 2002; López-Íñiguez & Burnard, 2021). This is why Lebler (2008) suggests that for future music professionals to know how to navigate the working world, today's music conservatories need to provide students with comprehensive instruction which is musically inclusive and leads to both flexibility and a great variety of musical skills. Such issues as these, as will be illustrated in this section, do not appear as frequently as they should in the classroom.

This is extremely worrying since we know that the employability of musicians who graduate is minimal, but also “complex and disorganised” (Bennett, 2016, p. 112), and when they leave the higher conservatories or music universities with their diploma as professional instrumentalists, they will have to address their professional options, not only in keeping with their skills as instrumentalists, but also with other informal aspects and their ability to take decisions and adopt a variety of professional roles in the music area (Burnard, 2014), a rather uncertain career for those who are professionally dedicated to it (Bennett, 2007; Bennett & Bridgstock, 2015; Shihabi, 2017). Being the principal player or *tutti* in an orchestra, or establishing a chamber musical group with an agenda replete with concerts and commercial recordings is attainable to very few instrumentalists (Bartleet et al., 2012; Bennett, 2014). Furthermore, a great majority of them will be dedicated to teaching their instrument and for this, as we shall see in Chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”, comprehensive teaching of instrumentalists as music teachers is essential to ensure them an empowering and motivating future.

Here, studies undertaken by Zhukov (2019, among others) repeat the need for change in dyadic teaching in higher conservatories and music universities, putting emphasis also on creative aspects and professional development during studies (e.g., López-Íñiguez & Bennett, 2021). Moreover, Perkins (2013) advocates authentic learning activities which arouse students' curiosity and therefore their motivation, beyond the necessary skills with the instrument. These specific skills of the instrumental discipline have been defined in a range of studies (in the American context, e.g., Chin, 2002; Young, 2016), for example, with pianists, indicating those which are truly important in interpretation evaluation: sight-reading, playing the Western canonical repertory, harmonizing melodies, transposition, improvisation and accompaniment. We all agree that skills with the instrument must necessarily have to be refined to the utmost. It is a fact that students of musical instruments in higher education centre their efforts on this (Creech et al., 2008; Gaunt, 2010). However, these

skills are not enough to make a musician successful nor adapt to the contextual and professional demands of this society.

Hence, the curriculums of music teaching have always considered this a central aspect (Barrett, 2007; Carey & Lebler, 2012; Walmsley, 2013). However, the addition of representative subjects of the aspects mentioned in the previous paragraph in the curriculums as we have just suggested, do not appear to be sufficient and therefore, students must also be exposed to pedagogic environments where they develop traits which are relevant in our current western society, including adaptability, flexibility and resilience (Burnard, 2012; Gaunt et al., 2012). Our students also need to develop their social skills and organisation, their motivation, their confidence, their artistic agency and autonomy, and the necessary strategies to cope with their professional demands (Burland & Davidson, 2004; Juuti & Littleton, 2012; MacNamara et al., 2006, 2008). They also have to be able to reflect critically on their professional learning pathways (López-Íñiguez & Burnard, 2021), and on their abilities and profiles as future music professionals (Blom et al., 2014; Brown, 2009). Essential qualities, without forgetting also generic matters such as critical thinking, leadership or working in a team (Bennett, 2009; Bennett & Bridgstock, 2015).

Recent research studies conducted within the Icelandic framework (Jónanson & Lisboa, 2019) or the Australian framework (Lebler, 2008, 2019), emphasize the offer of additional engagement in investigation for music students in higher studies (see also Chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”), since it is only in this way that they may be prepared to lead in bringing about the necessary change we have been suggesting and to improve the curriculums of the different centres where they will work in the future. Such is the significance of these aspects that, for example, in the Australian framework, after having researched these issues, they have insisted on designing the higher musical education curriculum to be more centred on offering authentic learning and assessment experiences (Carey & Lebler, 2012; Harrison et al., 2013). As a result the students come out of what several authors (e.g., Burwell et al., 2017; Rostvall & West, 2003) define as the ‘secret garden’ or the ‘black box’ of the conservatory classroom or the rehearsal soundproof booth to new and inspiring environments (Perkins & Williamon, 2014; Smilde, Page & Alheit, 2014) which include collaboration (Gaunt & Westerlund, 2013; Pozo et al., 2008); innovation in musical styles and pedagogic practices (Lebler, 2007), and diverse creativities (Burnard & Haddon, 2015).

All of these issues, but also aspects such as the criticism of musical studies in formal institutions, the lack of exposure to professional situations during studies, or the focalising on soloist careers (Bartleet et al., 2012)—which really is a dream only within the reach of very few (Juuti & Littleton, 2012)—comes to light when professional musicians are asked whether their musical education prepared them for what truly was their profession within the musical framework (López-Íñiguez & Bennett, 2020), i.e., a comprehensive or holistic education in which a broad identity was developed as musical citizens their whole life long, as identified in research in musical education as the ‘living curriculum’ (Bath et al., 2014; Johnsson & Hager, 2008). For this reason several studies in music have identified the need to expose students



to real experiences with professionals who enrich them and help them develop a variety of essential competences in life as musicians, such as versatility, personal growth or social and emotional skills (Ascenso et al., 2019; Burland & Davidson, 2004; MacNamara et al., 2006, 2008).

To conclude, the future instrumentalists will have greater or lesser success as professionals depending on the variety and quality of their interpretation activities during their studies and the potentiality of these for promoting self-discipline and autonomy (Creech et al., 2008). However they will also possess realistic anticipation about the professional opportunities available to them (Brown, 2019; Reid et al., 2011), which will necessarily have to be defined within a framework of expansion within and without the educational framework in the professional environment.

### **3 The Social Function of Music: Playing and Learning Music in an Increasingly Open, Diverse, and Changing Society**

During the last few decades, the expressive and creative dimensions of music have changed considerably, and as a result, Miles Monroe would need not only to understand which novel questions would occur musically around them but to understand that these new artistic manifestations of great diversity respond to constant social changes. These changes respond, for example, to the diverse cultural influences of a global society which is increasingly more interconnected and constantly expanding, to the growing interest of professional musicians in improvisation and composition, to the artistic expression mixing a great variety of musical genres, or the acoustic and electronic productions and interpretations which take place in unconventional contexts and which are enabled in turn, by the genuine technological advances that facilitate their access and transmission to audiences who are different from those of the opera or classical ballet.

Furthermore, as stated by Tregear et al. (2016), educating professional musicians has been highly selective and exclusive, particularly over the last two centuries, and for this reason we may call it “elitist” since a “talent” or musical predisposition was required, which supposedly only some people had, and which was something that could not be taught. At the same time, these people interpreted for elitist audiences because the language to communicate was highly intellectual and therefore accessible to select and erudite audiences. Throughout this book we will try to demonstrate that a more open view is required regarding musical education and that it should not be reduced to the virtuosity of the individual interpreter. Instead of being merely limited to an exclusive form of musical education it should open up to new audiences, new social settings outside of the ones it has been used to. To do so, greater efforts need to be dedicated to educating not just the musicians but the audiences too, without whom those musicians would not be able to professionally develop (Tregear et al., 2016).

However, if understanding all of this were not enough for Mr. Monroe, he also should accept that music not just evolves as a response to social changes but that it also occasions them (e.g., Green, 2017; Regelski, 2006), with the relationship between music and society being a similar dilemma to the ‘what came first, the chicken or the egg?’. The social function of the music would therefore be more related to cultural enrichment through its multidisciplinary and trans-disciplinary character (see Chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”), connecting it both to other arts and diverse scientific domains. A dialogue therefore arises which could contribute to sensitisation on ecological sustainability through more local cultural projects in small communities, or exercising as the essential focus in the development of social justice through the integration of immigrants in musical experiences derived from their folklore. Some of these issues have come about in macroprojects of relatively recent research such as the *ArtsEqual* in Finland which includes interventions of social cohesion and integration through projects in which the arts are used to improve peoples’ health. Educational policies are designed to support the development of artistic institutions which act in the most responsible manner possible towards society. The impact of the arts on equality and wellbeing has been studied, as has the importance of the arts as an element creating diversity in general schools (e.g., Anttila & Suominen, 2018; Jääskeläinen & López-Íñiguez, 2017; Kallio & Heimonen, 2018; Kivijärvi & Väkevä, 2020). In Latin America we also found individual research initiatives on the accessibility of music in schools of developing countries such as Chile (Angel-Alvarado & Lira-Cerda, 2017), or “*El Sistema*” in Venezuela. The latter originated as an experience which went on to have great success in these social aspects according to several authors, (e.g., Verhagen et al., 2016), and was then adapted to other countries such as the United States (e.g., D’Alexander & Ilari, 2016), although it also received severe criticism regarding its results, which were far from conclusive on the said social benefits. Further rigorous research is required as to the real effects of their practices (Baker et al., 2018).

#### **4 Creativity and Restructured Pedagogies: Towards Genuine Change in Instrument Learning and Teaching**

The dimensions dealt with in the previous sections and others we cannot embark upon here, conclude that there is a need for profound change in the ways music is taught and learned in our classrooms - the key aim of this book. Since the millennium, several studies in educational sciences (e.g., Bransford et al., 2000; Mayer & Alexander, 2016; Pozo, 2008, 2016; Pozo & Pérez Echeverría, 2009; Sawyer, 2015), and in the psychology of music and musical education have stressed the need for a change in model to reinforce the role of the learner with respect to taking decisions on their own learning, so that their learning processes are appropriated (Hallam, 2001a, 2001b, 2006; Gatién, 2009; O’Neill, 2012; Virkkula, 2015; see also Chapters “[Teaching](#)

Music: Old Traditions and New Approaches” through “How Teachers and Students Envisage Music Education: Towards Changing Mentalities”) and to autonomously manage which goals and contents should be learned (Gilbert, 2016; see, e.g., Chapters “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” and “Student-Centred Music Education: Some Ideas to Improve Learning and Teaching”) through the most innovative and constructive approaches, centred on the student and on the development of their competences (Bautista et al., 2006; Musumeci, 2005; Zarzo, 2017). According to these studies, the traditional *teacher-learner* approach—currently the most used in the majority of musical teaching institutions in the Western world (Daniel & Parkes, 2017; Duffy, 2016)—, do not encourage students to be autonomous nor to self-regulate their learning (Gaunt, 2005; López-Íñiguez & Pozo, 2014a, 2014b), but neither do they exercise the necessary critical, reflexive and independent thinking to continue learning throughout life, something which is crucial in the musical environment (Boud, 1989; Boud et al., 1999; Carey, 2010; Carey et al., 2017; Daniel & Parkes, 2017; Duffy, 2016; Falchikov, 2007; Gaunt, 2008; López-Íñiguez & Burnard, 2021; Montalvo & Torres, 2004), and without which professional opportunities in music would be limited (Hennekam & Bennett, 2017), as we saw in the previous section.

Improving the quality of education in musical interpretation therefore requires, as we noted at the beginning, overcoming the traditional *conservatory model* (Burwell, 2005; Tregear et al., 2016) which has been so much in vogue since the eighteenth century. This model will be analysed in detail in Chapter “Teaching Music: Old Traditions and New Approaches” and revisited in Chapter “Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century”. Both researchers and teachers, and even students themselves are increasingly demanding a change in instructional practices in instrument or voice classes which results in student centred teaching. In fact, this type of teacher is the main focus of higher musical educational reforms in Europe (Klemenčič, 2017). Thus, for example, the new pedagogic forms which appeal to the social change confronting this passivity and reproductively by music learners is reminiscent in our context with the demand for change proposed by the *European Association of Conservatoires* (AEC), which urges educational institutions to develop more comprehensive and enlightened curriculums where contemporary traditional teaching approaches which are “almost damaging the development of the student as a reflexive and innate musician” are eliminated (Cox, 2007, pp. 12–13). Recent auto-ethnographic articles have reflected critically on the complex trajectory in educational institutions of professional musicians (López-Íñiguez, 2019; López-Íñiguez & Bennett, 2020).

In fact, this enlightened vision in musical education which appears to lead to the best results in learning (Biggs, 2003; Carey & Grant, 2014, 2015; Cranton, 1994; McGonigal, 2005; Mezirow, 1997, 2000; Taylor, 1998, 2007), has been receiving strong support from several groups and research projects during recent years. Beyond these and other specific investigations there are numerous initiatives by institutions, associations, universities or projects both on a national or international level, focused on improving musical education which shares to greater or lesser extent, the concerns

expressed in this chapter. Since it is not the aim of this book to list all the possible associations, institutions or research and dissemination networks involved from different paradigms and methodologies, and so as not to overwhelm the reader, some of the initiatives we believe to be more relevant are listed overleaf in an appendix. The interested reader may thus probe deeper into whichever direction they choose. In any event, all of these initiatives, like many others from different and more or less global, but we believe complementary perspectives, coincide in the need to promote radical changes to the traditional forms of learning and teaching music in musical institutions and in the functioning of the music industry in general (Tregear et al., 2016). These traditions consequently require rethinking and alternative models must also be put forward to help close the deep chasm between the academy and the society with which we began this book. This is the aim of Chapter “[Teaching Music: Old Traditions and New Approaches](#)”: to propose new approaches after a critical analysis of still dominant traditions in our classrooms and educational institutions.

## **Appendix: Some Relevant Initiatives for the Redevelopment of Musical Education**

In the international arena there are or have been initiatives with similar interests such as, for example, the Reflexive Conservatory in the United Kingdom, where the emphasis was on improving specialized education in the performing arts (e.g., Gaunt, 2013) as also occurred with international professional networks *Innovative Conservatory* (ICON, Duffy, 2016) and *Transforming 121* (see for example, Carey et al., 2012; Carey & Grant, 2014, 2015; Carey, Bridgstock et al., 2013; Carey, Grant et al., 2013), or the projects based on the format *Students as Partners* (Coutts, 2018; Shihabi, 2017), which proposed restructuring ways of teaching at different education levels of music mastery in general. In the report by Sarath et al. (2014, p. 14) we mentioned previously, a long list of North American projects may also be consulted which over the last 50 years have also proposed the need to reform musical education from the conservatory model, such as the subject of music in primary schools and secondary education institutions.

Moreover, the research project *Transforming Musicianship*, located in Finland and the principal researcher of which is the main author of this chapter, begins with the idea that this type of restructuring instructions—particularly in the area of higher education in classic instrumentalists—are only possible from a construction of the student identity as a true, life-long learner (see Chapter “[Student-Centred Music Education: Some Ideas to Improve Learning and Teaching](#)”; see also, López-Íñiguez & Bennett, 2020, 2021), who learns through the reflection on what s/he “does not possess and is not” (Reay, 2010, p. 2), which necessarily occurs when the intrapsychological processes (individual dimension) and interpsychological processes (social dimension) of the individual connect. For our part, as mentioned already in the

preface, the GIACM, as part of the *Interdisciplinary Seminar on Learning and Educational Change* (SEIACE), has spent 15 years studying aspects which are partly related to improving educational quality and developing musical competences, from which this book is largely derived.

All of these projects and initiatives have also had the support of several international associations which are constantly making efforts to support the visibility of the different research studies in the field this chapter focuses on in particular and the book centres on in general. For example, the *International Society for Music Education* (ISME), is managed by the *Commission on the Education of the Professional Musician* (CEPROM), which promotes comprehensive values in the education of the musician reflecting artistic vision and diversity of learning in people within different cultural and social contexts. It is also managed by special interest groups in *Applied Pedagogies*, that centers on offering the latest theoretical advances in education to teachers throughout the world, or in *Assessment, Measurement and Evaluation* which encompasses different aspects on how to measure instruction practices in music and its results. These issues are contained in many editorial lines and activities promoted by ISME.

Similarly, but from an integrating perspective between musical education and the psychology of music of a marked scientific bent and predominantly through psychometric studies, the *Society for Research on Education and Psychology of Music* (SEMPRE) fosters the promotion of different events and publications relating to the science of interpretation and the holistic education of the musician, taking into account sociological issues (gender, race, socioeconomic and employment status, etc.) and psychological issues (skills, motivation, self-concept, self-sufficiency, self-regulation, etc.) These aspects are also present through the combination of biological, cognitive and social processes enveloped in the acquisition of skills in the Australian megaproject *Understanding the Mechanism of Musical Mastery*, and in some of the topics present in the *International Symposium on Performance Science* (ISPS), one of the most important forums for dissemination research relating to the essential objectives of this book. From the Nordic framework, the interdisciplinary nature of musical education comes under the umbrella of the *Nordic Network for Research in Music Education* (NNMPF) which, like that of the *German Association for Research in Music Education* (AMPF) in the Central European area, publishes annual books and virtual journals each where the latest and most relevant research topics to their respective authors and members are contained.

In the Ibero-American context we have for example, the *Centre for Research in Psychology of Music and Music Education* (O-CIPEM), or the *Columbian Society for Investigation in Education and Psychology of Music* (PSICMUSE), with similar interests to those proposed by SEMPRE, but for the Portuguese and Colombian areas. There is also the *Spanish Association for Music Psychology and Musical Performance* (AEPMIM), which encompasses professionals from both areas simultaneously, from psychology and music. Its objectives highlight the diffusion of knowledge of this area through formative activities in formal education centres (conservatories and universities) and other informal areas, in periodic scientific activities, together with

the fostering of research into the Psychology of Music, through events, publications and cooperation with several of the previously mentioned organisations and other similar ones in the international field. These include European (ESCOM), Argentinean (SACCOM) and Brazilian (ABCAM) societies for Cognitive Sciences of music. Also in Spain, with a long and exemplary trajectory is the *Society for Music Education of the Spanish State* (SEM-EE) which has its own committees of *Music Education and Training in the Conservatories and Schools of Music* (EFMCE) and of *Musical Education and Training in Higher Education* (EFMES).

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# Teaching Music: Old Traditions and New Approaches



Juan Ignacio Pozo , José Antonio Torrado, and Lucas Baño

## 1 Introduction

In the previous chapter we saw how, for several reasons, a threat is being posed towards the traditional model of instrumental musical education that has predominated in conservatories but has also spread to other institutionalised environments, such as schools of music, or even beyond them to other less formal educational contexts (see Chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”) and virtual spaces, with their apps, video games, and tutorials (see Chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”).

Of the different levels of analysis and intervention (musicological, cultural, institutional, curricular, professional, etc.) for improving music education, we shall be mainly concerned in this chapter—and also throughout the rest of the book—with how these changes affect the way teachers should act in the classroom to change the way their students learn. Of course, what happens in the classroom is largely consequential to what is happening on other levels—e.g., how student selection criteria and assessment are established (see Chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”) or how future teachers are trained and selected (see Chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”)—and we shall therefore also be referring

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to them at different times. Our intention, however, is for our core theme to be the perspective of teachers and students. We will be probing into the way they have traditionally related not just to one other but also to music, in what we could call the conservatory model or if preferred, the conservatory educational culture. Following this analysis, we will propose a new form of envisaging these relationships, of feeling, living and producing music through learning and teaching, which we will then expand in detail throughout the rest of the book.

## 2 Music Education in Conservatories

The culture of music education in conservatories has been greatly depicted and analysed (e.g., Burwell, 2005; Ford, 2010; Small, 1998; Sarath et al., 2014; Tregear et al., 2016; see also Chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)” of this book). For our purposes, especially useful is the analysis adopted by Musumeci (2002), according to which broad agreement exists that the standard model of Conservatory music education is characterised by a series of traits which we have partially redrafted. These would be:

1. A rigid and restricted knowledge structure of a historical and stylistically limited range of music.
2. Musical theory based on an epistemology with clear influence of positivist tradition.
3. A musical production system largely derived from Taylorism and individualism.
4. Guidance centred mostly on musical score decoding and technical control of the instrument.
5. Direct or transmissive teaching methods based on strictly prescribed, regulatory, authoritarian and one-directional social interactions, in a teacher-student method dyad.

These features will be examined in greater or lesser detail so that through this analysis we may propose an alternative way of conceiving and developing learning and teaching in both conservatory classrooms, and beyond them to other less regulated spaces of music education.

### 2.1 *A Rigid and Restricted Knowledge Structure*

Let's begin with what could be considered a prototypical case of music education. Carlos belongs to a group of friends, just like those schoolboys who already got together in a garage when they had time to rehearse songs by trendy bands. His musical life is completely divided between the classical violin and modern music. His friends wondered why he had to choose when it was all music. They

did not fully understand the duality Carlos was experiencing between the conservatory music and music with the group (maybe these friends could now read Chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)” of this book on the different cultures of music education and get a better understanding). As Small (1998) explains, there are many places and ways in which sounds can be played and converted into something that communicates emotions, from the theatre opera singer to the multitudinous rock band concert in a stadium; from the spectators at a sports event sharing their feelings towards their team and singing its anthem to that family member who sings whilst cleaning the house, making light of their chores. The truth, as Carlos’s friends think and as explained by Small (1998), is that music is something people use to make sounds to communicate. Why does this difference between the conservatory violin music and that of the group exist?

In the group Carlos and his friends listened to their favourite tunes and together, little by little, they reproduced the sounds of those songs. On the one hand, the electric guitar melody and lyrics and on the other, the bass guitar, drum rhythm etc. They began to rehearse and propose: “*I think it should go a bit faster*”, “*we should give it more umph here*”, “*we should lower the sound here to create that amazing atmosphere*”, “*Now, Luis, this is your moment, give it all you’ve got*”, largely playing through cooperation (without the need to have read Chapter “[From Individual Learning to Cooperative Learning](#)” of this book on cooperative learning, even though this would doubtlessly have helped them). Neither did they read Chapter “[Learning Music Through ICT](#)” on the use of information and communication technologies (ITC) in music education. Carlos and his mates finish their rehearsal by recording it on a mobile, sending each other the audio and discussing it throughout the week: “*hey, here it sounds like we are novices, we need groove, here [...]*” Carlos got really involved in these sessions, he realised what it was that he didn’t really like or what was truly wrong about them but he saw this as an opportunity to improve, to learn through self-regulation (as will be discussed in Chapter “[The Psychology of Learning Music](#)”). The songs of the big bands became his songs, he made his own versions, adjustments, took his own decisions, and everything became a genuine process of learning and creating. “*These guys were really serious about it*” he said of these friends.

In the conservatory the situation was different. Carlos had to finish his pre-professional violin studies and had to play the repertoire that was requested of him, the pieces had already been studied by his father, who was also a violinist. This repertoire was not exclusively the demand of his conservatory or of his instrument; it belonged to the educational culture that impregnates the world of conservatories worldwide. Albeit with certain variations there is a “classical” or canonical repertoire (Ford, 2010). There is little variation in this set of pieces: baroque concertos by Vivaldi, or similar, sonatas and partitas by Bach, or similar, classical concertos by Haydn, Mozart, famous violinist methods and etudes, caprices by Paganini, etc. At the end of the day this is the classical repertoire interpreted in conservatories to finalise pre-professional education, for entry to an advanced conservatory or university of music (as may be observed in the actual centre programmes, generally accessible



on their web pages). It is even used for teacher entrance examinations (see Chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)” in this respect) or when auditioning for an orchestra. Ultimately, this is the standard repertoire established in the Western tradition as a canon from which to measure and compare instrumentalist competences, which we could call the canonical repertoire of Western music (Ford, 2010).

Although in general Carlos liked this repertoire as well, he was not happy about not being able to decide on it himself. His famous teacher knew perfectly well how Bach should be played, for example, on the violin, to the extent that he was the one deciding which fingering, articulations, etc., were most appropriate or more to the point which ones were canonical and therefore obligatory. Carlos felt a bit uncomfortable. With all due respect to the written text, Carlos thought that what he did was not what he felt nor did it sound like the audio of his favourite interpreter when he played a certain repertoire (see Chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)” on what a musical score represents, from the sounds with its parameters—pitch, key, intensity, etc.—to the emotional content underlying them). He told his teacher about the situation and the teacher agreed. The teacher said he also liked that interpreter, but that first he had to play the piece as “it was written” and then, once he had passed the exam, he could decide differently and play it with a more personal or expressive type of interpretation (Chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” contains real examples on forms of learning including that of this teacher, where literal reproduction of the musical score comes before the construction of a genuine interpretation).

Carlos felt that the centre stage of his musical world was not inside him, nor in the emotions beneath that conventional role. The leading role resided in the literalism of the text, and was shared with the teacher’s instructions to convert its signs into sounds canonically through the instrument. In fact, as Ford states (2010) and as we shall see throughout this book, the technique taught in conservatories that centre on the previously mentioned canonical repertoire, with the exception of departments of jazz or modern music, is to play that repertoire, not to be true interpreters. Ford (2010) explains that the repertoire has been given priority over the interpreter and his or her action of interpreting the music. As we shall see in the next section of this chapter, everything boils down to technique and repertoire, with the aim being to produce students who are their teachers’ clones. Small (1998) attributes this to thinking abstractly, which may be appropriate for conceptualising, but actually entails certain dangers like, for example, limiting the word music to a musical score and not to the action of *musicising* (Small, 1998), which suggests the activity of making music, where music stops being an object (the direct object) and becomes an action (the verb). As we shall see later, music is thus conceived as a formal, abstract language which is disembodied or disengaged from action, that needs to be exhaustively mastered before making or feeling the music (Pozo, 2017; Pozo et al., 2019). As a result, no educational value is attached to the artistic action (see Chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” for examples of how this occurs in the classroom), nor to its recreation

by the interpreter, the perception of the listener or their response. The work created by the composer is in itself the object.

Thus, continuing with Small's ideas (1998), believing that the meaning, the emotional content of the musical score resides in the actual composition is assuming that the interpretation is not a creative part of the process, with the interpreter only being a mediator between composer and listener. If this is so, as commented by Sloboda (1986), if technical mastery and precision of key and tempo is all that is required for musical interpretation, it would be better to give the task to computer programmers and shut down our conservatories.

From the point of view of assessment, to be examined in Chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”, if we return to Carlos' experiences, the arguments stated become quite strong. Carlos passed his professional violin studies: he tuned up, weighed up and followed all the indications given by the musical score and did not stop playing, which accounted for a high percentage of his overall score. In Spain, since the reform of the Organic Act on the General organisation of the Education System (LOGSE, 1990), conservatory teachers create a document which states, among other things, what will be assessed and how much weight each element of assessment will have in the final score, as happens in other Western countries. In general, this could be considered an assessment framework which is more precise and explicit in some times, places and levels than in others (see Chapter “[Re-thinking How to Assess Students of Musical Instruments](#)” for the regular assessment procedures). Furthermore, Carlos was easily able to handle his instrument, i.e., the teachers who assessed him were able to observe a certain technical level in the execution of his repertoire and also that he played from memory, which slotted into another section of that assessment framework. The artistic part of the framework was blurred by the idea of having to comply to the last detail with the *fortes*, *pianos*, *crescendos*, phrasing, etc.

What Carlos had to do was faithfully reproduce the text. As we have just said and as we shall insist throughout this book, the educational tradition of conservatories, with a canonical and timeless repertoire, is therefore centred on technical learning. This may be understood as the most effective route to reproducing note for note the musical score of a composition. This in turn will allow for the expressive content to follow, if possible, with the collaboration or help from the individual talent of the instrumentalist, but this has to rather mysteriously appear because it is hardly touched upon in education, other than assuming that technical mastery will lead it to shine forth (Bonastre & Timmers, 2019).

As a result, the artistic part of the framework, that reinterpretation of the emotional content submerged beneath the organised sounds, melts away. It is understood that carrying out the different parts of the musical score is sufficient to communicate the emotional content. It is assumed that without a communicative intention, just by respecting the indications of *forte*, *piano*, etc., the communicative content will reach the listener. In other words, the teachers here use these indications (*f*, *p*, *crescendo*, etc.) as ends in themselves instead of indications to promote the composer's communicative intention. In this way, they prevent the interpreter from becoming another

creator, thereby generating the need to teach the instrumentalist to create, to communicate, to undertake an epistemic reading of the musical score. As you yourself may confirm, if you want your listener to capture your communicative intention—letting them know your anger for example—, you have to deliberately not just do this with *what* you say but with *how* you say it. By speaking in a higher or lower tone, faster, or slower, the anger will be noted if the intention to communicate anger is there. If not, the listener will otherwise understand that you are joking, or being ironic, etc. Learning any language is, after all, learning to communicate intentional meanings. This is what appears to differentiate human languages from other forms of animal communication (Tomasello, 2008).

Going back to Carlos, he contemplated getting away from this canonical conservatory higher education tradition of violin teaching and interpretation and submerging himself in modern music. He wanted to manage more technical resources like the *Chop*, the *ghost notes*, etc. However, advanced educational studies in the violin meant continuing to follow exactly the same routines he had already followed and continuing also with a similar and traditional repertoire in the conservatories: baroque, classical, romantic, contemporary, etc., generally requiring high technical demand. Obviously in all eras there have been more musical formats than the canonical one selected for his study. However, it needs insisting that the repertoire required in the interpretation itinerary for graduating has remained the same without any significant changes, since the foundation of the first conservatories at the beginning of the nineteenth century throughout the Western world (Ford, 2010, including Spain). The interpretation of a repertoire which approximately, and depending on the centre and the instruments, includes a piece from each of the styles mentioned, with the inclusion of a virtuoso piece and a National repertoire piece (naturally chosen from those considered classical) is constant. For instance, in 2019, two centuries after the creation of that first conservatory, in a conservatory the name of which we no longer wish to recall, although the guideline in all of them is highly similar, to graduate in violin the person has to interpret a repertoire of no less than 50 min and include a sonata or piece by Bach for violin alone, a Paganini caprice, a concerto for violin and orchestra and a freely chosen piece (as can be seen by consulting teaching guides in their web pages, at least in Spanish conservatories). Give or take a minute more or a minute less, one piece more or one piece less, this is obligatory in almost any higher conservatory in the interpretation speciality in conservatories of our western cultural tradition.

Advanced level of music for Carlos meant playing a similar repertoire to that of professional education, for example Paganini's caprice and the Bach sonata. Maybe the other pieces were more technically accessible, but they were pretty similar. The advanced level therefore actually meant spending at least four years with a similar repertoire, and at times even the same one, with the same composers and just waiting for any changes the respective teachers might include. In his city a modern music speciality was not available, nor is it in almost any public conservatory in Spain. Neither were there specialities which differed from the classical world, like jazz or flamenco, which is only taught in some of these conservatories. The 23 higher education conservatories existing in Spain offer the interpretation speciality in all

instruments which form part of an orchestra, but from the exclusive vision of the repertoire understood as classical, or canonical, but not modern, or jazz or flamenco.

We do not know what the future holds for the fictitious Carlos, but we do know that he is not alone in his experience. Many of us who have been to a conservatory have shared that experience of an education based on that rigid structure of knowledge restricted to a range of historical and stylistically limited music, like that defined by Musumeci (2002). Minassian et al. (2003) reinforce that same idea when they point out that the activity in conservatories is restricted to the area of classical music and what's more, also the way in which that classical music has to be interpreted and the instructions given to control the instrument to reproduce the musical score as requested or demanded. There is a great problem here, beyond questioning whether the conservatories should restrict their activity to classical music or open up and adapt to new trends and to the employment market (let us not forget that we should also be trained to teach students how to get into the job market and, as shown in Chapter "[Learning and Teaching Music in the Twenty-First Century](#)", within a social and cultural context that differs greatly from that which prevailed when the first conservatories adopted this model). Putting the onus on technical resources (see Chapter "[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)") in the musical score, its fingering and articulations, etc., structures what the piece will sound like whilst configuring a partial vision of it and constructs a canonical interpretation of the classical repertoire, but above all it structures the mind of teachers and students with respect to what the music is and how to teach and learn it. This is why changing the tradition and the focus into one particular musical format is complex unless we rethink what we understand by music and how we believe it should be learned, beyond entrenched traditions.

The learning of music conceived by most teachers and students (read Chapter "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)" in detail for information on teacher and student conceptions) is that the musical score is the truth and the life of the music and its learning is in keeping, as stated by Musumeci (2002) with a positivist conception of the music itself.

## ***2.2 Musical Theory Based on Positivist Epistemology***

Going back several decades before the recently related experience of Carlos, several of us still remember the "free access" contained in the 1966 study plan in force for many years in Spain until the LOGSE (October 1990) came into force. At the beginning of the year, you had to go to the conservatory Secretary's office (because in those days there was no internet) and pick up a form which listed the compositions, studies and methods that you had to know for the June exam, the musical canon to which we referred in the previous section. Nowadays, those repertoire sheets from the *1966 plan*, have evolved in Spain with the LOGSE and further educational policy changes into increasingly more complex teaching didactic programmes which are

full of literariness that is more prosaic than poetic, involving objectives, contents, methodologies, competences, capacities, assessment, etc.

However, despite the alphabet soup of letters and terms, we fear that instrumental learning practice, as suggested by Musumeci (2002), is still based on positivist epistemology. In other words, often assuming more implicitly than explicitly that learning is appropriating objective, true and established knowledge from culturally authorised voices (Hofer, 2001; Pecharrómán & Pozo, 2006, 2008). In the case of music, as we saw with Carlos, it is taken for granted that to master an instrument, one not only has to embrace an authorised repertoire but also interpret it from the proper canons.

This positivist epistemology is not exclusive to instrumental learning contexts. In keeping with Covington and Lord (1994), we will exemplify it with the use of what is not an instrument class but is so optimistically called musical language. Musumeci himself recounts, (2002, p. 1):

Nacho had already been throwing up that morning and when he arrived at the conservatory by bus he felt a cold ball of acid gas in his guts. The exam made him crazy. When Professor Frei at last entered the classroom he thought he would not be able to control his longing to disappear, vanish, walk or run away, it didn't matter how, just getting away from the situation at any cost. But he stayed. He heard Frei saying, "Let's begin by recognising the key. I'm going to play the chord three times".

"First time", he said and played A 440 and a chord. "What chord? Which is it? What's A got to do with that chord" thought Nacho, whilst the sound of his classmates' breathing was almost palpable, scarcely behind his own, on the piano's echo that was already fading away. "Frei is good today," thought Nacho, "he let it resonate a while... but I can't hear one".

This positivist, objectivist or reproductive epistemology (Hofer, 2001; Hofer & Pintrich, 1997; Pecharrómán & Pozo, 2006, 2008; for music education see O'Neill, 2012) is still largely characterised by the education offered by conservatories today. As we shall see in Chapter "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)", behind all the decisions we take as teachers lie beliefs on knowledge, learning, etc., which usually come into play unconsciously and automatically. Thus, this implicit positivism, this belief in an accurate, true, musical interpretation threatened by a silent, and at times not so silent, because they are perfectly detectable, army of errors, deviations, mistakes, means that the teacher's job continuously consists, in a similar vein to that of newspapers of yesteryear, in detecting at least ten differences, or ten errors between the student's interpretation and the canonical form in which that piece should have been played in the mind of the teacher. The objective is to try and immediately correct them so that the student does not persist with them. In Chapter "[The Psychology of Learning Music](#)" (Table 1, p. XX) there is an example of a teacher who is repeatedly dedicated to correcting the systematic errors of her students (other examples are available in Chapter "[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)").

This same underlying epistemology, in many cases positivist, is therefore intensely present in the assessment. This often, in keeping with the abovementioned game of ten differences, consists in comparing the product offered by the student with the authorised object of knowledge residing in the teacher's mind (see Chapter "[Re-thinking How to Assess Students of Musical Instruments](#)"). The assessment method, with its

rigid demands, its strictness and external control, does not lead to emotional states conducive to enjoyment and emotional expression but to feeling physically ill. The students anticipate a type of exercise (aural this time) which is completely removed from their daily lives but which generates a fear of failing, of punishment and external control. The conservatory student has to be able to aurally identify and then transcribe intervals, such as tones, rhythmic metrics and bars in the exercise which is traditionally called “music dictation”. This positivist epistemology with its objective, instead of subjective conception of music, is often implicitly rather than explicitly based on a behaviourist approach. In other words, a prefixed response is expected from the stimulus of an exercise or musical piece by the students, but not any response they may create themselves.

The consequences of this type of assessment are diverse: jeering at the Rite of Spring by Stravinsky, the experiences of Carlos in the previous section, and much more everyday experiences like the anxiety attack suffered by Nacho in the above transcription. This type of anxiety similar to stage fright is suffered by almost four out of every ten conservatory students (Zarza et al., 2016) and is in fact characteristic of classical music education (Perdomo-Guevara, 2014). This may be due to the way it assesses or appreciates music within the positivist conception framework, which ends up linking instrumental learning to the emotion of fear: fear of making mistakes, of missing out a note, of not playing “as it should be played”, fear of failing to reproduce the musical objective where knowledge resides. And learning from fear is one of the least effective forms of learning and enjoying what one has learned (Bächler et al., 2018; Pozo, 2016).

This organisation of learning, using “*well structured*” activities and objectives (Covington & Lord, 1994) apparently leads to good results, but they are restricted to specific academic tests and contexts (that feared assessment). In other words, no effective learning processes are produced, according to the definition which will be established in Chapter “[The Psychology of Learning Music](#)”, since they are neither *durable nor transferable*. Like Carlos in the previous section, Nacho is not going to be able to cross the bridge separating classroom from life with just his musical knowledge. The useful knowledge on one side of the bridge is no good on the other. This is another problem that the conservatory model faces: it is founded on cultural formats, or musical production modes, which undoubtedly do not respond to the demands and forms of distribution of musical knowledge in full twenty-first century swing.

### ***2.3 A Musical Production System Based on Taylorism and on the Individual***

In the previous section positivist epistemology was characterised from the perspectives of reproductive learning, i.e., the student knows music when s/he is capable of reproducing or interpreting the repertoire authorised from the established canons.

The characteristics of this type of education have repercussions on the experiences of the students and also the teachers and other education entities, since they all share the same musical culture, and breathe the same impure air of a rigid and reproductive music. Part of this air has become impure, dense and for many students like Carlos and Nacho, and by no means few teachers, unbreathable. Its origin is in the history of the cultural production of music, which has undoubtedly contributed to solidifying this type of positivist epistemology practices. A quick glance at this highly complex history must begin with the way in which music was produced, which we share phylogenetically with other animal species. From here to its *Taylorist production* mode which organises the conservatory learning spaces and finally the contemporary methods of mass distribution that organise the production structure in today's contexts of mimetic learning.

The evolution of homo sapiens but also of the other animal species has led us to produce, share and transfer music from generation to generation through our phylogenetically shared mimetic learning devices. For example, Fitch et al. (2018) propose an ecological vision for human musicality by differentiating four types of musical manifestations that we share with other species (vocal songs, percussion instrumental music, social vocal synchronisation, and dance). Thus, influenced by the immediate ecosystem, songs are formed or improvised combining the different cultural memes, or basic musical structures, which are implicitly acquired (Pozo, 2014) and which resoundly characterise each of these species and in our case, the different musical cultures.

The idea of a culture with productive rather than reproductive modes of production is therefore accepted and exercised from basic patterns of music or cultural memes learned mimetically (Lord, 1964, 1965; Pressing, 1988; Vikis-Fribergs, 1984). This mode of production, for example, would occur in the multitude of cultures studied in Southeast Asia, India, Gamelan, Latin America, etc. (Nettl & Russell, 2004). It is also present in the Spanish flamenco culture with improvised or “de repente” (spontaneous) song (Machado y Álvarez, 1881). This method of production allows the music to be a true language during social interaction, the essence of which is not the musical, expressive form but its content. It is the shared emotions that are synchronised in a community through the participation in musical activity. There are no social or cultural rites (whether they be wedding, funeral or ritual celebration) that are not interceded by music that is conceived as a social activity. Everyone participates, with no differentiation between composers, interpreters and spectators. This division of musical roles has its own history.

Although the goal of mimetic learning is imitation or reproduction of a previously established action or object, these open production formats stand out because no interpretation—or supposed imitation or reproduction—is exactly the same as the previous one. This is what characterises home-crafted production. If you go to a craft market anywhere, in Granada, Marrakech, Cusco or Oaxaca, you will recognise something that is hand-crafted because it will contain a variance, an error, a mark, that distinguishes it from anything else. No two hand-crafted articles are the same because each production is unique. They are open to multiple contextual variables which transform them. Innumerable identical copies of the same object can only be

made by industrial production and this had a decisive impact on learning and teaching, which stopped being crafted and became technical (Pozo, 2014). The artisans became workers and music was reproduced instead of produced.

However, this path towards the mechanisation of learning in the case of music actually began many centuries before the Industrial Revolution, with Pope Gregory Magno, who had the idea of unifying Christendom through a single rite. For this he created the *Schola Cantorum*, where the reproduction of what was later known as the Gregorian chant was taught (Serrallach, 1953). In order to quicken and facilitate the learning process of these chants the first attempts were made at writing music (Sarget, 2000). Even so, the open forms of production continued being a daily practice, resulting in the first polyphonies (del Arroyo & Rey, 2017; Devoto, 1980; Lara, 2005; López, 2009) and progressive reduction was maintained, up until Romanticism (Crocker, 1962).

Writing music became fully developed with the Enlightenment and due to the good intention of transferring genuine musical knowledge to all mankind pieces, treatise and dictionaries on music began to be published and marketed (Rosen, 1971), as did the figure of the bourgeois enthusiast and his or her respective cultural associations (predecessors of the current wind instrument bands in Eastern Spain). However, the most influential change for formal music learning spaces came at the hands of the Industrial Revolution. The new Taylorist industrial production model with its assembly lines, specialised labour and division of work organised the spaces of learning in the emerging conservatories, similarly to the other educational spaces (Pozo, 2014, 2016), which in the case of music meant the already assumed distinction between composer and interpreter (Moore, 1992; Salazar, 1944), that enabled us to understand the positivist or reproductive epistemology described in the previous section.

So, by observing the history of cultural production it is possible to understand how musical practice conditions have changed, to a large extent through outside interests from emotional communication. Our approach to Taylorist industry and its mass production lines must differentiate between the different professional profiles and their specific education: designers and managers of production chains (composers/directors) on the one hand, and technical experts (instrumentalists) who proceed with them on the other. We have spent a couple of centuries moulding professionals for the Taylorist mode of production, which incidentally we have achieved very well. In fact, there are numerous professional European orchestras (and students) whose musicians have been trained in this musical culture. However, as was shown in Chapter “[Learning and Teaching Music in the Twenty-First Century](#)”, most musicians currently trained in this tradition have to search for other professional careers for which that specialised Taylorist education has not prepared them (López-Íñiguez & Bennett, 2020).

Ultimately this musical production has generated a whole culture of learning and teaching, which consists in confronting the student with a closed task that requires the decoding and interpretation of musical scores but rarely the creation and interpretation of their own creations, either alone or with companions, or even the creation of their own interpretation or version of others’ works, as their *cover*. But, do we



prepare conservatory students to enact their lives through music? Apparently not. Even worse, we do not show them how to create interpretations from the musical scores themselves, but only to obey the teachers, who on too many occasions act like production line managers, where the need for the student to know what they are doing and understand the process is less important than respect for the established product. Phrases like “you don’t need to think” or “this is played like this” are far too common a conclusion. Rather than confronting them with genuine problems of composition, creation or interpretation that are tasks open to finding different solutions, they are confronted by mere closed task exercises, that only admit a pre-established solution (see Chapter “[The Psychology of Learning Music](#)” for the differences between exercises or musical problems and also the example given in Chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, p. XX).

## ***2.4 Guidance Towards Decoding the Musical Score and Technical Mastery of the Instrument***

This form of conceiving music as a more or less closed or established knowledge system, as a subject of knowledge that predates the student, and the teacher that music education has to convey to new generations of interpreters in the most faithful way possible, within the framework of a Taylorist production model, necessarily moves towards an instructional model or musical education in keeping with these premises. Circumstances are similar with other emblematic contents of our educational tradition, such as reading and writing, mathematics, or science. As shown by Small (1998), by denouncing what we would call the *abstract* or decontextualized nature of music taught, instruction has tended to begin with a mastery of the code (reading musical scores) which only later when students they have already fully mastered these codes do they have to convert them into actions. In the beginning is the Verb not the action (Pozo, 2014). Thus, as we shall see in greater detail later, we learn music as an arbitrary, abstract, and amodal language (AAA) (Glenberg, de Vega & Graesser, 2008; also Pozo, 2017), decontextualised from action, interpretation and meanings. In specific contexts this production is closed in on itself, packaged like just another industrial consumer product instead of being an open production, centred on communicating meanings in a specific context.

Learning thus begins with the decoding of written, musical language, and translates it into sound patterns which have to be executed using specific actions in the instrument. Playing music is conceived as a process of acquisition of the necessary technical skills to decode the musical score and master an instrument, thus achieving the translation of the musical score, which itself is conceived as a closed code, into another equally closed code, of technical patterns which are able to generate this organised, technically accurate sound.

Although there are many different forms of teaching musical language and its translation into patterns of sounds, studies show a dominant conception in our culture,

according to which music, in keeping with the dominant positivist conception is contained in the musical score, (see Chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)” of this book). Playing involves turning what is written on a score into sounds and therefore, to be able to play any instrument you have to know how to decode it. As we shall see further on in Chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, in this process of musical literacy we usually also assume an analytical focus, in which the musical text is decomposed into minimal units, notes, the subsequent combination of sequencing of which then produces the desired melody. In accordance with model AAA (arbitrary, abstract and amodal knowledge) already mentioned (Pozo, 2017), the musical score is decomposed into a series of arbitrary, abstract and amodal units (the notes). A meaning should arise from their combination, in a similar manner to how it is proposed that children should learn to read and write or learn mathematical notation. If we return to the shining metaphor of the Library of Babel by Borges (1944), it is taken for granted that the whole of knowledge is contained within the Library, in the code, and therefore mastering the code will mean mastering or knowing all music (Pozo, 2007).

In music learning, as in other areas of expertise, a cultural pattern in keeping with a behaviourist-centred learning appears to predominate, as has been pointed out previously. We could also call it associative (see Chapter “[The Psychology of Learning Music](#)”), according to which everything is reduced to the sum of its parts. Thus, the meaning which in the case of music teaching, as we shall see later on, (see also Chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”), refers to its emotional content (Kivy, 2001) that comes from the combination of the most elemental units composed by the code, adding on notes. Borges said that the Library of Babel contained all the books that could be written with the 28 letters of the alphabet but also all the errors of each one of these books. The function of the teacher, as we have seen, is to detect each one of the errors committed by the student when decoding the musical score by turning it into sounds. And the function of the student, as we shall see in Chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)” will be to process the musical score to a highly elemental level, note by note. Just as when one learns a text by “heart” without understanding it (see the example presented in Chapter “[The Psychology of Learning Music](#)”) the student tries to learn music “accurately” without detecting the underlying musical structures that organise and provide meaning to these notes, and certainly does not link that music with all the cultural, expressive, personal etc. elements that give it life (see an in-depth analysis in Chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”).

As with certain teaching methods for reading and writing, the student learns to combine notes, or letters (*p* with *a*, *pa*...), which they then thread together with other notes, letters or syllables like the links in a chain until long “dictations” are made. But in music, unlike writing, these dictations then have to be translated into actions which through an instrument generate the desired sounds. The letter—in this case the notes—have to be converted into actions, which are sequenced and organised and with a high level of technical complexity in keeping with the restrictions imposed

by each instrument. As we shall see further on, and is already pretty fully developed in Chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, the most normal route for teaching instrumental technique is based on providing the student with a detailed model of the pattern of actions they should carry out and under the control and supervision of the teacher, who goes about forming this interpretation, correcting as many errors as the student commits until the established musical pattern is reached. This pattern is the only one that will ensure the desired canonical sound. Let us now go into one of Carlos’s classes for a moment and see how his teacher helps him to correct his errors:

*Teacher:* Carlos, there are several things regarding what you have just played. The intonation, really, there is no note that we could say is well in tune...., and it is clear that the positioning and tension in that hand will not help to improve it. Look, if you hold the violin like this, it only leads to problems. It even affects the bow. Look how you hold the bow, how your hand does not allow for flexion. Your sound is tense. The piece is not well read, you played several wrong notes and there were changes you did not adhere to. The B of this ascending scale, for example is a flat, the next time there is a natural. And several other things. You haven’t followed the fingering and articulations I gave you. I am not surprised that what you play does not sound anything like Bach. Play what is written, improve those technical problems, as I’ve told you several times how to do it, and you will see everything will come together.

As the example shows the technique from this classical focus is conceived as an end in itself and is acquired through several phases (see Chapter “[The Psychology of Learning Music](#)”; also Pozo, 2008) which should include very clear and precise instructions (on the positioning of the fingers or the hands or control of the column of air—depending on the instrument) accompanied usually by the teacher, who the student has to imitate as much as possible (“*Carlos, look at how I move my arm during this passage*”). This also requires a great deal of practise, which is difficult to ensure if the students’ motivation is insufficient (as we shall also see in Chapter “[The Psychology of Learning Music](#)”). The student must also be strictly supervised by the teacher, whose function is to correct all errors the student commits as soon as possible (“*not like that, repeat it again and please do it as I told you and showed you*”). This obsession with error and correction will become, whether they like it or not, one of the pillars of the learning and teaching process, where the student will also be worried about error and experience music from this fear of error. They will focus all their attention on avoiding these technical errors (missing a note, not keeping time, not getting the tempo right, etc.), and as we shall later see, will scarcely think about the music and the expressive meaning of what is being interpreted. The teacher will take on the responsibility of preventing all these errors, so they will always be breathing down the student’s neck when they play, displaying their authoritarian role that leaves little room for student autonomy with regard to both their abilities and competences and their actual motivation.

## 2.5 *Transmissive Teaching Methods Based on Authoritarian and One-Directional Relationships*

The model we have just described is based on a certain relationship between student and teacher, or rather pupil and maestro, which also forms part of our educational tradition beyond music, but that here, given the didactic and usually long lasting relationship between teacher and student (a teacher does not usually, as in other educational contexts, teach several students at the same time nor does the student have several teachers), and therefore the relationship and its consequences become more intense.

As shown in Table 1 at the top, in the traditional model the teachers assume that their function is, according to Pozo (2008), to provide their students with as much knowledge as they would need (but never allow them to choose their musical repertoire or decide how they wish to do things), mould their execution, promote mimetic learning and train the student’s execution, focusing as we have seen on the correction of errors (i.e., deviations from the knowledge provided and models established). Claxton (1990) expresses this more graphically: the teacher has to be a petrol attendant who fills up the student’s tank with knowledge (empty because from this focus we have seen the music the student knows and experiences in their everyday life is of no consequence. The most it can do is distract). The teacher is also a sculptor who moulds the student’s action and a watchmaker who painstakingly revises and changes the technical execution of the student, piece by piece. And what is the student in that model? The passive receptor of the teacher’s actions, a mind to be filled, a mass of information to be polished or sculptured to the teacher’s tastes, a piece of machinery to repair or at least to adjust. If the student persists and practises sufficiently the desired results will be achieved.

The theoretical and practical limitations of this model will be analysed in detail in the following chapters. The former lead to a much poorer musical learning than desired in most cases, as was pointed out some years ago by Covington and Lord (1994), but one of the undesirable consequences is that often such a close link established in instrumental learning between the learner and the teacher has a negative effect on actual learning and becomes what today is called a toxic relationship.

**Table 1** Different teaching functions or profiles in the traditional educational focus (top) and in the other alternative focuses centred on the student (bottom)

Claxton (1990)	Olson and Bruner (1996)	Pozo (2008)
Petrol station attendant	Authority	Provider
Sculptor	Hand-crafted	Model
Watchmaker		Trainer
Sherpa	Consultant	Tutor
Gardener	Colleague	Advisor

Taken from Pozo (2008). Reproduced from *Aprendices y Maestros* by Juan Ignacio Pozo with permission from Alianza Editorial, S.A., Madrid

Leaving aside extreme cases, unfortunately, as analysed by Fernández-Morante (2018), it is not so infrequent for a strong relationship of dependence or domination to be created where the student, far from building up the necessary autonomy, ends up being increasingly more tightly under the supervisory control of the teacher. Without mentioning those cases where the teacher tries to maintain that control by using psychological punishments, the continuous correction of student errors is the seed of the famous fear of failing, or stage fright which threatens a large part of the interpreters even whilst they are exercising their profession. It is not surprising that the emotion you deal with reported by musicians trained in the classical tradition, unlike those trained in other musical cultures, is that of fear, fear of making mistakes (Perdomo-Guevara, 2014). Since it is impossible to learn without emotions (Pozo, 2016), the teachers who adopt this model usually try to motivate the student, making them see that if they do not correct their errors, the audition they have the following week will not go well, that their parents will be disappointed and what will the people listening to them think. What emotion will the student feel when they have to participate in that audition? If music, as we shall later see, above all involves expressing emotions, what emotions will a terrified student express, who does not believe in their own musical skills?

Instead of having students who are always immersed in these negative emotions, it is possible to propose a music education guided by motives, goals and positive emotions. As shown in the example presented in Chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”, when the goal of the music is to communicate an emotion, the only possible error is not to achieve it, not to literally play the key that releases the mystery or the suspense. There is no external canon to repeat, no execution to emulate. Instead there is personal management of one’s emotions and the technical actions (yes, because technical actions are still there) that are able to communicate them. In this new model (see the lower part of Table 1) the person teaching becomes the guide, the tutor, the adviser, of a journey the students themselves set out on in keeping with their expressive goals. According to Claxton (1990), the petrol station attendants or watchmakers become *sherpas*, those native persons who are more knowledgeable of the terrain, who guide the climbers but who do not decide which journey they should go on nor take decisions for them. They are in the background, leaving the student to be centre stage of that climb. They do of course try to prevent them from falling or freezing in the middle of the audition but they do this from suggestion, questioning, guiding, not from orders and control or imposing certain patterns of action (in Chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)” the criteria that distinguish one type of teaching action to another will be analysed).

This new form of being a teacher, which is illustrated in several chapters of this book (for example, in Chapters “[Early Initiation to Music Learning: Little Children Are Musicians Too](#), 9 through [Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”), also requires a new form of conceiving music as a cultural, epistemological production and as an instructional activity. In other words

it wishes to rethink each of the points we have been analysing and take them as its guide, but without strictly following them, in keeping with the characterisation suggested by Musumeci (2002). This is a new focus on music teaching which largely draws on assumptions that oppose the traditional model.

### 3 Towards a New Approach on Instrumental Music Teaching<sup>1</sup>

Recently the AAA focus, that underlies the processes of literacy, is being strongly reacted to by the philosophy of the mind (Rowlands, 2010), neuroscience (Damasio, 1994) and cognitive psychology and learning (Claxton, 2015; Glenberg, de Vega & Graesser, 2008; Pozo, 2001, 2014, 2017; Wilson, 2002), and also from actual educational spaces (Barab & Dodge, 2008). A new focus is therefore proposed, based on the so-called *embodied mind* which defines our mind as an incarnate, incorporated system. Compared with the mind–body dissociation and the belief that all knowledge begins with abstract, formal, decontextualised activity, this draws upon the fact that all mental activity is produced from and for the body. It is an embodied activity. Compared with the evangelical supposition that “in the beginning was the Verb” then this “became Flesh” upon which, as we have seen, a large part of our music educational culture is founded, the embodied mind focus accepts that all of our acts of knowledge implicitly begin in the body itself, in the bodily or embodied sensations and representations. Therefore, knowing is to a fair extent specifying and reconstructing these primary embodied representations (Pozo, 2001, 2014). Unlike that which occurs in the classical cognitive focus, in keeping with the ideas that as we have seen have predominated in our music educational culture, where these representations are coded in the form of arbitrary, abstract and amodal symbolic units, (Glenberg, de Vega & Graesser, 2008), from the embodied focus it is accepted that the primordial representations are enactive in nature, they are based on bodily actions and sensations and are therefore genuine representations/actions (Pozo, 2014).

Thus, learning and teaching, including musical learning (Cox, 2016), should be aimed at explaining and transforming these primary embodied representations through the mastery of new codes and systems of representation (Pozo, 2014, 2017). All learning has to start from implicit and embodied representations which unconsciously guide the activity of learners. However, as we shall see, this transformation requires recording using different external social or cultural languages and representations (Pérez Echeverría et al., 2010), which not only help to make them explicit but mostly to generate new meanings using a representational re-description (Karmiloff-Smith, 1992) in other representational formats. The process of re-description, according to Karmiloff-Smith (1992), would involve the progressive translation of a representation to a new code or format, with greater representational power. In the case of the instrumental music this would be indicating

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<sup>1</sup> Part of the content of this section is adapted from a previous publication (Pozo et al., 2019).

how the intuitive representations, linked to the body (which we will see in Chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”) acquire a different meaning and translate to other external cases, to acquire a more symbolic and flexible character from the musical scores. Since embodied representations are fixed or linked to the context, they need to be translated into other codes with greater capacity of transference than the actual bodily experiences, so that what is learned may be generalised to other contexts or situations.

The question which the reader may be asking him or herself is what can a student who is beginning to learn an instrument re-describe if they do not yet know anything about how to play that instrument or what these primary embodied representations are that are linked to the body and which let us learn music and instruments the way we intended. The answer is simple, we are emotional beings (Damasio, 1994), music plays its role in the area of expressing emotions (Juslin & Västfjäll, 2008; Koelsch, 2014; Koelsch et al., 2008; Meyer, 2008) and we are all humanly musical (Hallam, 1998; Musumeci, 2005). Music is one of the most genuinely emotional expressions of a human being. In fact, this emotional content is found to be present in the roots of creation and musical practice, as emitted from the so-called proto languages (Mithen, 2005), in this case and more specifically in the use of sounds for driving emotions. It is also found in classical studies such as that of Blacking (1995) in the Venda tribe from South Africa. More recently, Juslin and Sloboda (2013) report that music is above all a communicative and expressive phenomenon the main aim of which is to express emotions. Even from the viewpoint of interpretation and not just from the composer’s view, Levitin (2006) states that the essence of musical interpretation is, essentially, being capable of transmitting emotions which would imply, as we shall see in Chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, a personal construction of the emotional content underlying the musical score.

Finally, as Kivy (2001) says, the emotional qualities of music cannot be denied since they are heard and we have ears to hear them with. We feel music and its sounds impact us until they achieve the communicative effect that lies within them. This quality of understanding the emotional content that sounds transport and reacting to them is not a specific quality of musicians. It is applicable to the human race, that is evolutionally prepared to appreciate and express music. (Mithen, 2005).

However, as we have seen, music as an academic discipline concentrates on the study of the musical code and forgets or abandons this communicative nature of organised sounds that form part of our embodied representations, or our “standard cognitive equipment” (Pozo & Gómez Crespo, 1998). Based on amalgamated rhythms, seventh chords, modulations and semi-cadences taught from abstraction, we forget the primitive use of music, which truly connects us with what we are (Mithen, 2005; Peretz, 2006), making up that “humanly compatible” musicality (Musumeci, 2005). In fact, if we allowed ourselves to choose between different versions of “*My Way*”, by Paul Anka, made famous in the version by Frank Sinatra, it is certain that one of them will sound more intense to you than others, and make you feel more emotional. This communicative and expressive intention of the singer of the version that you perceive as more emotional, is what each one of us appreciates as listeners,

even teachers, as the most significant aspect of a musical interpretation (Laukka, 2004). Curiously, though, what is most highly appreciated in one interpretation is usually what is the least taught and naturally does not form the backbone of music and instrument teaching, but is supposed to be something that, magically, comes from the interpreter. Or not.

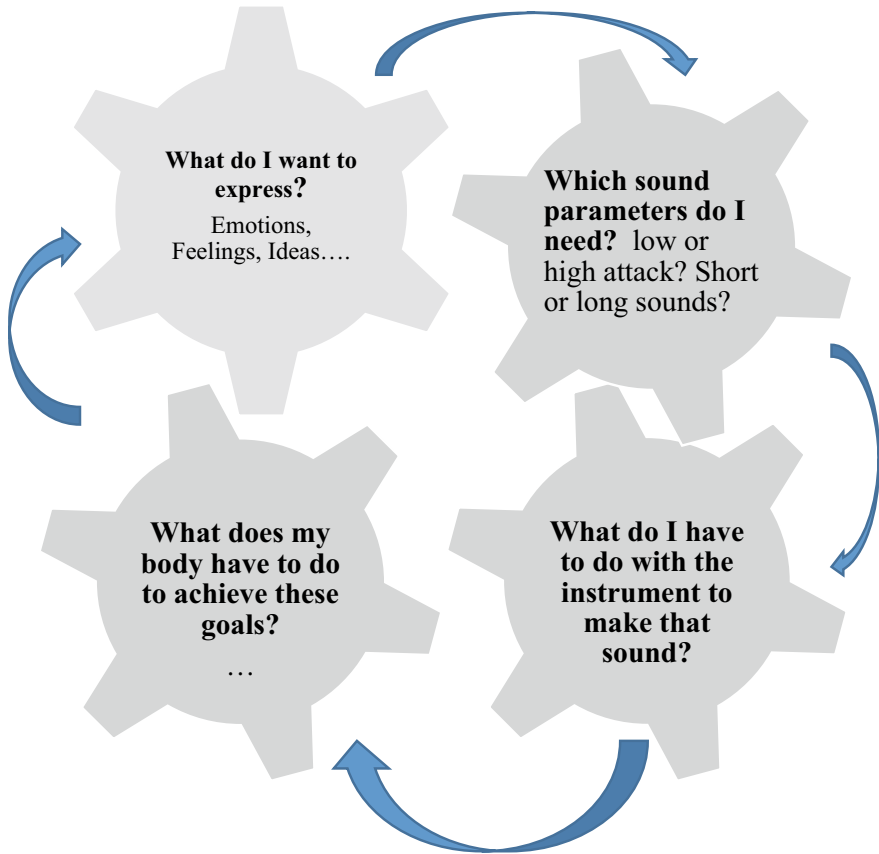
Recovery of this primitive sense of music which lets us learn from our primitive embodied representations means using expressiveness as a starting point, as we shall particularly see in Chapters “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”. This communicative function starts with this expressivist model of music education (Torrado et al., 2014) because the actual nature or function of music is not just to move people but because that expressiveness or emotional content modulates the management of sound parameters and therefore the management of what we will do to produce it.

As shown in Fig. 1, it is the management of the different sound parameters which enables expressive content to be modulated. For example, to get a certain bodily response from the listener (relaxation, serenity) we have to communicate tranquility and security to them and to do this we use long sounds, with little attack and little sound material (Gabrielsson & Lindström, 2010). For this reason, sound and its parameters are another musical learning content. Learning to construct the emotional content we perceive in a musical piece and learning to strategically control what parameters of sound we need to manage so that these contents reach the listener are essential areas of learning in the music classroom (as shall be shown with different examples in Chapters “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”).

These sounds, with their parameters, must be produced either from instruments inherent in being human like a voice, or external instruments like a violin or a saxophone which of course have their own mechanism of sound production. Its emission design restricts how much of the bow has to touch the violin or the air that has to be used with the saxophone, for example, to produce those sounds with the planned parameter which drive the desired expressive content. For this reason, mastery of the instrument, as a sound production mechanism, should integrate all learning contents. It is not a question of not teaching technique because obviously technique is essential but always as a medium for achieving expressive ends, not as an end in itself. This we shall see in the next chapter when we establish the difference between technical and strategic use of musical knowledge.

Continuing with Fig. 1, it is the mind/body system that decides what to communicate, what emotions to arouse in the audience, through which sound parameters, by which actions with the instrument (Damasio, 1994). And from the perspective of embodied learning adopted here (Poza, 2017), we can speak of the mind/body system because it is not only promoting cognitive management of one’s own actions but feeling and experiencing that management through the body itself, which is what is going to make the necessary actions possible to achieve the desired sounds and





**Fig. 1** Components of instrumental learning according to Pozo et al. (2019), with permission from the authors

produce the sought after emotions. The interpreter must feel the achievement of his or her communicative goals through this bodily position management, muscular tension, and breathing. It is the body which finally produces the music, so one should therefore learn to feel it and regulate it in a cycle. As we have tried to reflect in Fig. 1, this is not a vicious cycle because every time the relationship between the components of this expressivist model (emotions, sound, instrument, body) twist around, a new level of representational re-description of musical knowledge is reached.

Ultimately and to conclude, in the case of instrumental music, compared with the traditional focus described in Musumeci's characterisation (2002), this new focus proposed and based on these embodied assumptions of the mind imply significantly uniting the four representational devices that need consideration for this new form of music education:

- The emotions to be communicated (the emotional content of the music that is its genuine meaning)
- The sounds and their characteristics that can link these emotions together
- The technical properties and characteristics of the instrument which restrict the actions and enable these sounds to be generated
- The bodily actions and sensations linked to the production of these sounds with emotional content through the instrument

For classroom work on these four components, to be dealt with in detail in Chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” (see also Chapter “[Student-Centred Music Education: Some Ideas to Improve Learning and Teaching](#)”), activities need designing which will lead to:

1. Specifying the desired expressive goals, which, in turn, requires
2. Establishing relationships between the different representational components (emotion, sound, instrument, body), which in turn involves
3. Also clarifying the means through which they may be achieved (regulate the actions and sensations of the body that must be deployed to produce the desired sounds).

To sum up, interpreting is rather more than decoding and translating the musical score into sounds (Cook, 2013). It requires the creation of expressive goals which have to be regulated and executed through the instrument using specification and meta-cognitive control of the actual bodily actions (Pozo, et al., 2019). Music is not contained in the musical score nor in the instrument. It is the interpreter who conveys the emotions through the control and regulation of their own body and the sound generated through their actions with an instrument. For this model to expand into music classes, in the conservatories and outside them, then we, as teachers, also have to re-describe our ideas on how our students learn. We will deal with this in greater depth in Chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, and assess what we are really teaching when we say we are teaching the use of a musical instrument as a means of expression. Table 2 compares and summarises the existing distance between the traditional model and the expressivist model proposed.

**Table 2** Differences between the traditional and the expressivist models explained in this chapter

	Traditional model	Expressivist model
Expressivity	Something which will happen that is dependent on individual talent. We are not all musicians	Starting point of musical and instrumental teaching. We are all humanly musical
Focus	Teaching method based on mastery of code and technique	Teaching method based on activating expressivity and relationships between sound parameters, sound production mechanisms and body management
Didactic strategies	Learning strategies and explicit work for musical decoding and mastery of instrumental technique	Learning strategies and explicit work aimed at expressivity, which requires knowledge of the musical parameters and technical mastery of the instrument

Adapted from Torrado et al. (2014), with permissions from Enlace Creativa

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# The Psychology of Music Learning



Juan Ignacio Pozo 

## 1 Instrumental Learning in the Western Cultural Tradition

If we asked any music teacher or even any student what you must actually learn to be a good musician or, specifically, to play an instrument well, we would perhaps find there was some agreement that you have to learn to technically master musical language and the actual instrument in question. You have to be able to play pieces with a “good sound” which usually involves correctly decoding the written composition and the musical sense the author wished to portray in their composition, but using your own style or personality. However, this apparent consensus would quickly melt away if we began to ask not about the final goal—that sensitive, personal and technically precise interpretation of the composition—but about the day in day out learning required to reach that intended result. What should the student learn? And how should they learn it? Through what sort of activities or tasks? What should the teacher do to promote this learning?

Actually, if we analyse the answers to these questions, or indeed observe the classes of different teachers and students, responses will be very varied which, as we shall see in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, respond to the different conceptions these teachers and students have on what learning and teaching music entails. But this diversity of conceptions does in fact reflect a limited number of differentiated models or theories for managing learning and teaching in a music classroom. We assume that learning involves long-lasting changes to students’ abilities, knowledge or skills as a consequence of practice (Pozo, 2008). In turn, teaching would consist of a set of activities designed by a teacher—or by someone who is helping another or others to learn—to promote that learning. As shall be seen in greater detail in chapter

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“[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”, one of the traits that differentiates formal learning (that which occurs, for example, in a school of music or a conservatory) from non-formal (a group of teenagers getting together to play rap) or informal (an unregulated context of teaching or assistance) is that in the formal and informal contexts of learning there is someone who is responsible for preparing and organising the learning of others. These spaces are necessarily asymmetrical, clearly differentiating between the roles of the person teaching and the person learning, which is reflected in their form of socially organising the learning (also see chapter “[From Individual Learning to Cooperative Learning](#)”).

### ***1.1 Traditional Versus New Approaches***

Beyond the distant common goals, the way in which this learning is organised in formal contexts can be based on different models of learning. This is reflected by real examples, in this case in an instrument lesson, contained in Tables 1 and 2, where two different teachers handle instrumental learning of their students in quite different ways. In the first case (Table 1) there is a teacher who, at the beginning of the class, asks the student to play the pieces assigned to him that week, correcting the technical errors the student makes and identifying them on the musical score. The teacher then focuses on helping the student to identify the notes in both the musical score and in the instrument.

This teacher centres her student learning on the musical score and how the notes expressed in the musical score are “interpreted” or transferred to the instrument, with all student attention and learning directed through precise instructions and explanations (“*The C is high, raise the instrument, watch out for the chord change. Play it again*”). The student rarely intervenes except to play when she asks him to and to respond to closed questions. The student is not an active agent in learning, but merely reactive.

Now lets us look at what happens in another different class (which we call B in Table 2) where another teacher gives a class to a student of a similar age and with similar contents. We see how here the class does not focus on the musical score but on the relationship between the student’s actions and the instrument, on how his actions can transform the sound produced by the instrument. Furthermore, instead of giving instructions or closed explanations the teacher encourages the student to take decisions, to try to understand why what is happening is happening and to appraise his own actions (“*Perhaps you can tell me something that has improved since last week*”). The class is constructed as a dialogue rather than the teacher’s monologue.

Although both teachers apparently have the same goal: to achieve a “good sound” (which is also sensitive and personal), the way in which they do so is extremely different and insofar as we know how students learn and how we can help them (Bransford et al., 2000; National Academies of Sciences, Engineering, and Medicine,

**Table 1** Example of a basic level cello class from a traditional focus, centred on the musical content

Class A
<p>Episode 1</p> <p>Teacher: <i>Right, play what you had for today. I think we had 3 and 4 didn't we?</i></p> <p>Student: [plays and at the end the teacher intervenes:]</p> <p>Teacher: <i>C is high, raise the instrument, and watch out for the chord change. Play it again</i></p> <p>Student: [Plays again and, this time with no mistakes. Then:]</p> <p>Teacher: <i>Tell me what the notes are. Where are you going to begin?</i></p> <p>Student: <i>here [pointing to the place on the musical score]</i></p> <p>Teacher: <i>Good, I see you have jotted down the name of the notes, but only in this one, and not in the others? Ah! Here as well. But not in this one?</i></p> <p>Student: <i>I forgot</i></p> <p>Teacher: <i>You forgot, OK. Well, you can't forget because [...] Right, let's say the notes from here</i></p> <p>Student: [begins to name the notes perfectly at the speed indicated by the teacher]</p>
<p>Episode 2</p> <p>Teacher: <i>The next time we have a class, bring me this to the individual class [...] and this as well. I am going to give you the two-octave scale here. [...] you begin with C, from C in the fourth string to D in the first string, OK?</i></p> <p>Student: <i>But, does it say you have to write something here? [pointing to musical score]</i></p> <p>Teacher: <i>No, not there [slightly annoyed]. Here it says to play the scale of two octaves beginning with C in the fourth string and ending with D in the first string. It doesn't say it but I have written it [...] So, this is the rhythm, [points to the musical score]. A semibreve tells you it is worth two minims, a minim tells you it is worth two crochets, a crochet tells you it is worth two quavers, so when you have two quavers you have a beat, there are two quavers, so, it is a beat, not a tempo. When you have two quavers here, one crochet. It is the same as two quavers. So as there is only one, it is longer, do you understand?</i></p> <p>Student: [seems to agree with a gesture but is not terribly convinced.]</p> <p>Teacher: <i>Do you know how to measure quavers and crochets? [the teacher sings:] Fa-Fa-Fa-Fa-So-La. There are two quavers in one beat and in another one crochet [...]</i></p>

Adapted from Torrado and Pozo (2008)

2018), their probabilities of reaching that goal are also highly different. In the next few pages, we will examine why.

Accumulated research over the last few decades on ways of learning and teaching music has identified these two teaching styles as the two extremes of a continuum (Torrado & Pozo, 2008), which extend from a type of teaching—which we could consider traditional—centred on established musical contents which the student must learn to produce that “good sound” (particularly the decoding of musical languages, instrument technique and repertoire excellence) to a more student-centred teaching and the development of capacities that allow them to establish a relationship between their goals and mental representations (what they wish to express and the sound they wish to make to achieve this), their bodily sensations, the actions performed with the instrument and the sound they are capable of making as a consequence, making it possible for students to self-regulate their learning (Varela et al., 2016) or become active agents in controlling them (Wiggins, 2016) Which method is more effective? To answer this question we have to consider not just goals but also criteria that allow us to define or assess what effective learning is.

**Table 2** Example of a basic level violin class, from a different focus, centred on the student

## Class B

## Episode 1

Teacher: *Right, have you worked on your scales a little bit this week? I asked you to do something the other day, but I don't know if you will have remembered: that you should note down what you had done*

Student: *Yes*

Teacher: *Yes? OK, well, get out the piece of paper and we will have a look at what you have written*

Student: *I have been working on the scale double, triple and quadruple stop*

Teacher: *That's great! With double, triple and quadruple and stopping too?*

Student: *Yes*

Teacher: *Right, let's do it*

[the student plays the scale and when they finish] Teacher: *Good. Perhaps you can tell me something that has improved since last week*

## Episode 2

Teacher: [...] *So, if we want to play increasingly softer, what can we do?*

Student: *Use the bow increasingly less*

Teacher: *Very good, using less bow. And for going increasingly more slowly, what can we do? Draw the bow more quickly or more slowly?*

Student: *More slowly*

Student: [Begins to play]

Teacher: [...] *Ah!, I liked that. Did you like the sound?*

Student: *I was going at it very hard and very close to the bridge*

Teacher: *OK, shall we try something to improve it?*

Student: *Let this [points to the wrist] go limp*

Teacher: *Very good, and what else can you do? Can you see where you put the bow?*

Student: *Concentrate a bit more*

Teacher: *OK, in what?*

Student: *In not going towards the bridge*

Student: *I was going here [points to the neck], instead of towards the bridge, here*

Teacher: *It was a bit exaggerated, but that is the idea*

Adapted from Torrado and Pozo (2008)

## 1.2 When Is Teaching Effective? What Are the Criteria for Learning Well?

We can assume that learning is more effective when it produces (Pozo, 2008):

- (a) *More long-lasting changes.* Learning is changing what we already know or do, but if all learning involves change, not all changes are the same in nature, intensity or duration. It is known that a student-centred type of learning, also called constructive learning, (as illustrated in Table 2), tends to produce more stable and long-lasting changes—for reasons which will be later explained—and therefore better learning.
- (b) *Changes that are transferable* to new situations or contexts. One of the consequences of more reproductive or repetitive learning (as reflected in Table 1), focusing on content and not on developing the student's capacities or skills is

that, although it effectively achieves learning in terms of the previous criteria, and they are consolidated, what is learned will rarely be useful for new contexts or situations. It is therefore probable that the student from the example in Table 1, who is used to it being the teacher who tells him what he has done right or wrong and why, is incapable in the future of taking decisions for himself to improve his music practice when he makes a mistake or does not like what he is doing. Guided by the teacher, the student will learn to play a passage or a piece but will find it hard to use what they have learned on their own in a new composition or situation. In contrast, constructive learning, as illustrated in Table 2, which focuses on developing student capacities will, as we shall see later, encourage the student to understand what they are doing, take their own decisions and autonomously use their knowledge in new situations. Whilst the traditional approach creates an increasing dependence on the teacher, who is the one taking all the decisions on the interpretation, the constructive approach inspires more student autonomy, towards their own interpretation of the piece.

Therefore, although there are doubtless many intermediate or mixed stances between these two extremes (see the conceptions described in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”) and many nuances in this respect, research has convincingly shown that a student-centred learning leads in the medium to long term to more long-lasting and transferable outcomes. This is not just the case for music learning (e.g., Green, 2017; McPherson & Welch, 2012; Wiggins, 2015) but also for many other domains of learning (e.g., National Academies of Sciences, Engineering, and Medicine, 2018; Pozo, 2014; Sawyer, 2015). Here too, as in music teaching, the traditional approach has been on the learning of formal codes (grammar in the case of language whether this be the mother tongue or a foreign language, equations in mathematics and physics, syllogisms in philosophy), with fairly poor results.

There is a common way of handling learning in Western formal education tradition, whether it involves reading, writing, calculus, or playing an instrument. The strategy is based on following a gradual route or method, essentially centred on teaching the code, together with the routines that allow one to efficiently master it. Only when this code has been sufficiently mastered by the students are they allowed to enjoy certain autonomy, because it is assumed that only then are they in a position to use it without making mistakes and to enjoy it. This is how learning to read and write is usually taught, and also how to create music on the saxophone or the violin, with the consequences we are all aware of: the students disconnect, they fail to be motivated, they are not able to find any sense to what they are learning, they read or write less, or play less or are increasingly turned off by the instruments so that they read or write or play increasingly worse which then makes them even less inclined to try. Some students of course do learn with this methodology, but the majority do not become engaged with formal learning. They end up withdrawing (in the case of music, this would be when they are not forced or highly pressured by their families) or they stop learning when they have no choice but to continue studying.

As previously mentioned, recent research has shown that there are other ways of teaching—reading, writing, mathematics, science, but also musical interpretation—and they are the backbone of this book. This is learning that centres on the students’ experience—in this case musical, their emotions, their intuitive musicality (see chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”), of how they feel and experience music in their own body, and from there help the student to reconstruct—to broaden but also transform—that experience through reflection and comprehension of musical knowledge. Undoubtedly, mastery of those musical languages and instrumental technique is required but instead of musical knowledge being the aim of music education it becomes a necessary means of generating those changes in the musical experience of the students.

Student-centered music teaching requires understanding and transforming the way students learn. In recent decades, following the theoretical abandonment of behavioural approaches—which were concerned solely with changing the behaviours, the actions of students—it has been assumed that fostering learning requires above all changing how these students make sense of their actions. In addition, behaviorism also did not take into account that these actions or behaviors always happen in social, cultural or educational settings, which are what drive (or slow down) these changes. Along with the growing influence of neurocognitive approaches, research on learning in general, and music learning in particular, has now been dominated by two approaches: cognitive constructivism and sociocultural constructivism.

Both approaches share the idea of putting the learner at the center of learning and teaching processes, albeit with certain differences. The cognitive approach (which will be the one adopted essentially in this book), emphasizes transforming the processes and representations that mediate learning (such as motivation, memory, beliefs, self-regulation or metacognitive management, etc.) (see e.g., Sloboda, 1985, 2005). Instead, the sociocultural approach focuses more on the analysis of social interactions and practices and how they are transforming people’s discourses and actions (e.g., Rogoff, 1990; Valsiner & Rosa, 2007; in music, Wiggins, 2015). While cognitive psychology takes an analytical approach (differentiating and analyzing different processes and components of learning), the sociocultural approach is more holistic.

However, far from being opposed, the two approaches are complementary. According to the general genetic law of cultural development formulated by Vygotsky (1963)—who may be considered the father, or perhaps the grandfather, of the socio-cultural approach—“all higher mental functions make their appearance in the course of child development twice: first, in collective activity, social activity, i.e., as intersychic functions, second in individual activity, as internal properties of the child’s thinking, i.e., as intrapsychic functions” (p. 31). In this sense, although this book takes an essentially cognitive approach—that is, analytical and representational—in considering how music is learned, it assumes that the change in those representations and learning processes has its origin in social activities and interactions, essentially instructional. Consequently, teachers play an essential mediating role in helping students to become agents that self-regulate their own learning, also

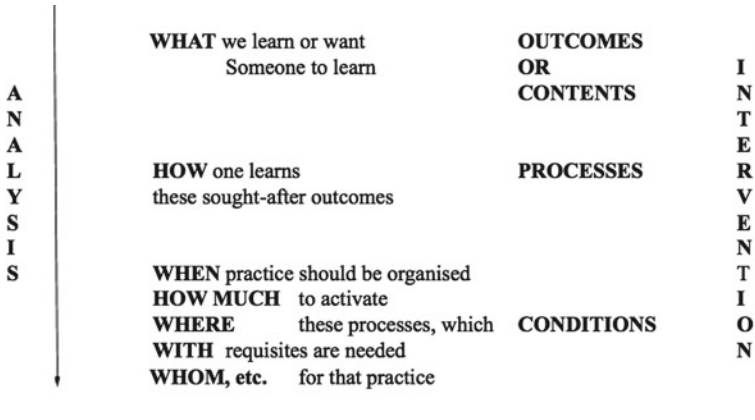
using various cultural devices and resources, such as scores (chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”), ICT (chapter “[Learning Music Through ICT](#)”), as well as various types of social organization (chapters “[From Individual Learning to Cooperative Learning](#)” and “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”) to promote this internalization of musical skills by students.

Throughout the book we will see how these different forms of organizing musical learning have affected the different components of musical education (see Part II). In this chapter we will try to show how students learn in each approach. Not only are different things or *outcomes* learned, but their mental activity also changes in one case and in the other, with them learning through different *processes*. Finally, the teaching practices also differ: the activities carried out; the way they are organised, and how the teacher and student act through them. To sum up, the *conditions* in which learning takes place. These three components—outcomes, processes and conditions—make up the essential elements that must be considered when analysing any learning situation. This is the basic foundation of learning assumed in this book, based on the work of Pozo (2008). Of course, the reader could find alternative, or rather complementary, stories in other sources (e.g., McPherson, & Welch, 2012; Shively, 2015; Sloboda, 2005, Wiggins, 2015). Likewise, in order not to exhaust the reader’s patience, many of the statements made below are supported by recent research in Psychology of Learning (e.g., Bransford et al., 2000; Haties & Yeats, 2014; National Academies of Sciences, Engineering, and Medicine, 2018; Pozo, 2008; Sawyer, 2015), so we refer to these sources for further developments or to seek theoretical or empirical support for them.

## 2 An Outline for Understanding and Transforming Music Learning: Outcomes, Processes and Conditions

As shown in Fig. 1, we assume that all learning situations may be analysed from three basic components, regardless of whether they are formal or informal, implicit or explicit, with instruction or without it:

- (a) The *outcomes* of learning, sometimes also called *contents*, or *competencies* in new educational approaches. These consist of what is learned, or if preferred, from the previously defined traits, what changes occur as a consequence of learning.
- (b) The *processes* of learning, or how these changes come about, through which psychological, cognitive and affective activity from the person who is learning are achieved (how they concentrate, remember, think, explain, feel, etc.). These processes will make the changes in learning outcomes possible.
- (c) The *conditions* of learning, or the type of practice taking place to initiate these learning processes; whether it is formal or informal learning, or, if applicable, what type of help is received by the student from the teacher (e.g., the different



**Fig. 1** Graphic for the analysis and intervention of learning, taken from Pozo (2008)

types of help contained in Tables 1 and 2), from a tutorial or technology, if the learning is individual or in a group and, if applicable, how that joint activity is managed, how much practice or rehearsing is done and how that practice is organized.

As the downward arrow shows in Fig. 1, before starting any relevant learning, either one’s own, as learners, or externally as teachers, we would be advised to ask a series of questions about this learning (what, how, when, how much, with whom, etc.) to help us better analyze and understand the difficulties we will face and the possible ways of confronting them. Therefore, analysis and planning go from top to bottom in the figure, asking oneself what one wishes to teach, and from there, what are the processes required for the student and which conditions help to drive these processes. However, intervention acts from bottom to top. In reality the only thing that we can modify directly as teachers are the practice conditions, but not the processes and outcomes which, even with external aid, are essentially inside the body and mind of the students. If we wish to modify these processes—their motivation, their attention, their forms of thinking and feeling the music—we have to do so indirectly through the activities and tasks we propose.

This is of particular importance to teachers, since it partly explains the lack of efficacy of traditional teacher/learning approaches that, as mentioned in the previous section, produce less long-lasting and transferable outcomes. When they are not centered on the student and on the development of their abilities, these forms of teaching do not ensure autonomous learning and therefore solely depend on the activities proposed by the teacher, not on self-regulation, management or agentiality by the student. In other words, not on their metacognition, which we shall see is really important in the student-centred learning we have called constructive (Hallam, 2001). When the student cannot take their own decisions about their own learning, it is unlikely they will be able to transfer or use what they have learned with the teacher’s help in new situations (e.g., in the previous case in Table 1. when the teacher tells

the student to raise the instrument, will the student understand why and when they should do so and will they be capable of transferring this to other situations?).

The distinction between these different learning components (outcomes, processes and conditions) is relevant for analysis and intervention because we now know that each of these components is in turn highly varied. Compared with monotonous learning continuously based on the same processes and always aimed at the same outcomes, through the same activities or conditions (e.g., repeat the same line of a song five times from the classical repertoire to learning its dynamics and fingering by heart), learning allows for multiple variants. The different combinations of these three components will give rise to different learning situations and with them, different learning problems. The problems and the solutions are not always the same. What is constant is the presence of these three factors and the need for a balance between them if we wish to achieve good learning. Both learners and teachers can improve the learning situations making outcomes, processes and conditions conform, and interlink well with one another. For this to happen the different variants adopted by each of these components needs to be understood, together with the different levels or types of learning they may lead to before illustrating in the next few chapters how these components interlink in subtle but predictable ways, in different learning situations.

### 3 The Outcomes of Instrumental Music Learning

What does one learn when one learns to play a musical instrument? To control body movements, master the instrument, breathe, discriminate between sounds, establish relationships between them, feel them, read the musical score and imagine what each individual part sounds like (in the “inner ear”). However, fears or doubts are also often acquired, believing or not believing in oneself, admiring, respecting or fearing the teacher, observing other musicians, understanding the historical importance of a certain composition, differentiating different musical styles and genres. These different outcomes—or, as we saw before, the different changes which whoever is teaching wishes for their students to learn—are learned in subtly different ways, requiring different processes and conditions. However, fortunately, we can classify them into a few types of outcomes, which will help us to understand learning problems that these students may have. In a simple way we can differentiate between three major types of learning outcomes (Pozo, 2008):

- (a) *Symbolic* (or verbal) learning: learning to decode and interpret musical languages and theories, but also the relationships between the components of the musical interpretation (the instrument, the body, the sound achieved, etc.) (see chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”). Basically, this is learning to say things about the music and understand what is said or written about it, and what its historic or



musicological history is, as well as understanding the relationship between the different components of the musical production.

- (b) *Procedural learning*: learning to make music through bodily action by means of an instrument. (with the exception of song and dance, where the instrument is the actual body). Here it is not a question of “speaking” music, but producing it through the coordination of physical (or motor) actions and mental (or cognitive) actions which enable these physical actions to be coordinated or regulated.
- (c) *Attitudinal learning*: learning to handle the music and communicate through it, getting close and relating to the instrument, with the interpretation, audience, the composition, how to feel and live through it. In sum, how to acquire attitudes and values from which instrumental music may be approached and construct one’s own identity as a learner and as a musician.

These ideas will be treated in depth in Part II of the book, but for now we will take a brief look at each of the outcomes of learning and also the typologies within them that may differ, bearing in mind the polarity we have defined between a more traditional learning centred on musical contents and a more constructive learning, centred on the development of abilities or competences in the students through these contents.

### ***3.1 Symbolic Learning: Reading Musical Scores and Musical Comprehension***

As we have seen, at least in the formal music education tradition, a major part of learning is usually centred on the mastery of musical languages, systems from which music is coded not just so it can be stored but mainly so that actions can be translated, and interpreted in the form of organised sounds. Later on, in chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, we will analyse the different forms or levels in which the students may process those languages, in the form of musical scores, and the different musical knowledge that may be acquired as a consequence. For now, to illustrate the different levels, or if preferred, the different symbolic outcomes that may be acquired by learning musical languages, and their different complexity, we will resort to an analogy. Just as by reading and interpreting a musical score one may learn different things about the music, different things may be learned by reading and interpreting texts, depending on the type of learning involved. Here is a simple test. Below is a text. You should read it several times (two or three maximum) and aim to learn as much as possible about its content, without taking notes:

The procedure is actually quite simple. First you arrange things into different groups. Of course, one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities that is the next step, otherwise you are pretty well set. It is important not to overdo things. That is, it is better to do too few things at once than

too many. In the short run this may not seem important but complications can easily arise. A mistake can be expensive as well. At first the whole procedure will seem complicated. Soon, however, it will become just another facet of life. It is difficult to foresee any end to the necessity for this task in the immediate future, but then one never can tell. After the procedure is completed one arranges the materials into different groups again. Then they can be put into their appropriate places. Eventually they will be used once more and the whole cycle will then have to be repeated. However, that is part of life.

Confronted by this task, there are two different ways of attempting to deal with the text learning. The one most students would probably try if this text was to “come up” in an exam would be to try to remember it “Word for Word”, based on repeating it over and over again with the exact words to “memorise” it. But there is a different way of learning it: read it and meanwhile try to discover what such an ambiguous text is about (in fact you may already have done this, in a deliberate fashion or otherwise). What does the text mean? What is it really referring to? What procedure is it talking about? What has to be taken from one place to another? It has been proven that the key to remembering a greater number of ideas from a text is not repeating them one by one (the causes of the decline of the Roman Empire are three, there are three... or, in music, there are seven main types of musical trills, there are seven...) but to achieve a general idea of its content, a structure of meaning through which the information contained in the text can be linked to previous knowledge which you have, which you know about the world, and more specifically, about the set contents of the text. However, to understand it, instead of simply repeating it, you have to try to relate the different phrases composing the text in a necessary or meaningful way. It is not just a question of juxta-positioning them or associating them to one another (there are three causes, there are three...) but logically linking them to one another.

It is not at all easy to understand the text above, to relate the phrases in it to one another instead of arranging them one after the other and repeating them faithfully, because the text is quite ambiguous, with no specification of what the text refers to and it is difficult to imagine a plan or idea to organise the parts that compose it. However, when we try to imagine what the text is about, we create an interpretation of it which will depend not just on what is said in it, but what we believe its content is about (classify a library? Prepare materials for an exam? Prepare a meal? Do a puzzle? Pack suitcases?). Comprehension will partly depend on the previous knowledge we activate to interpret it, and indeed, from our previous experiences with the subject matter contained in the text. Our memory and learning will be the product of the interaction between these materials and the previous knowledge we activate. Understanding is, to some extent, translating something into one’s own words, one’s own ideas, one’s own experience. This is a central idea of learning through comprehension: it is a process whereby what we learn is the product of the new information interpreted with regards to what we already know. It is not a question of reproducing information but assimilating it or integrating it into our previous knowledge, and thus changing it, and therefore learning. This is the only way we can understand and the only way to acquire new meanings or concepts.

The problem of the above text is that it is very difficult to understand because no specific experience can easily be connected. It is hard to know what it is about. In

fact, when one reads the text preceded by a heading that summarises its contents, comprehension is much greater and therefore the learning more durable and transferable, since the text now makes sense. (If you are curious, you will find the title of the text in this note below<sup>1</sup>.) It no longer appears to be a succession of juxtapositioned or disordered phrases (the reader possibly had that impression on reading it before without knowing what it was about). There is now a certain logical organisation to it, as a sequential action plan. This means the text may be explained in its own words, thus providing it with a meaning, and possibly recalling it for some time. But text recall will never be a copy of it, what is remembered will not be exactly what the text says, but the *interpretation* that someone has made of it.

Learning by understanding is therefore more effective since, coming back to the previously described criteria of good learning (see page XX) it produces longstanding and transferable outcomes. However, it is also more complex and difficult to achieve, since it requires a more demanding cognitive activity from the person learning to link the new information with previous knowledge, translate it into one's own words, look for the relationship between the parts forming this information and seek their relationship or application in other contexts.

So if a text may be learned in different ways that lead to the mere literal reproduction of it or to its genuine comprehension the same occurs with “musical texts”, the musical scores. This shall be covered in detail in chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”. To interpret it, to transform it into sounds, the student can limit him or herself to reproducing it note for note, rather than word for word in a literary text or s/he may comprehend how that musical score is organised, what parts it is made up of and what musical meaning these parts have (note that when Beethoven composed his famous Moonlight Sonata, he did so thinking about the noblewoman aged 17 who he was in love with at the time, Gillette Guicciardi, and that although the composition was a sonata for a keyboard, it does not follow the classical structure of this type of piece).

Consequently, as we shall see in chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, students may process the musical score at different levels of complexity or depth, from reproductive, note for note learning (with hardly any meaning), to comprehension of the relationships between the musical structures within the musical score (types of dialogue of two instruments in the different movements of a sonata, or contrast between voice and piano accompaniment in a Lied; how differentiated musical motifs are combined for certain instruments in programmatic compositions such as the oboe sounding like a duck in short, fast notes, or the gong played with the bow to reproduce the wind; or what relationships may be established between the harmony of a composition and its agogic and dynamic tones),

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<sup>1</sup> The title of the text is “washing clothes” (Bransford & Johnson, 1972, p. 722). It was used in this pioneer research on reading comprehension: The study showed that whoever read the text preceded by the title remembered much more of the information than those who read it without reading the title. Understanding helps the reader retain more information because it is now more significant. This contrasts with what is normally assumed, that the accumulation of information will allow one to later understand it. If there is no comprehension, then most probably it will be forgotten. It is understanding which helps literal information to be remembered, not the other way around.

thanks to the mastery of syntaxes, of the musical language in which this musical score is coded, and even knowing how to capture the historic or conceptual significance of the piece by connecting it to other musical compositions, schools or periods. We shall see that students with greater musical education generally process musical scores more deeply or significantly (chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”), but also that a student-centred teaching encourages a more in-depth processing of musical scores, even at early ages, and therefore better comprehension of them (chapter “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”).

There are not just different levels of symbolic learning in the reading of the musical scores, since interpretation requires the use of diverse musical concepts which students do not always master. Again, they sometimes tend to learn them reproductively without capturing their essence and therefore without being able to transfer them or use them correctly in new contexts which, as we have seen, is one of the demands of good learning only guaranteed through genuine comprehension. As the examples contained in Tables 1 and 2 reflect, the students are hearing about quavers, semibreves, scales, slowing down, soft notes, but also of tones, pitches, *tempi*, harmonies, etc. And they may learn them by simply reciting them or giving them a name or a label (“*well, let’s say what the notes are here...*” says the teacher in the first case, Table 1, more linked to traditional teaching) or trying for the student to give it some sort of meaning, i.e., that they relate it to some sort of musical concept (for example, understanding a musical passage composed of the same musical note repeated four times in ascending thirds) or with their own actions with the instrument (“*So what can we do to make it increasingly softer?*” asks the teacher in the other situation, Table 2, to which the student replies “*increasingly lessening the bow work*”, establishing a relationship between interpretation tempo and bow movement).

As we shall see in chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, children already have an intuitive musicality which lets them make sense, i.e., *feel* in their own bodies with an emotional content, of some primary musical concepts (tone, tempo or quantity of sound). However, to truly understand these concepts beyond this intuitive sense and to be able to use them flexibly in new musical contexts, they need to explicitly establish relationships between them and with their own actions. Although they feel that a slow *tempo* induces sadness, they should understand explicitly how that *tempo* is related to other musical parameters (the key, the rhythmic and harmonious density, the technical traits of their instrument, etc.), and also with their own actions with the instrument and the other components implicated in musical production, as we shall see in chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”. These at the very least include comprehension of emotional content which is intended to be communicated using these organised sounds, the sound which is needed to achieve that communication, the actions which should be made with the body itself to produce these sounds with the instrument and the “logic” or technique of the instrument itself, which imposes restrictions to these possible actions. (Pozo et al., 2019).

Learning music therefore requires not just learning to decode a musical score, from its most elementary levels, note for note, to the most complex ones (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”). It also mainly requires understanding that all of these symbols are not only related to one another but are also related to the way in which the body feels on interacting with the instrument to produce a sound from the musical score. Then moving beyond it, to communicate to whomever is listening to the music the emotions which the interpreter wishes to convey with it. Learning music is not just about understanding these relationships. It is mostly about being capable of converting them into actions or in terms of learning outcomes, into procedures.

### ***3.2 Learning Procedures: From Technique to Strategy***

If there is anything that characterises instrumental learning, including vocal interpretation, it is that this requires meticulous mastery of the necessary motor skills to produce the necessary sounds, depending on the technical requirements of each instrument. Whilst musical comprehension of different instrumentalists would to a large extent be shared, each instrument requires specific procedural learning, with the understanding of procedures as sequences of actions aimed at a goal. However much the musical contents of a piece are understood, a violinist would not normally be capable of producing the necessary sounds from the oboe or the piano, because each instrument requires specific techniques. This technical instrumental interpretation requirement has frequently led to technique becoming the central, if not the only objective in instrumental teaching, as we saw in chapter “[Teaching Music: Old Traditions and New Approaches](#)” from Musumeci’s characterisation (2002) of the conservatory model (also see Hallam, 1995). As we shall see in the next chapter, there are some highly popular beliefs among teachers and students that instrumental learning is principally technical and is usually centred on the automation of motor skills required for instrumental mastery.

Mastering an instrument definitely requires demanding technical expertise, and this may be understood as the carrying out of complex sequences with a high level of efficiency (without committing errors) and automation (without requiring a conscious effort). It is known that mastering a technique, whether this be a motor technique (articulation of the fingers on the fingerboard of string instruments) or cognitive (the use of vibrato depending on the desired sound and expression), generates a series of advantages from the point of view of the processing and execution of the action compared with what would be the controlled or conscious execution of these same actions, applied to learning to play the guitar, to multiplying, driving a car or making an omelette. As shown in Table 3 some of these advantages would be a faster execution, making fewer errors, hardly using any cognitive resources and therefore being able to perform in adverse emotional, cognitive or contextual conditions and free up resources for executing other tasks, with non interference in other processes or actions, resulting in the ability to carry out several parallel or simultaneous tasks.

**Table 3** Differences between automated and controlled actions (taken from Pozo, 2014)

Automated actions	Controlled actions
<ul style="list-style-type: none"> <li>• Executed more speedily</li> <li>• Fewer errors committed</li> <li>• Little attention or conscious effort required</li> <li>• They are effectively executed in adverse conditions</li> <li>• They do not interfere with the functioning of other processes</li> <li>• They are rigidly, inflexibly applied</li> <li>• They are executed without control, in an almost forceful manner</li> <li>• Attached to the context, very difficult to transfer to new contexts</li> <li>• They cannot be partially recuperated nor combined with other representations</li> </ul>	<ul style="list-style-type: none"> <li>• Executed more slowly</li> <li>• More errors committed</li> <li>• More concentrated attention and conscious effort required</li> <li>• Execution is impaired by adverse conditions</li> <li>• They interfere with the functioning of other processes</li> <li>• They are flexibly applied</li> <li>• They are executed in a controlled, voluntary manner</li> <li>• Removed from the context, easier to transfer to new contexts</li> <li>• They may be partially recuperated and combined with other representations</li> </ul>

These are all characteristic traits of the expert execution in any mastery and of course also define the excellence or musical virtuosity wherein so much effort from teachers and learners lies.

How can this technical mastery of an instrument be achieved? The automation and condensation of actions which characterise technical learning are gained to a large extent through repetitive learning, practicing the same sequences over and over until they are executed in automatic pilot, so to speak. This then frees up resources for other actions or mental representations. There is no doubt that technical learning is the result of practice, which as we shall see involves a great deal of motivation and as we shall also see later on, is not always easy to manage or achieve by the teacher or student. However, this does not mean to say that is necessarily a repetitive or blind practice, where the students carry out actions they do not understand or about which they cannot take decisions, but that they follow the instructions of the teacher (as seen in the case of Table 1, where the teacher says to the student “*Do is high, raise the instrument, watch out for the cord change. Play it again*”). It is also possible for the student to make the decisions, as shown in the example in Table 2, where the teacher asks and helps the student to make his or her own decisions. Chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” shows in detail how certain teaching conceptions and practices which are far removed from the most traditional ones or those of direct transmission, are precisely characterised by ceding control to the student for their own actions, to show them how to regulate their mental and motor activity whilst they interpret music, instead of acting mechanically. We shall see at the end of this same chapter how they may be helped to resolve musical problems (i.e., open tasks for which many solutions may be found) rather than carrying out simple repetitive exercises with no musical meaning, such as the scales which the Teacher in Table 1 programmes for her students without using strategies that are aimed at helping the student to assess

the importance of the scales, or the relationship that these scales have with their repertoire, for example.

Returning to Table 3, we see that although technical mastery of the instrument has a series of advantages for instrumental execution that we have already mentioned, it also has major limitations, such as rigidity or lack of flexibility of automated actions, the lack of control on them or the difficulty in transferring them to new contexts or combining them with other actions to generate new patterns of execution, and all of these traits are associated with a better learning, as we saw previously. The flexibility required for a personal, expressive interpretation linked to a specific context, requires going beyond that technical dominance and reaching what is usually known as a strategic action, where strategy is defined as the deliberate and conscious use of certain actions for achieving certain goals.

To better understand the difference between a technique and a strategy as procedural learning, we can use an analogy based on the sports people and their trainers. This is another social activity which requires high technical mastery by the players but where automaticity of these techniques is not usually sufficient for the desired goals to be met. Competitive sports also require a strategic use of these techniques, normally entrusted to the trainer. These techniques need to be applied flexibly, adapting them to the requirements of a situation or a specific sports event. They are dependent on fixed goals; the strengths of the rivals; training session activities; supervision of what needs correcting (the trainer changes several players during a match), and assessment in order to adopt decisions for future occasions (why have we lost? What should we do to improve?).

This same idea would occur in procedural learning in instrumental music, where the aim for achieving an autonomous and competent student (see chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”), is to convert them into their own trainer, making them capable of taking decisions on their expressive goals and actions which will allow them to achieve them, but also to assess their own execution and learn from their mistakes. This requires, as we shall see in the next section of this same chapter, metacognitive management of their own actions.

Thus, procedural learning implies both technical and strategic mastery of the instrumental execution. Usually, this means that the initial stages of musical education are intensively dedicated to technical learning under the direction of the teacher and it is only when the student has a good mastery of the instrument that they are allowed to begin to take decisions about their interpretation (see the critical analysis of this educational route for the acquiring of techniques in chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”). However, as we shall see in chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”, other routes are available for this technical mastery, driving in the opposite direction: instead of presenting the student with blind exercises at the beginning, executed under the teacher’s supervision, the student is asked to manage their own goals from the beginning and own expressive means, conceiving music mainly as a vehicle to transmit and communicate emotions. One of the advantages

of this alternative focus is that it creates another concept of music in the student—more closely linked to his or her expressive goals instead of blind repetition of motor patterns attached to many forms of learning. It also creates other attitudes, other ways of approaching musical interpretation that seem to encourage better learning than the traditional attitudes. With the latter the student mostly approaches music as frightened, if not terrorized, because of the errors s/he may commit.

### ***3.3 Learning Attitudes: Autonomy and Self-Regulation to Overcome Stage Fright***

Judging from the personal experience of many instrument students and also diverse studies that assess how musicians feel when they play their instruments, it is normally with trepidation if not pure fear that they directly confront interpretation, especially in the tradition of classical education (e.g., Perdomo-Guevara, 2014). In fact, this *stage fright* as an approach to music is characteristic of interpreters who are learners and also almost all children who within the framework of curricular artistic education, are forced to play an instrument. This is generally the recorder, and usually out of tune to them and no doubt to their long-suffering neighbours, since one of the most common memories of these early school experiences by adults is precisely that feeling of incompetence and fear when playing, putting in many cases a premature end to their interpretative career or their musical appreciation. Curiously in other cultures and areas of musical production other attitudes or more positive approaches predominate (Perdomo-Guevara, 2014), and this probably is connected with the different ways in which music in these contexts is learned and produced (see chapters “[From Individual Learning to Cooperative Learning](#)” and “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”).

It is insecurity that feeds this stage fright or this aversive attitude towards music which, as shown in chapter “[Teaching Music: Old Traditions and New Approaches](#)”, leads to many students dropping out. This is the sensation of a lack of control over what one does, the fear of making a mistake or the harsh judgement of the teacher or public. As we shall see in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, from certain conceptions and teaching practices, much emphasis is placed on the correction of technical errors, tuning, etc., which converts interpretation into a tense struggle to get close to the established model or canon (see, for example, chapter “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”), where all error or deviation is penalized, as reflected also in the prevailing assessment systems (see chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”). This in turn affects student motivation, which instead of being internally regulated in keeping with the expressive goals and bodily sensations, is under the control of external supervision, based on standards which students usually find difficult to achieve. The less motivated students are, or the more negative their attitudes and sensations in their approach to



music, the less they will practice and the less they will play, the worse they will do so and this in turn exacerbates their fears and insecurities, with further demotivation and increasingly the student is unable to have positive emotions or a sensation of control in their music learning.

How can this truly vicious circle be broken? Although throughout Part II of the book the chapters present numerous alternatives to approaching teaching, which appear to generate more positive attitudes, letting the student enjoy the interpretation and therefore desiring it instead of escaping from it (for example, look at the case of the girl in chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)” who through composition ends up enjoying not just the music but also mathematics!). The acquisition of these positive attitudes generally occurs from transferring control to the student. They are responsible for their own actions, providing them with enough liberty to take decisions and learn from their errors. Instead of being penalized for making the errors, the latter become a reason for reflection and learning. If instead of focusing assessment on the final product—the desired result or sound—, which is often unattainable even for the student, the focus is placed on the process—on what the student does and can do to improve their interpretation—, the student’s so-called Zone of Proximal Development (Vygotsky, 1978) may be worked upon (that which they are not yet capable of doing alone but may achieve with the help or guidance of their teacher), so that in this way we will be helping the student to feel more competent, realising they can achieve the small or progressive goals proposed. As a result they will feel more capable of achieving the objectives proposed through their endeavours.

To sum up, if we wish to help students approach music with less fear, with greater confidence in their technical and expressive resources, we have to help them become aware of their potentialities and weaknesses, to self-assess and self-regulate (see chapters “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)” and “[Re-thinking How to Assess Students of Musical Instruments](#)”), which implies greater awareness of the processes (emotional, cognitive, motor, social, etc.) through which, at times without knowing it, they control the production of sounds. This implies, as we shall see in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, aiming a major part of the teaching towards processes through which music may be produced instead of directly on actual products or outcomes. These processes, as we have seen before, are another of the essential components of learning in any domain, and also, obviously, in musical learning since they actually refer to the psychological activity the student is experiencing as they are learning. If we are unable to change that psychological activity, what they think, feel, imagine, expect or remember, whilst preparing the interpretation or performing, we cannot change the products or outcomes of that interpretation, which as we have seen are varied and complex (symbolic, procedural, attitudinal). The outcomes of learning are always mediated by the processes that make them possible and therefore a good part of teaching has to be aimed at making it necessary for the students to control their own learning processes, providing the essential scaffolding (Wood et al., 1976) to achieve the construction of these processes and above all, helping the students themselves to autonomously regulate and strengthen them.

## 4 The Processes of Music Learning

One of the traits characterizing the new approach to education in general (Pozo & Pérez Echeverría, 2009; Sawyer, 2015) and music education in particular (Brown, 2009; McPherson, 2015), is that it concentrates more on developing the capacities or competences of the student than on the learning of contents itself. The contents thus become simply a means of making meaning of those capacities (Pozo, 2016). As a result, in the case of music and in keeping with the analysis plan proposed in Fig. 1, this implies that teaching is aimed more at developing the learning processes in the students than simply gaining specific and immediate musical outcomes, on the understanding that there are processes (cognitive, metacognitive, emotional, motivational) which will make the students autonomously and self-sufficiently achieve those desired outcomes (sound, technique, stage presence, etc.).

As we shall see in the next chapter, one trait that differentiates the most complex or updated conceptions or practices from the most traditional ones in music education is precisely that of situating processes in the centre of the learning and teaching process. This does not of course dismiss the importance of these outcomes (without them a good musical interpretation would not be possible) but to design a different route in their obtainment, where the aim is not the appropriation of a repertoire (or as children say, “going over songs”) or the technical mastery of the instrument, but capacitating the student through this learning to independently produce the musical sounds required at all times.

But what are the psychological processes that the student has to learn to better control the sounds they need to express what they feel? It is not our intention to draw up an exhaustive list of these processes or the role they play in learning (see Hattie & Yates, 2014; National Academies of Sciences, Engineering, and Medicine, 2018; Pozo, 2008; Sloboda, 1985, 2005) but we can at least consider attention, perception, memory, learning as such, motivation, emotions and metacognitive management of learning itself.

### 4.1 *Attention and Perception*

Interpretation requires attention to many elements or stimuli simultaneously (the positioning of the hands, or of each of the fingers, body tension, the positioning of the bow, the angle of the instrument in relation to the body, the sound produced, the mouthpiece, the musical score, etc.). Unlike a computer, simultaneous processing of information is highly restricted in the human mind, the student has to learn to pay attention to the most relevant elements at each given moment.

When we observe, in keeping with the analysis system of musical practice described in chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices”, what it is the students are paying attention to whilst they play, we find there are many differences depending on the learning model to which

they are exposed. There are students who whilst they play only look at the musical score, or at the face of the teacher to see how to appreciate their interpretation; some students only concentrate on the technical movements that have to execute; others, and by no means few, do not listen to the sounds they produce, because they are so tied up with following the instructions received. However there are also students who feel it in their body when they play, who compare the sound produced with the one they wish to produce (chapters “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”, and “[Learning Music Through ICT](#)”). These are not causal differences but responses to teaching methods and specifically what their teachers ask of them and help them construct, where their attention is focused, as is so well reflected in the examples in Tables 1 and 2 (whilst the teacher Table 1 makes the child fix all their attention on the musical score, the other teacher makes him fix his attention in the relationships between what he is doing with the instrument and the sound it is capable of producing). Furthermore, this focused, educated, attention lets the students perceive the sounds differently, and if there is one thing music requires it is to learn to distinguish different tones, melodies, tempos or musical structures (Levitin et al., 2018; Reinfrow & Levitin, 2019; Tan et al., 2017), to recognize the different *voices* using those that the instrument can convey their emotions with. Again, this may also be trained or taught. Given the processing limitations the student is submitted to, it is impossible to simultaneously listen to or perceive of all to these nuances, and the use of technologies or mediating resources, such as recording the interpretation with a mobile to later review it, may be, as we shall see in chapter “[Learning Music Through ICT](#)”, a highly useful resource for helping to manage concentration and perception.

## 4.2 *Memory*

In addition to selective concentration and discriminatory perception of the here and now, musical interpretation also needs to be associated or related to previous experiences. It requires having a musical memory and knowing how to use it. Obviously everything the student does is conditioned by what they already know, by the famous prior knowledge of their musical memory. The question is to help them to use this knowledge optimally, establishing links between what they should do and other previous learning, between the problems they face and other problems they already resolved in the past, between the emotions they wish to convey and the ones they managed on a past occasion. The student is never a clean slate, a whiteboard with no writing. Even the youngest students, when they begin to formally learn music already have a history of musical learning, an intuitive musicality from which to begin and this we shall examine in chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”.

Teaching must therefore help the student to manage this memory, to link what they are doing with previous experiences, reconstructing them to provide a new

significance to what they are now doing. This is one of the traits that define what we could call an experiential focus on education. Throughout this book, the reader will find numerous examples (see the examples presented on developing the system for analysing the practice of instrumental lessons, SAPIL, in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”). The ways of helping the student to manage their memory can be more, or less sophisticated. As we shall see in the practice analysis model described in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, this management may be based on asking the student for a literal recall of previous situations (or of notes, as required by the teacher in the example contained in Table 2) or asking more for the search for non literal similarities, which transform their memories to generate something new (as shall be seen in chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”, when the girl who is learning music composing evokes the soundtrack of a horror film to search how to express the intrigue in her piece).

It is therefore not just a question of the student recalling musical memories, but of transferring them to new situations or interpretation contexts. As we saw before, on reviewing the traits that define good learning, the latter has to be not just long-lasting (i.e., stay in the memory and be as accessible as possible) but also transferable (i.e., be able to be used in contexts or situations that are new). Only then can we help the student to autonomously control these problems or new situations which they will undoubtedly have to face in the future and for which their previous knowledge or experiences should be flexibly applied with their hand (or arm, elbow, back, lung, diaphragm or throat, depending on the instrument).

### ***4.3 Learning***

If in accordance with the definition we provided before on page XX, learning implies changing who we are, how we feel and what we do, then to bring about that change the student needs to manage other processes leading to it. Throughout the book, the reader will find numerous examples of the different forms of managing learning propitiated by different music teaching models. More specifically, chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” deals with how these models are conceived, represented and managed by both teachers and students. Here, we will limit ourselves to highlighting several classical distinctions in the Psychology of Learning, that involve clearly different ways of managing learning processes in the classrooms, and of teaching the students themselves to manage them.

For a long time the study of learning was linked to behaviourism, which assumed that learning was basically changing behaviour or obvious actions, but nowadays it is assumed that learning should mainly produce mental changes, in cognitive processes and representations, like those mentioned here. Although behaviourism is clearly declining in theory and practice (especially in educational contexts) (Hattie & Yeats, 2014; Pozo, 2014; Sawyer, 2015) it continues to survive greatly in our classrooms

and also in music classrooms, since there are many teachers who still have naive behaviourist conceptions regarding the processes of learning, as we shall see in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, and they take it for granted that the student’s function is to make a more or less exact copy of the interpretation provided to them by a model. If the student is able to faithfully reproduce the overt behaviour or actions of the model (whether this is the teachers themselves, a video or a canonical interpretation of the composition) then the student has learned.

Another distinction contrasts implicit learning processes (when we learn without realising what we are doing), which lead to the reproduction of habits and behaviour (and we thus acquire a good part of our social attitudes, stereotypes, emotional responses or behaviour patterns), from explicit learning processes, which force us to be aware of what we are learning and how we are learning, since only then can we change and control (Pozo, 2014). Whilst stage fright or a passive attitude may be learned implicitly, changing them requires making this learning explicit or previous experiences explicit in order to reconstruct them. Whilst intuitive musicality which children have when they formally approach learning music (see chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”) has been acquired implicitly, to change it and reconstruct it they have to make it explicit. In other words, they have to convert it into a symbolic code where they can express it. This is something musical languages can help with if used appropriately (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”) as can ICT (Information and Communication Technologies) if used as didactic resources aimed at redescribing or reconstructing the actual previous experiences and implicit learning (chapter “[Learning Music Through ICT](#)”), which largely constitute that musical memory we mentioned previously.

One final distinction established by the Psychology of Learning which is highly relevant for our proposals and matches the previous ones (Pozo, 2014), refers to the difference between associative learning processes (in psychological jargon, it is most common to speak of repetitive or even “memoristic” learning) and the constructive learning processes (or also comprehensive or meaningful learning). Going back to the previous examples, we found how the teacher of the episodes from Table 1 insists that her student “memorises” the names of the notes, driven more by repetitive learning, whilst the other teacher places emphasis on the fact that the student links his actions to the sound he produces, that he understands why he obtained that sound and how it could be improved upon. As we shall see several times in the book and we illustrated some pages ago using the text we asked the reader to learn (the title of which I am sure you still recall), repetitive learning (word for word or note for note) produces poorer learning outcomes in general (less long-lasting and transferrable) than understanding. This does not mean to say that it is not necessary for this literal learning to take place in some cases, but as we shall see throughout the book limiting all learning to the student reproducing and copying usually has negative consequences not just for the learning but also for motivation and the student’s own self-esteem.

## 4.4 Motivation

Another essential process that intercedes in all situations of learning and teaching is motivation. Since, according to the definition presented some pages ago, learning requires practice and instrumental learning requires a lot of practice, no intentional learning can be achieved without effort and of course one cannot learn an instrument if there is no interest in doing so. What types of reasons can the student have for making an effort to learn music and in what way can the teachers promote or, in contrast, reduce the motivation of the students to learn?

If we pay attention to etymology, motivating means moving towards something, aiming at a goal (Poza, 2008). What goals can the students have for studying music in the afternoon, after school, when they could be chatting to their friends or playing their favourite video game? In the traditional model, as we have been analysing, the goal of many students directly controlled by their teachers through assessment, was to be successful, not to fail, to do what was asked of them so as not to have to repeat it. Often the teachers try to uphold these motives by “threatening” the student with the risk of failure, either in a test or an audition in front of the parents (“what will they say”). In chapter “[Teaching Music: Old Traditions and New Approaches](#)” we saw how Carlos, that imaginary and imagined student had to drag himself into the conservatory to ensure himself of success or avoid failure. We also saw how Musumeci (2002) spoke about the anxiety, if not anguish, of Nacho, another student, who may have been imaginary, when faced with a test or an exam. The bad taste in his mouth Nacho was literally left with due to this test will hardly help to make music a pleasure for him. It is worth bearing in mind that here the student will only make an effort and practice if he feels newly threatened.

For this reason, contrary to what some people think, the common strategy of this model for motivating students by increasing demands will not succeed in making Nacho or Carlos study or practise more, let alone learn more. Anyone who has walked through the corridors and classrooms of a conservatory could provide several examples of this strategy, the film *Whiplash* took this to extremes, where fear of making mistakes and failure became the only driver in achieving musical perfection. The fallacy of the so-called “work effort culture” is that it takes it for granted that the higher the demand the higher the motivation and effort by the student. But relationships between motivation and learning are far more complex (Hallam, 2009). Demanding more, without adjusting those demands to the student’s context and abilities, without redirecting goals from immediate success to genuine learning, will possibly only achieve that the student’s anxiety, and fear of failure increases (Sternbach, 2008; Wilson & Roland, 2002) and that they disconnect even more, that they feel less competent and with it, less interested. And worst of all, as everyone who has given up on their studies knows, they will detest music.

However, there is another way of driving motivation to learn music. We also saw in the example of Carlos that, unlike the conservatory experience, in the group he played in with his friends he was driven to achieve the goals set by himself and his companions. Compared with the external goals fixed by the teacher, through extrinsic

motivation, with his friends Carlos learned music for intrinsic reasons that he himself established and regulated. We now know that when it is the student him or herself who fixes the goals of learning, who manages motives, when learning is sustained by an intrinsic motivation rather than an extrinsic one it tends to promote more significant or constructive learning than when the student is limited to achieving goals fixed by others (Alonso Tapia, 2005; Covington, 1998). If, as we saw, motivating oneself is etymologically moving towards something, it is the goals that to a great extent move the student. If the student enjoys the music, and what s/he is doing to produce it, s/he will approach the instrument. If not, then, as we saw before, s/he experiences the interpretation with anxiety, feeling fear of making a mistake, avoiding committing them and whenever possible creating distance with the instrument.

But what can the teacher then do to drive these goals when it is the student who should fix and manage them? We could think that the alternative to this model of traditional motivation based on appraisal and fear of making a mistake, is to let the students do what they want, and that to motivate them the class must be fun, that if they have a good time they will therefore be interested in learning. According to this idea, partly supported by the woolly principles of positive psychology, for the student to be interested it is enough to create more “friendly” contexts,” making them feel good and enjoying what they are doing.

It is a necessary starting point, but focusing on the students’ interests is insufficient. They do not need music teaching for this. They need to be helped to construct new goals from their old ones, and from their interests and musical tastes, helped to change them, to reconstruct them. Claxton (1984) said that to motivate is to change someone’s priorities. But we cannot and should not change those priorities directly. What we can do is design activities so that they feel the need to change their interests, from the most immediate or pragmatic, here and now, to construct new epistemic goals, aimed at true learning, which transcends their initial interests and therefore makes them feel the desire to learn. In chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)” there is an example of how a girl who is learning music through composition starts with these pragmatic, immediate goals (expressing a desired emotion) but how through the teacher’s mediation, these goals become transformed and the girl ends up becoming interested in musical scores and even mathematics! These are because it is the only way to achieve the expressive goals she had proposed. Similar examples may be found in other chapters of this book as well (e.g., chapters “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” or “[From Individual Learning to Cooperative Learning](#)”).

In the end changing priorities is changing desires, and in this case constructing the desire to continue learning, and it is therefore difficult to disconnect those goals from how the student feels whilst learning music, in their emotional management of the situation.

## 4.5 Emotion

Although the essential aim of music is to incite emotions in people, it is significant that only recently has there been an interest in discovering how students manage their emotions whilst they are learning music. As happens in general with formal learning, there has been a tendency to assume that learning is a cold experience, a rational rather than an emotional experience (Pozo, 2016) and that the emotions, if activated during learning, tend to interfere with rather than benefit it. In fact, this is quite a common idea among teachers of different areas (Bächler & Pozo, 2016), who in the best of cases tend to believe that inducing positive emotions with a “good class atmosphere” tends to create favourable conditions for good learning but that emotions as such do not form part of the process of learning itself.

However, as with other teaching conceptions about learning and education (see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”), this conception which is upheld by a cultural tradition that tends to separate reason from emotion (Claxton, 2015; Pozo, 2017) is being brought into question by recent theories on the role of emotions in cognition in general and in learning in particular (Bächler & Pozo, 2016). In fact, as we have just seen, it is impossible to intentionally learn without motivation and it is impossible to motivate without feeling emotion. Emotions are therefore always central in the drive to learning and all the more so in the case of learning music, the final goal of which is to convey emotions.

When a teacher links effort to something done badly, something that must be corrected, when they penalise errors, as do so many teachers who ask their students to repeat something that has gone wrong ten times, until they do it right, or like the famous “tiger mother” (Chua, 2011) forcing her daughter to continue practicing every day until everything was correct, even though this went on until the early hours of the morning, learning is controlled from negative emotions (anxiety, fear or making mistakes etc.). This will lead to the infamous stage fright. In contrast, at the end of the first episode, contained in Table 2, the teacher helps the student to manage his learning from emotions with a positive bent (“*let’s see if you can tell me something you have improved from last week*”). This does not prevent them from fixing goals, from forcing them to come out of their comfort zone with this positive evaluation (Teacher: “*ah!, I liked that. Did you like the sound?* Student: *I was going at it really hard and very close to the bridge*; Teacher: *OK.. Shall we try something to improve it?*”). The teacher does not reject or react negatively to what the student has done and does not give precise instructions so that they do it well, like the other teacher does. (Table 1: “*The Do is high, raise the instrument, watch out for the chord change. Play it again.*” The student plays it again, this time without mistakes.) Negative judgment is reserved, and the student is encouraged to assess their own execution so that from their emotional response, they can improve interpretation.



Later we shall see how different forms of teaching (chapters “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)” and “[The Choir Conductor: Interpreter or Maestro?](#)”, for example) or different musical learning cultures (chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”) manage the emotion of learning differently. Furthermore, in chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” we shall see how this control of the emotions, linked to learning and to musical interpretation in itself, form part of the keystone of instrumental learning. Thus, part of the teaching is to help the student to become aware of their emotions in learning music, learning to regulate them and finally, to handle them in a metacognitive way (Pozo et al., 2019).

## 4.6 *Metacognition*

In each of the processes we have been reviewing, not just for emotions, we have shown that the essential goal of learning while managing them is not just to make them visible but also to train the student to manage them alone with a certain degree of autonomy. This capacity to recognize and regulate the actual psychological processes to improve learning is called metacognition (knowledge about knowledge itself) and is now considered essential for learning not just music (Hallam, 2001) but any other learning area (Panadero, 2017; Schunk & Greene, 2017).

The general idea is that music education should extend further than outcomes (sound, technique, stage presence), improving the way in which the student processes the music (what they pay attention to, how they perceive it, what they recall and memorize, what they do to learn, how they are motivated and how they manage their emotions whilst they play and learn), and should also ensure that it is the student who metacognitively manages or self-regulate each of these processes. The student must concentrate on what they should do; probes into their own perception of the music produced; search their memory aids to understand better what they are doing or evoke other possible actions; decide what should be done to improve learning; fix their goals and assess to what degree they are achieved, and regulate their emotional responses to help fix new goals, etc. (see chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” in detail).

As we shall see in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, many teachers who consider that learning these processes must play a major role in the definition of their goals or objectives and in their teaching strategies to be used in their classes, continue to think that they, as teachers, are the ones who should regulate these processes and they give no autonomy to their students to take any decisions, partly from fear of errors and partly because they are incapable of doing so. A metacognitive education involves empowerment, supporting students to become active agents of their own learning (Wiggins, 2016), to take decisions on their own goals of learning, on the actions they can carry out

to achieve them and the degree to which they have been reached. Three essential sub-processes are usually established in metacognitive learning (Pozo, 2008):

- *Planning*: this is fixing learning goals and the means to obtain them prior to initiating the task. In the traditional teacher-centred and musical-content-centred teaching model, the teacher decides what has to be done and what the objective is. In the more student-centred teaching, which promotes metacognitive control, the student is taught to establish their own goals and to decide how to achieve them. In the previous examples it was clearly seen that the teacher in Table 1. always tells the student what he has to do; in contrast, the other teacher questions the student, inviting him to search for his own answers. But as we can see the teacher does not leave him alone, she guides him towards the most effective goals and means to improve his interpretation. Later on, when dealing with the conditions in this chapter, we shall see how this guiding approach is much more complex than the traditional role of conveying instructions and monitoring their compliance and how it leads to a genuine change in both teacher conceptions (chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”) and in the teacher’s own professional identity.
- *Supervision* or regulation: Once the goals have been fixed (what sound we wish to achieve, or what emotion we wish to communicate) and the means to achieve them (breathing, position, attack, tempo, etc.) these actions must be executed with supervision as to whether what is being done fits in with the proposed plan or not and assessing any deviations from it. Usually it is the teacher who is supervising (or “correcting”) the position of the student, their actions (Table 1: “*The Do is high, raise the instrument, watch out for the chord change. Play it again*”). As shown by López-Íñiguez and Pozo (2016) when analysing good practices in music teaching, some teachers continuously interrupt what the student does, correcting them each time an error is committed, whilst others leave the students to complete the piece and then start verbally interacting with them to help them supervise their own actions (this is the case of the teacher of Table 2., who starts a dialogue with the student on what he has just done, and the student says “*I was going at it very hard and very close to the bridge*”). The student is learning to metacognitively manage their own learning and over and above this, their musical interpretation to the extent that they learn to supervise and regulate what they do, comparing their goals, since only so can they improve it themselves. This metacognitive management, as we have seen, affects all the processes mentioned: the student has to concentrate on essential aspects; they have to perceive the sound as it is produced, but also their body expression whilst they do this. They have to search in their memory for other experiences which help them to understand, by comparison, what is happening. They have to think of other possible actions which allow them to learn or to change what they have done, applying new goals and regulating their own emotions. Once again, as we shall see, the function of the teacher in this model is to guide the student through this process of metacognitive reflexion and regulation.

- *Evaluation*: as we shall see in chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”, assessment fulfils a very important function in formal music education because when it is well designed, it provides the student with essential feedback on what is happening in the classroom. In an accreditation assessment culture (aimed at deciding if the student has or has not obtained the established standards), for example like that usually predominating in conservatories, it is the teacher’s responsibility and obligation to appraise. However, as occurs with the other components of metacognition, planning and supervision, from another perspective closer to a formative assessment culture (Martín, 2009), you have to help the student to learn to self-assess, to decide whether they have achieved the goals proposed or not and what they may do to improve (see chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”), in sum to be agentive. Since most of the time the student practices in absence of the teacher, it is really important to help them supervise and assess what they are doing (chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”), because if not, it is possible that a large part of that practise is contributing to consolidating actions which then need to be modified or relearned, and this is usually more costly. In addition, it is also important to teach them to regard assessment as a guide to learning, which instead of penalizing these errors, leads to them understanding that detecting them and thinking about them is the only way to learn and improve.

Finally, encouraging students in the ability to plan their actions before executing them, in supervising whilst they execute them and then assessing what has been achieved requires designing a different type of teaching activities, and above all requires the teacher adopt different functions to the traditional ones, i.e., that also require rethinking as well what we have called learning conditions.

## 5 Learning Conditions in Instrumental Music

According to the learning situation analysis plan presented in Fig. 1, if we wish to achieve the lasting and transferable change that learning is all about in our students we have to decide what we wish to change, i.e., what outcomes we wish to achieve, and what psychological processes are required to help the student activate and achieve these desired changes. However, in reality, our tool as teachers, trainers or even as learners for activating and managing these processes leading to these outcomes is to modify practice, the activities through which these processes must be activated to facilitate those outcomes. However, as we have already seen, and luckily for the students we can clearly affirm that nobody from outside can directly activate these processes. We cannot concentrate or remember or feel for them. What we can do is create the *conditions* so that they feel, concentrate on, are motivated by, recall or learn music. However, as we have seen, there are different processes leading to different outcomes, and so too are there different conditions, different types of practice for learning/teaching, promoting different processes and therefore also

promoting different music learning. In chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” we will study these relationships between outcomes, processes and conditions in detail in the classroom practice, but we know that there are some variables of that practice which are critical for music learning.

### ***5.1 The Effect of Practice Quantity***

The effect of practice quantity on learning is one of the most highly studied variables.. In our case this is the number of hours the student practises with the instrument. Although initially it is assumed that there is a lineal relationship between the quantity of practice and the outcomes of learning—i.e., that every increase in practice would lead to a proportionate improvement in performance—we now know that the relationship is more complex, but that in the long run, it can continue to be maintained that the more the practice the better the performance, particularly in the area of instrumental practice that requires large amounts of practice. Beyond the magic number of 10,000 h of practice required for expertise in any mastery (Ericsson et al., 1993), it is absolutely true that the variable which best predicts expert performance in any domain, be it chess, medical diagnosis or music, is the amount of practice (Chi, 2006). If we ensure that a student practices a lot, we can be sure they will also learn a lot (although as we shall see later, there are also differences in quality between the types of practice: there are hours of practice which in the long run count more than others, there are ways of practicing with which one learns better). However, as we have seen, for students to maintain that effort, these hours of practice at ages where there are many other stimuli, goals and projects, we have to make them activate certain processes (motivational, emotional, learning in itself) which we cannot take for granted. How can we get students to practise more?

Here we are facing the problem of motivation, the main process underlying the time the student dedicates to practising with the instruments, or rather a problem of lack of motivation, lack of desire to improve or learn. Often when instrumental learning is not obligatory this demotivation leads to giving up (in statutory education, particularly secondary, lack of motivation is more pronounced, since it is not possible to dropout) but in other situations it leads to insufficient but constant practice, which makes learning difficult. How can we help the student to practise more? Faced with this problem of lack of motivation, in our educational culture in general, recently the so-called “work effort culture” has been established. As we have seen before, this is the idea that the more effort the student puts in, the more that is to be demanded of them. It is a simple type of law, a false learning equation dictating that the more we demand of the student the more they will learn (Poza, 2016).

But this equation, as it has been already mentioned, is empirically false since there are already many data that refute it, and it is also theoretically incorrect, because today we know quite well why this does not work (e.g., Alonso Tapia, 2005; Covington, 1998). As we have seen, motivation like any other psychological process cannot

be controlled from outside the body and mind of the student. All we can do is generate more motivating conditions. The latter appear to be more closely linked to the student finding meaning in what they learn, in his or her dual acceptance of making it significant and feeling it in their own body. Instead of forcing him or herself to reach certain levels of high performance due to fear of failure, the student is more motivated when s/he can fix individual goals s/he believes s/he is capable of achieving, instead of confronting huge waves of demand s/he feels incompetent about, or tasks that do not make sense. If we want the students to practice musical interpretation more (or reading, or mathematical calculation or scientific research or tennis), instead of threatening them with the flames from hell (or failure, or what their parents will think or whoever is listening to the concert), we have to ensure that they enjoy playing, reading or researching. This is the first step to learning. However, it will not suffice. The way in which they practice has to also promote improved learning.

## ***5.2 The Effect of Practice Type: From Repetition to Reflection***

As we have just seen, the probability of the student practicing more or less also depends on *how* they practice. Going back to the distinction established before when we referred to the learning processes, repetitive, blind, meaningless practice not only leads to poorer learning than constructive and reflexive practice—i.e., less long-lasting and transferrable outcomes—, it is also less motivating or if preferred, more difficult to maintain. The reason is clear: it is not only that the more interested and involved the student is the more they will learn, but also that the more they learn, the more interested and involved they will be. This is a two-way relationship of learning and motivation which mutually offers feedback to one another (which is also why the opposite occurs, the less motivated the less the student learns and the less they learn the less they are motivated, until they give up altogether).

As a result, those conditions or activities, which encourage constructive or reflexive learning, unlike repetitive learning, would promote more lasting and transferable learning, because it is also more probable that the practice is further sustained over time. Going back to the now remote Tables 1 and 2 we can find examples of the type of practice each teacher promotes. In the episodes of Table 1. the teacher proposed closed tasks (giving orders: say the notes, play according to their instructions and corrections, etc.) and that they should play it repetitively (“*play it again, Sam*”). In contrast the teaching style of the teacher who guides the student in Table 2 is really different: instead of giving orders or instructions she asks questions. Instead of proposing closed tasks, she proposes open tasks where the student has to take decisions, manage their technical, cognitive, etc. resources and this promotes reflexive practice rather than repetitive practice. Metacognitive control is required by the student of his or her own learning.

The processes which a teacher who adopts this teaching style or conception (see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”) promotes are really different from those adopted by the more traditional teacher. The former tends to use a different type of activities in the classroom: asking or suggesting, offering the student greater autonomy and helping them to confront their own mistakes, instead of pointing them out and correcting them (López-Íñiguez & Pozo, 2016). Beyond musical learning there is a classical distinction in psychology which helps one understand the difference between activities or tasks which are proposed by one or another type of teacher. This is the distinction between *exercises* (understood as closed tasks, which offer a single solution which has to be reached by a well-trodden route, without the need to take any decision over and above that of applying the established sequence) and *problems* (open activities, which allow several possible routes towards their solution, and even several possible solutions, which require the student to take decisions on the best way of confronting the task) (Pérez Echeverría, 2004). In terms of the previously analysed outcomes, whilst the exercise promotes superficial symbolic or technical learning, the problems promote meaningful and strategic learning.

Although it is unusual to speak of musical exercises or problems, unlike in other domains such as the sciences or mathematics, when students are faced with open musical activities which require fixing their own expressive goals, choosing the technical resources to reach them, supervising those actions and assessing them, totally different patterns of interpretation are observed than when they are limited to mechanically applying a pre-established plan of action to a mere musical exercise, which is usually understood as the interpretation from a simple or well-known musical score (Torrado et al., 2016, also see chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”). The students carry out a more sensitive and personal interpretation, but also more technically tighter, when the activity requires a metacognitive control of their actual interpretation, instead of mechanically following previously fixed instructions. One of the ways of converting closed tasks to open activities, converting exercises into problems is to promote learning spaces of dialogue and even cooperation instead of listening solely to the voice of the teacher in the music classroom.

### ***5.3 The Social Organisation of Learning: From Monologue to Dialogue and Cooperation***

Something which most clearly reflects the differences between educational practises in the music classrooms is student participation. Going back to previous examples, in the Episodes of Table 1, you can barely hear the student’s voice. In Table 2, genuine dialogues are shown, where both student and teacher take it in turns to speak, and the student’s voice is not only listened to but encouraged, sought through the continuous questions the teacher asks. This seems to be a trait which identifies student-centred

musical teaching (López-Íñiguez & Pozo, 2016). The voice of the student is called for, converting the teacher's monologue into a genuine dialogue, to help the student redescribe their own experiences and actions through symbolic codes (words but also gestures or visual representations provided for by new technologies) (Pozo et al., 2019; also see chapter “Instrument Mastery Through Expression: The Learning of Instrumental Technique”).

Obviously, these dialogues reflect asymmetrical conversations whereby, as we shall shortly see, the teachers must assume new roles, new functions, but continue guiding the student towards new learning goals to aim for. The teacher's work does not disappear; it becomes more complex when its function is to help construct the student's voice without converting it into the teacher's ventriloquist doll.

Another type of dialogue which occurs in the music classroom, but less frequently, involves not talking with the teacher but with other students. Due to its technical bent—more focused on exercise than solutions to musical problems—instrumental music teaching remains to a large extent individual or dyadic. However, the actual interpretation of the music is produced almost always in the most complex social group contexts, which require coordination with other interpreters. As we shall see in detail in chapter “From Individual Learning to Cooperative Learning”, group learning does not always imply dialogue, since at times it is so hierarchical that it is almost monological. However, in its most complex but effective forms, music learning should promote truly cooperative learning, i.e., situations in which one learns not just with others but *through* others. It is known that metacognitive control and constructive learning as well as several types of social learning, are encouraged when they are cooperative rather than individual or competitive (Monereo & Durán, 2002). However, for this to occur, the tasks set have to be open. It is not a question of reproducing a pre-produced sound but of searching for solutions to new musical problems (also see chapter “From Individual Learning to Cooperative Learning”). If previously programmed actions are reproduced, it is of no help to complete them with others, but if planning, supervising or assessing how to deal with the interpretation of a piece is the case, then cooperative dialogue between a number of voices not only helps to multiply perspectives by finding more and better solutions than an individual response, but also to express optimisation of each of these alternatives better and therefore understand them better. Cooperation does not only add voices, it multiplies them.

#### ***5.4 The New Teaching Roles or Functions: From Trainer to Guide***

All the dimensions or variables of the practices we mentioned regarding the conditions that favour one or another type of learning, sooner or later become the teacher's responsibility—the person who has to take decisions on what learning they wish to promote and how they wish to achieve it. The main variable, therefore, in bringing

change to music classrooms is the teaching mentality. It is not a question, or only a question of acquiring new teaching resources, new techniques or strategies to apply in the classroom, but of changing conceptions regarding what it means to teach and learn instrumental music, as we shall see in detail in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”.

Indeed, the new teaching practices which have been outlined in this chapter in the form of conditions, but which are developed in detail throughout the whole of Part II, the nucleus of this book, imply new teaching functions, or if preferred a new teaching identity. This is summarised to a large extent in Table 1 in chapter “[Teaching Music: Old Traditions and New Approaches](#)”. in the previous chapter (p. XX), which illustrates the different roles of functions that may be adopted by a teacher depending on the teaching model they select. Does the reader recall them? Perhaps you recall that in the new learning culture the teachers, in the terminology of Claxton (1990), should stop acting as petrol station attendants (filling up the student’s knowledge tank) or watchmakers (minutely adjusting the student’s technical actions) and should behave like sherpas, guides who accompany the student in their journey towards knowledge, helping them achieve their goals—returning to the idea of the intrinsic motivation suggested some pages ago—, leaving the student him or herself to take decisions, but always closely supported by the teacher.

Of course, this guiding function is much more complex than that of a finished musical knowledge transmitter. It is not enough to know how to play an instrument or have musical knowledge to be able to help the student acquire it as well. The teacher has to know how to guide and this, as we have pointed out, requires not only acquiring new teaching strategies but assuming a new role, providing appropriate teaching aids to match the student’s capabilities. Speaking of constructing knowledge, Bruner himself (Wood et al., 1976), who later was involved in identifying these new teaching roles, coined the term *scaffolding* to define this teaching function. Guiding the student is going a little bit ahead of them, anticipating the difficulties they may have, constructing scaffolding—formed by a set of teaching aids, or activities, or in our terms, conditions—from which to construct the musical knowledge of the student. However, once this has been constructed, the scaffolding, the aids, must be removed so that the student may autonomously manage their own musical actions and their own interpretation. Another way of expressing this comes from the famous concept by Vygotsky (1978), which is that these aids should form the Zone of Proximal Development (ZPD) of the student. In other words it should be something the student can do if we provide the necessary aids, but which they are not yet able to do alone if we remove them (for probing into this concept see, e.g., Kozulin et al., 2003, or Lacasa, 1994). In this sense, to programme activities in the ZPD of the students requires posing challenges that exceed their current capacity, converting those activities into real musical problems that they can only solve by using the cognitive and emotional resources they possess, together with the scaffolding offered through the teaching mediation. As these aids are taken on board and the student can use them autonomously, new ZPD will appear in which to deploy the action of teaching.



## 6 Conclusion: The Need to Change the Design of Learning and teaching Music

To conclude this chapter, we can refer to an old saying that again reflects common sense on teaching, i.e., these traditional forms that must be amended if we wish for music learning to play a more major role in the students' personal development in today's society. The proverb goes "to each his own", i.e., his own teaching techniques or resources, acquired through craft or experience, rather than formally or academically, at least in the case of instrumental music teaching. This book's aim, to improve the learning and teaching of music, does not require giving up one's own way of doing things so much as amending it, being aware of what one does, how one does it and why one does it and trying to contrast it with other models or approaches, as will be shown in chapter "[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)". If student learning is yielding metacognitive management of actions, representations, and bodily sensations, the same should occur with teacher training. Only by knowing and rethinking what we are can we change. A first step towards this may be becoming aware of the different conceptions held by teachers and students on learning and teaching music, and this is the objective of the following chapter.

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# How Teachers and Students Conceive Music Education: Towards Changing Mentalities



María Puy Pérez Echeverría 

## 1 Why Is It So Difficult to Change Mentality in Education?

For some time now Nieves has been pondering and turning things over in her mind about how to give her piano lessons. Although she has several years of experience as a teacher in the conservatory of music and as a pianist, lately she has not been satisfied with her students or the results they are getting from her teaching. She can no longer find that feeling of peacefulness she had before when she gave classes. She asks herself a little ironically if perhaps she is suffering from what some call “teaching malaise,” so fashionable among secondary school teachers and which for a long time she had considered a way of teachers escaping from their problems. Or maybe the students have changed a lot during the last few years. Not long ago she went on a constructive teaching course recommended by the musical education teacher of her conservatory, where she listened about how to start teaching from students’ intuitive musicality, of progressive release of control, etc. and of the differences between traditional and constructivist teaching, in a very similar way to what we were able to see in chapter “[The Psychology of Learning Music](#)” of this book. However, even though she found it very interesting and it helped her to understand several things about motivation, and about the difference between repetitive or constructive learning, it actually did very little to help her in her daily life as a teacher. In other words, she had no idea about how to take these insights into her classes. She and her colleagues share the idea they ought to help the students understand music in a different way and, in this sense, she also shares the characteristics of some of the teaching learning models defined in chapter “[The Psychology of Learning Music](#)”, but neither she nor her colleagues are really sure what they should do or what they should change to achieve this objective.

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Juana, one of Nieves' long-standing students, is not very satisfied either. After so many years of studying music and dedicating many hours to her practice, she feels increasingly less interested in what she was doing. In other words, she is not motivated. She perceives that her technique is increasingly better, but she does not enjoy playing and she needs something more than just this technical mastery. Neither are her interpretations evolving as she would have liked, and they are far from being similar to those of her teachers. As we saw in the examples of the previous chapter, she has learned the technical aspects really well, but has not managed to establish her own goals for herself and to feel excited by her own challenges. She does not seem able to motivate herself. Although she gets on well with Nieves and thinks Nieves has taught her many things, for which she is grateful, there are also times when she thinks Nieves is not a very good teacher. This is because she does not say precisely what Juana should do to improve, and the few times when she does say she always refers to technical aspects which have occurred to her and not how to resolve problems. Notwithstanding, Juana realizes she is not always able to define what is happening with the music nor make explicit her sensations and problems in class or during her hours of study. She considers herself a good student because she endeavours to follow the guidelines and do what they say, although at times she does not really understand what her teachers are proposing. Sometimes she is even bored and she thinks that she is not a competent enough player.

We could easily find many similar stories to those of Nieves and Juana in any teaching centre dedicated exclusively, or not, to music. These stories tell us of the difficulties of learning and teaching. They also tell us of the feelings of dissatisfaction or frustration their main characters face with their learning and teaching activities and practices. These feelings could be summarized by pointing out that both Nieves and Juana are aware things are not going well but they do not know how to improve them. They are still adhering to the most traditional forms of learning and teaching because this is what they know, but the satisfaction they had hoped for eludes them. However, neither of the two is alone in this. These sensations are not only felt by many students and teachers of music and any other specialty, we could generally say by the whole of our society. For example, every time a new edition of the PISA report is produced or any other similar report, the media mostly thoughtlessly and wrongly state that teaching in Spain is not just much worse than in other neighbouring countries but that it is progressively worsening too. Although data do not confirm these ideas (to compare it take a look at the last six PISA reports published up until now), they do undoubtedly reflect a general malaise, a sensation of frustration which in our opinion refers to the fact that we neither achieve our proposed goals in education personally or as a society (Pozo, 2016; also see chapter "[Learning and Teaching Music in the Twenty-First Century](#)" and "[Teaching Music: Old Traditions and New Approaches](#)" with reference to the need for changes).

Thus, there is nothing new in affirming that our way of learning and teaching requires profound change. As we have seen in previous chapters and will continue working on in other parts of this book, there are major reasons for this change which are linked to social factors (changes in learning objectives and in learning methods) (see chapter "[The Psychology of Learning Music](#)"; Marchesi & Martín,

2014; Monereo & Pozo, 2001; Pozo, 2016), epistemological factors (the conceptions of musical interpretation as a means of expression and control of emotions versus the idea that musical interpretation is the translation of musical scores to the musical instrument) (see chapter “[Teaching Music: Old Traditions and New Approaches](#)”) and psycho-educational factors (repetitive learning versus constructive learning) related to our knowledge on how to learn and how to teach (see chapter “[The Psychology of Learning Music](#)”). However, if the competences required by society have changed, together with learning objectives and we also know more than ever how we should learn and how we should teach, why then are the learning and teaching settings so difficult to modify? Why is it so difficult for us to change as teachers and students? In the following pages we will analyze the conceptions on learning and teaching music as one of the causes of these difficulties. Although this book is essentially aimed at learning and teaching of musical interpretation, we believe these conceptions are more general and stretch beyond interpretation to embrace the whole of music learning. However, as far as possible we will restrict our examples to music interpretation.

According to Ertmer (1999), there are a series of barriers which impede and oppose educational change. For this author first-order barriers are those difficulties which concern institutional aspects, which are therefore not usually controllable by Nieves or by Juana. They refer to different educational regulations, or to the type of curriculum proposed by the state but also to different infrastructures and resources held by the learning and teaching scenarios. Obviously, investment in education policies, in provision of centres or in development and contraction of teaching staff help to improve education and to lead to changes in education. But are these improvements enough to alleviate our discontent as teachers or students? In other words, would higher investment in education and particularly in technological measures bring about changes to teachers and students? Would they help Nieves and Juana to feel more satisfied with their work and with themselves? Having sufficient means will undoubtedly improve the situation. However, Ertmer (1999) suggests second-order barriers to educational change, which are as difficult to modify as the institutional ones, if not more so. We could call these barriers intrinsic as they refer to the beliefs held by education agents on what learning and teaching means and therefore on the goals proposed in learning at each given moment, determining a great deal of their habits and practices. We could also put fear of change itself among these barriers and the uncertainty and anxiety that this fear uncoils. At the end of the day, a popular saying “better the devil you know” is applicable here. Old habits and educational or other practices offer safety and certainty, even if we do not like them. Changing the way we teach and learn is, in contrast, opening up an empty space which is difficult to fill and which generates a certain level of anguish. We could therefore conclude that we are debating between the perception of needing a change and the fear of bringing it about.

## 2 Explicit and Implicit Conceptions on Learning and Teaching

In several chapters of this book (see specifically chapters “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”) we see that everyone has an intuitive musicality which forms what in other domains of knowledge is understood as prior knowledge. It is related to both our evolutionary history that has triggered certain neurophysiologic structures through which we perceive and process sounds (see for example Mithen, 2005), and also to the musical practices and structures common to our culture, which modulate almost since birth, our relationships with sounds and music and the way in which we use music to communicate our emotions. This intuitive musicality makes certain melodies successful over others and is to a certain extent responsible for our musical choices during certain moods or, as we shall see in chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, of the type of song we hum along to when we are trying to calm babies and help them sleep. As it says in a radio advert lately, nobody would choose Beethoven’s 5th symphony for a nursery school entrance tune. However, this intuitive musicality can also prevent us listening to and enjoying music from cultures different to our own or with tonal melodies and structures not in keeping with the characteristics of our intuition.

Moreover, apart from having intuitive musicality, as people we also have intuitions on many other aspects, both physical (for example, we have an intuitive physique that allows us to distinguish and hold objects) (e.g., Pozo & Gómez Crespo, 1998; Spelke, 1994), and psychological (e.g., Pozo, 2014). One of our intuitive conceptions on psychology is attributing to others a similar mind to ours (Premack & Woodruff, 1978), which we definitely do not attribute to objects, although sometimes we do this with animals. This mind, i.e., our beliefs, desires or tastes are what determine our actions and objectives to some extent. Thus, for example Nieves *thinks* that Juana *thinks* or *believes that* often she does not concentrate in class because she is focusing on other things. Among our psychological intuitions, we could include the conceptions on what teaching means and what learning means or expressed in the words of Ertmer to which we referred in the section above, the beliefs on learning and teaching. According to Olson and Bruner (1996), teaching implies *believing* that someone, e.g., Juana, the piano student, needs a piece of knowledge they do not possess and that another person, e.g., her teacher Nieves is capable of organizing and providing the right conditions to help her acquire this knowledge, i.e., to learn (see chapter “[The Psychology of Learning Music](#)”). This belief in the capacity of human beings to learn and to teach facilitates the formation and development of stable cultures which are conveyed from generation to generation and encourage the construction of learning and teaching conditions. (Olson & Bruner, 1996; Premack & Premack, 1996). As we saw in the preceding chapter, learning involves changing and teaching is facilitating that change. From this premise we are assuming, thinking,



or believing that our mind is not yet prepared for all the challenges provided by sociocultural interactions and forms of life, but also that this mind may change. At the very least it can increase the amount of knowledge necessary for these goals and ultimately modify competences, how to interpret this world and intervene in it and at the same time change ourselves too. Thus, Nieves' actions are certainly guided by the belief that she can help Juana to make a change in her musical interpretations. However, she probably is not consciously aware of this idea, although she can decide what to do and how to do it so that this help is effective. Therefore, these implicit or explicit beliefs, conceptions or ideas are powerful tools that help to make us capable of acquiring different types of knowledge, be it musical, instrumental, vocal or from any other area. Depending on what these beliefs are, we will decide one way or another, in a more accurate or less accurate way, on how to help someone to learn.

But, what are we thinking of when we speak of conceptions, beliefs or ideas? In the previous paragraph we said that Ertmer (1999) spoke of beliefs regarding learning as a barrier which hindered change and therefore hindered learning, and we have just written about the beliefs and conceptions which require help to bring about this change. Just as we can find beliefs, theories or ideas that can help with learning so too can we find theories, beliefs and ideas that hinder that learning. Under the term conceptions we are including a set of representations which may obviously be different to one another in their content (let us consider for example the two types of teachers described in the previous chapter), and their functions or how they have acquired them and can use them (see chapter "[How to Know and Analyse Conceptions on Learning and Teaching](#)"), etc. To start with, we can distinguish between explicit and implicit conceptions. The explicit conceptions or theories are those which we know we have, and we can talk about, display, argue or discuss, in this case referring to how one learns and how one teaches. The implicit conceptions, like intuitive music, lie beneath our actions and decisions, are of a procedural nature and cannot be narrated, discussed, or argued. We are not aware of our own implicit theories.

Therefore, if Nieves were by chance reading this, perhaps she could tell us what the constructive learning theories are and the difference between these theories and the more traditional ones. They are, after all, much spoken about in many of the places where learning and teaching is exercised or discussed, or where future teachers are trained in different subjects and levels. Also, since she is so conscientious and hard-working she will have carefully read chapter "[The Psychology of Learning Music](#)" of this book. Many teachers know what meaningful learning, the zone of proximal development, and other constructivist theories are. However, it is possible that although Nieves can tell us about the constructivist learning theories and show us her general agreement with these theories, her decisions and practices do not correspond with what she verbally defends and very possibly this is because these theories are not a good match for her intuitive (implicit) conceptions on learning and teaching. It is possible that the malaise she feels with her teaching and to which we referred at the beginning of this chapter is about the differences between her explicit ideas or theories and her implicit beliefs or conceptions. The differences between what she thinks by reasoning on the one hand and on the other what she feels she

should do in her classes and shares with most of her environment and social group. In other words, it may be that the implicit theories of Nieves (her intuitions or beliefs) and her explicit theories and knowledge do not fit well together, resulting in discord.

As we have just seen, apart from what Nieves can tell us about learning and teaching, there is a set of representations, which lead to intuitive, implicit theories or beliefs that are characterised by us not being able to express, argue or discuss them and which are visible mainly in the way in which we act and take decisions (Clará & Mauri, 2010; Pozo et al., 2010). Just as we have intuitive music (see chapters “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”), that serves as a starting point for musical learning, the intuitive beliefs, conceptions or theories about what learning and teaching mean are the starting point of the development of the learning and teaching methods and strategies. We therefore have explicit knowledge and beliefs on what learning and teaching is that we can tell others about, that we can compare and discuss because of these same characteristics, they are relatively easy to modify. Then we also have implicit theories we are not conscious of but which become visible by our actions and when we take fast decisions. Also, as in the case of intuitive music, these intuitive beliefs or conceptions on learning and teaching developed over our whole life through the interactions in cultural situations in which we teach and learn (Levin, 2015; Pérez Echeverría et al., 2001; Pozo et al., 2006; Rodrigo et al., 1993) have no explicit awareness that we are undergoing this learning. They not only help to create these conditions of facilitating teaching and communication in the Western culture, as we saw above, but also often create an obstacle, particularly when these beliefs do not adapt well to our learning objective.

Thus, for example, when Nieves confers with colleagues about the extremely important problem of motivation in conservatories she usually states that teachers “punish” students a lot whilst she has to encourage them while they are working, underlining what they do well. However, when she is giving classes to Juana she usually corrects her as soon as an error of any type occurs, which really is not very encouraging. If an independent observer analysed Nieves’ classes (see how to do an analysis of practice in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”), they would definitely reach the conclusion that she spends more time correcting Juana than highlighting what she does well as a student. Neither does she use the errors as a means of analysing Juana’s performances so as to teach from them. Possibly, the explicit beliefs of Nieves on motivation clash with other more implicit beliefs on what the outcome of teaching should be. It is possible that within these beliefs is the intuition that whoever teaches should correct the student’s errors, if they are to learn properly. If Nieves continuously corrects Juana she is implicitly sending her the message that she is not doing anything right and perhaps that she is not proficient. These messages do nothing to encourage the student, although at times the teacher uses words of encouragement. Later on, we will come back to this example and other similar ones. We would now like to demonstrate that whilst the explicit ideas of Nieves on motivation or on any other subject, maybe expressed, analysed, discussed and therefore adjusted or modified,

her implicit conceptions are expressed by her actions and are unconscious. We only become aware of them when someone or the circumstances help us to do so, which is why they are much more difficult to change.

Ertmer (1999) was referring to this type of belief when she stated, as we saw before, that beliefs on learning held by educational agents are intrinsic barriers that hinder and even impede the changes needed to adapt to new social needs. These barriers are responsible for teachers of the twentieth century to be teaching contents of the nineteenth century to their twenty-first century students, as was very graphically illustrated by Monereo and Pozo (2001), (also see Marchesi & Martín, 2014). In other words, it is possible that a visit to any conservatory will show teachers and students doing the same activities and often trying to interpret exactly the same musical pieces that were interpreted by other teachers and students forty, fifty year ago or more.

Notwithstanding, some readers could argue when reading the above that teaching how to interpret music, and especially if we are talking about what is known as classical music, requires the same type of contents, skills and capacities that were needed forty, fifty years or more ago. Although many technological changes have taken place around production and especially musical reporting, the musical scores and melodies are still the same. From this point of view, learning to play Bach or Mozart today we would need to develop the same skills, competences and sensitivities that were required one hundred years ago and therefore it is not odd that the conservatories (see chapter “[Teaching Music: Old Traditions and New Approaches](#)”) tend to teach by following the same models and almost the same techniques as they did in other ages. However, as we have shown before, the social demands of learning and teaching have profoundly changed in recent years (see chapters “[Learning and Teaching Music in the Twenty-First Century](#)” and “[Teaching Music: Old Traditions and New Approaches](#)”; also Marchesi & Martín, 2014; Monereo & Pozo, 2001, 2006; Pozo, 2016) and as a result the students and the contexts in which they learn music have also profoundly changed (think of Youtube tutorials; see chapters “[From Individual Learning to Cooperative Learning](#)” and “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”). Moreover, we know far more about learning and teaching than we did a few years ago (see chapter “[The Psychology of Learning Music](#)”) and Nieves is a clear example of this. In sum, it seems that general teaching conditions and specifically music and musical interpretation have been profoundly changed, although the practice of learning has not changed so much, particularly in conservatories. Paraphrasing the title of an article on conceptions of violin teachers (Torrado & Pozo, 2006), which in turn serves as a Spanish popular refrain, we could say that “it’s easier said than done”. The gap between saying and doing, to be dealt with in greater detail in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, consists of our actions, decision-making and at times, our justifications, within which lie these conceptions or implicit theories we have long been speaking of.

### 3 Implicit Theories on Learning and Teaching

The implicit theories or conceptions are therefore procedural theories about the world which allow us to interact in it, with it, and with others at very little cognitive load, since hardly any cognitive or reflexive resources are required. Nieves' immediate reactions to a conflict in the classroom, or to a clear error by Juana, the way Juana begins to work on a certain piece or divides up periods or work, etc. are manifestations of these theories which are not based on a conscious and rational analysis of a situation but often respond to "what the body craves" (Pozo, 2017a, 2017b). However, when we have to argue or explain the reason why we are taking a specific action, our explanation is based on more rational aspects of a more general nature, which does not usually coincide with the implicit reasons. In the chapters forming Part II of this book, we shall see how these theories play out in different situations. In the pages that follow we shall try to describe what these theories consist of and what the differences are between them, whilst the next chapter will be dedicated to the study of how we can detect these theories in different contexts.

Studies on implicit conceptions or theories in the different fields of knowledge (Baxter-Magolda, 1992; Hofer & Pintrich, 1997, 2002; King & Kitchener, 1981; Pintrich, 2002; Rodrigo et al., 1993; Strauss & Shilony, 1994; see reviews in Fives & Gilles, 2015; Pozo et al., 2006), including musical interpretation (many of them reflected in the chapters in Part II of the book, but also in e.g., Bonastre et al., 2016; Bonastre & Timmers, 2019; Chiuminato, 2019) have found the presence of different types of theories, underlying which are also different presuppositions or in other words, different ways of understanding the results, processes and conditions of learning and teaching (see chapter "[The Psychology of Learning Music](#)"). All of these theories cover a wide range of intuitive beliefs from the most traditional, that underlay the theories of learning and teaching from a long time ago (see Olson & Bruner, 1996), up until the constructive theories or those of a post-modern conceptions. Table 1 contains a summary of these theories and presuppositions which refer to the implicit theories found in the studies on learning and teaching of music and in the learning and teaching of musical interpretation.

Therefore, according to this table there are three different types of implicit theories on learning and teaching which are characterised by different epistemological, ontological, and conceptual principles. However, as we shall see later on, different research studies show that teachers and students do not assume theories monolithically. Instead the theories are organized around profiles with underlying mixes of these principles. As we shall also see these mixes are not random, but organized around certain dimensions of learning and teaching scenarios (e.g., conceptions on teaching, learning, evaluation, etc. and no opposing principles appear in them (e.g., direct theory and constructive theory together).

**Table 1** Implicit theories on learning (taken from Pozo et al., 1999, with permissions from Editorial Universidad de Alcalá)

Assumptions	Theories		
	Direct	Interpretative	Constructive
<b>Epistemological</b> <i>What is the relationship between knowledge and its object?</i>	<b>Naïve realism</b> Knowledge faithfully reflects the object although with different levels of plenitude or exhaustiveness. There are partial and complete points of knowledge	<b>Interpretative realism</b> Knowledge reflects the object in a vague or distorted manner. This distortion may be reduced or even eliminated using appropriate techniques of detection, measurement, contrast, etc.	<b>Constructivist Relativism</b> Knowledge is a construction created within a social and cultural context relating to certain goals. This construction provides tentative and alternative models for interpreting the object, each of them with different levels of appropriateness, according to the context in which they are applied and their explanatory power
<b>Ontological</b> <i>What type of entity is learning?</i>	<b>States and events</b> The results of learning are conceived in terms of states. The generation of these results is conceived in terms of isolated shortened events	<b>Process</b> Learning is conceived in terms of processes, which increase in number and complexity, determined by different factors: evaluative, cognitive, motivational, etc.	<b>Systems</b> Learning is interpreted from complex relationships between components which form part of a system which in turn interacts with other systems
<b>Conceptual</b> <i>What type of conceptual relationships exist between the elements which compose theory and how is this structured?</i>	<b>Data and facts</b> A lineal and direct relationship is established between several conditions (age, motivation, contact with the object, etc.) and the learning outcomes	<b>Linear causality from simple to complex</b> The efficacy of the learning depends on a series of factors which, either separately or together act in a single direction on the results	<b>Interaction</b> Interactions between the learning system and the other systems (psychological, educational, social) in which it is registered define the framework of learning interpretation

### 3.1 The Direct Theory

People who hold direct intuitive theories on learning and teaching are usually teachers who hold very similar views to what in the previous chapter was considered a traditional form of learning and teaching. These teachers would start from the epistemological assumption that knowledge is a faithful copy of reality and therefore learning

is a state that is reached when the learner is capable of reproducing that reality (ontological principle). A caricature and therefore overly stereotyped version of a direct teacher would be a teacher who, for example, when they were trying to teach a student to add up would think of all the actions in existence to help learn that operation (knowing the written numbers, knowing the sum of simple digits— $1 + 1$ ,  $2 + 3$ , etc.—putting the numbers that are to be added one under the other, beginning to add the digits from the right and writing the result below and being careful or writing above in brackets when carrying a number, etc. Expressed in another way, the important thing for the teacher would be to know and analyse the aim of learning to present it to their students in the clearest possible way, so that they would in turn “copy” that object. If this teacher taught music instead of mathematics they would operate in the same way to teach the musical scores (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”), analyzing all their components (pentagram, notes, keys, etc.), presenting them clearly and progressively and waiting for the student to make enough effort to learn the musical scores just as they had been taught, i.e., to repeat them enough number of times and practice the instrument as many times as necessary so as not to forget them. A good direct teacher is the one who best knows the aim of learning and can consequently better analyse it and more clearly demonstrate it. Thus, it is assumed that the better a musician the teacher is, the better they will be able to teach their students to play an instrument, with all efforts aimed at imitating their *Maestro*. According to this theory, the errors or distortions that occur when one is learning to play act as a warning sign indicating that knowledge is not being well “copied” or learned. Faced with this warning, it is necessary to immediately make corrections to prevent the student from learning badly. At times, these errors may be an indication that they were not sufficiently prepared for what they were being taught and they would have to go back to a previous piece of learning, as a necessary prerequisite for what they are supposed to learn now. If these errors are repeated, despite the fact the teacher has clearly shown what they wish to teach, this would definitely be a sign that the student does not have enough talent or has not worked hard enough.

As a result, from the point of view of the conceptions on learning, this theory maintains that what is vital is the material presentation of what is to be learned. The organisation of material is determined by the characteristics of the declarative or procedural content to be taught. The student would learn if they were able to reproduce what they had been taught or shown, be this sums, musical notes, melody or the tempo of an interpretation or what is called the composer’s style. If the teacher presented the information or knowledge clearly and in an organised manner, the student would have to necessarily learn, unless they had not studied or repeated sufficiently or did not possess the conditions or talent necessary to produce this learning. In other words, there would be a direct causal relationship between learning conditions and their outcomes (see previous chapter). This theory thus holds that learning is imitating reality.

For its part, the work of a student who believed in direct theory would basically consist in reproducing and repeating actions until they produced the most accurate reproduction possible. Learning passes from the teacher to the student and the

student's only activity is to manage the reproduction times so as to achieve the condition for realization of the result. A student who takes notes of what the teacher says, word for word, to be able to "*study them properly afterwards*" would be a good example of a student who adopts a direct position in this aspect of their learning. As we saw previously, if the student practices the learning objective enough, the notes they have taken, the notes of a specific composition, etc. they will learn and if they do not learn this is because they have not pushed themselves enough (see chapter "[The Psychology of Learning Music](#)") or that nature has not endowed them with sufficient talent to learn, in which case no amount of effort on their part or the teacher's will remedy the situation. It is also possible that the cause is lack of motivation, but in this case, motivation is perceived as a state the student possesses. Like talent, they are believed to have it or not and therefore the teacher can do nothing to change this state. As a result, these direct teachers and students accept realist principles and also appear to accept a dualist conception of knowledge (Perry, 1970; see Table 1 in chapter "[The Psychology of Learning Music](#)"). Accordingly, this could be true or correct (when it perfectly reflects the musical score, the model proposed by the teacher for an interpretation or the way in which the teachers plays *seguidillas* on the guitars), false or erroneous (when these external models are not followed), and at times, partial (when we have not yet repeated the piece enough times). Assessment from this theory therefore centres on applying measures for technical perfection. It is hoped that expressivity or any element which helps to make the interpretation more personal or individual, will arise or emanate from this technical perfection (see Bonastre & Timmers, 2019) and it is not necessary to work with them, just to demonstrate them.

In its most basic version, this theory reduces learning to the copy of good sound already achieved with a good technique, without deliberately tackling the mediation of any psychological process. The simple presence of certain conditions (exposure to the result of an action rather than to its execution, certain characteristics apparent in the learner, etc.) ensure success of the copy and therefore learning, which would be an immediate all or nothing event, of an irreversible nature.

However, very few teachers and students match the profile we have just described and hold all the beliefs we have just described. On the one hand, the majority of teachers as we said previously, present profiles combining more than one theory. Of course, Nieves would not see herself reflected in this picture and neither would Juana identify with the direct student profile. Studies on implicit conceptions show that this theory, as a whole, is not the most common among primary or secondary teachers or among music teachers, although we can see several traits of it in many teachers and students. Experience in learning and teaching situations means that certain variables pertaining to both the conditions (practice, exposure to execution of action and not just to the result of the already finished action) and the learner (age, motivation, etc.) are progressively incorporated into it. These will become more significant as mediating processes in the interpretative theory which we will consider next. This direct theory is usually behind the conceptions of children aged from 3–4 years, when they think that just by seeing something they learn it (Pozo & Scheuer, 1999; Scheuer, de la Cruz, et al., 2006; Scheuer et al., 2010; Scheuer, Pozo, et al., 2006),

but may also be found in specific situations in older aged students and in teachers of different levels and specialties. For example, when Juana makes any mistake, Nieves plays the piano hoping that it will be enough for her to be the model so that Juana learns and this error will not be repeated (*but, if you have seen how I did it, how can you continue playing it wrongly?*), or, on the contrary, when Juana tries to imitate the actions without considering the reason why (*I have done what you said, I wrote down in the exam what was in my notes*) both are demonstrating direct theory beliefs which indicate that just showing and reproducing a content is learning it. We also find these conceptions when failure is exclusively attributed to the student (s/he has no talent or motivation, or does not make an effort; *poor thing, s/he works hard but never makes it—Quod natura non dat, Salmantica non praestat—what nature does not provide, Salamanca does not add—<sup>1</sup>*), without considering that a teacher should try to teach the students they have, whatever they are like and whatever their thought patterns. Vestiges of this theory may also be found in highly traditional cultures where learning is based on the relationship between learners and teachers, as befitted artisan methods characteristic of cultures from previous epochs (Olson & Bruner, 1996; Pozo, 2008; see chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)” for the analysis of some of these cultures). According to this theory, the learner is an empty box to be filled up with knowledge presented by the teacher.

### 3.2 *The Interpretative Theory*

As we saw in the previous section very few teachers and students are wholly committed to the direct theory—direct beliefs mixed with other beliefs in the implicit profiles of many teachers do appear. Research has shown that the way in which most teachers analyse, take decisions and act is more in keeping with what has been called the interpretative theory of learning and teaching in both music (Bautista et al., 2009; Bautista et al., 2010; López-Íñiguez et al., 2014; Marín, Pérez Echeverría, et al., 2014; Torrado & Pozo, 2006) and in other contexts (Aparicio & Pozo, 2006; Martín et al., 2006, 2014; Pecharromán & Pozo, 2006, 2008; Pérez Echeverría et al., 2001, 2003; Pérez Echeverría, Pecharromán, et al., 2006). This interpretative theory has several elements in common with the direct theory. According to this theory learning is also considered to be reflected by the proximity or distance of the characteristics of the object which is to be learned, but here it is also understood that at times this object is highly complex or difficult. It is accepted that at times learning is a hazy, not totally exact, imperfect or partial copy of the object to be learned, in the hope that the student or the conditions of learning will permit that this learning be achieved (*s/he has played the sonata more slowly than it should have been played but it's not bad considering how long s/he has had classes*). The interpretative theory therefore continues to stem from a realistic principle, in the sense that knowledge reflects reality, but conceives

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<sup>1</sup> This is a Latin proverb meaning that a university cannot give anyone what nature denied.



of learning as the result of the student's personal activity, which requires a series of highly complex mediating processes by the learner (attention, memory, intelligence, motivation, etc.) which in many domains makes it very difficult, if not impossible, to achieve exact copies (Pozo et al., 1999). The management of these processes always comes from outside, from the teacher (Pozo, 2017a) (*I always stop for a bit in class and make some sort of joke so that the students are motivated and pay attention; if you use your Smartphone in class to record the students you will get them to make more effort*). Thus, an active but reproductive learning is adopted (Bautista et al., 2010).

Nieves could be an example of a teacher whose actions appear to suggest an interpretative theory, although, as we saw before, she is capable of having constructive theories too. She is very clear on the type of sound she wants Juana to play and also that explaining is not enough, although her explanations are very clear and organized and neither is it enough for her to be the model and show Juana what she is looking for in order for Juana to learn. However, she cannot help but correct her continuously, every time she makes a mistake. She also knows that what she is teaching Juana is highly complex and therefore if Juana is not sufficiently motivated, she will not pay enough attention and will not make the effort she needs to learn. For this reason, as she knows that Juana loves the song "Malamente" by Rosalía some days at the end of the class, if Juana has worked hard enough, they both play and sing this song or others that Juana likes. This is when they both have a great time, and she hopes it will suffice to motivate. She has even encouraged Juana to work with other conservatory colleagues in a group that plays a different type of music to what they play in class, provided it does not distract her too much nor take away time for the work she has to do for herself. She thinks working in a group is good, since the students can help one another and learn to coordinate their efforts and fill out their interpretations, but you have to know how to choose when to use it because in the end instrument interpretation learning has to be individual. You play on your own and nobody can play for you (see chapter "From Individual Learning to Cooperative Learning" about group work). Similarly, she knows that concentration cannot last when an activity lasts a long time, so she programmes rests or some other activity that can help Juana, so that afterwards she can concentrate better on the piece she is preparing for the year-end audition. As we said before, the piece is complex and has several passages which are considerably difficult technically, and therefore Nieves allows some errors which she thinks will disappear in the future, when Juana has more experience. However, when Juana commits more basic errors, she immediately corrects them. This, as we saw before, is so that she does not learn the wrong way or in a distorted fashion and she also reminds her constantly to concentrate on the musical scores since this is the most important tool for her interpretation (see chapter "Reading Music: The Use of Scores in Music Learning and Teaching").

To sum up, the teaching processes set up by Nieves (the conditions in the graph from the previous chapter) consider the actions Juana has to take to learn and the psychological processes the student has to carry out. The student is considered as an active learner. Unless she gets involved, she cannot learn. However, all activities and processes that Juana has to do are organised and regulated from outside, from

the conditions set by Nieves who determines what the objective of learning is and when this objective is achieved (see chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”). Notwithstanding, it is highly probable that the final objective of Nieves is that Juana becomes not just active, but also regulates and manages her own activity and her own learning. Just like in the direct theory, she was hoping that the expressivity would emanate from technique (Bonastre, 2015). Here it is hoped that self-control, self-management etc. will emerge by themselves, as the fruit of the work of regulation carried out by the teacher. (*But how can you have worked on the whole piece; did you not realize that in class we divided it up?*)

But teachers’ conceptions on both learning and teaching as well as on music appear to influence students’ conceptions (see chapter “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”, also López-Íñiguez & Pozo, 2014a, 2014b, 2016; Martín et al., 2006). We saw previously that the intuitive theories are learned implicitly within situations and contexts of learning and teaching which are both formal (the way in which you have been taught since you were young) and informal (the media opinions about what should be learned and what teaching should consist of; the way in which your parents and the adults around you taught you...). It is therefore not surprising that most students, among them Juana, come close to interpretative conceptions. In this way, a good many piano students state, as shown by the study by Bautista et al. (2009), that they consider the best teachers to be those who organise weekly activities giving them “homework” rather than those who ask them to manage themselves. They also consider it is positive that they verbally make corrections or demonstrate any finger work they require, instead of letting the students think about what errors they have made and that the best way of learning is practicing, with greater emphasis on the most difficult parts of the piece. Thus, it seems that the students also consider they should be active in their learning, but it is the teachers who are in charge of externally regulating their activity.

To sum up, the teachers closest to the interpretative theory take into consideration the processes their student should act out so as to learn, upholding the conditions so that these processes are activated. For their part, the students also appear to demonstrate the teachers’ dependence. In both cases, according to this theory assessment is exclusively considered as a form of measuring whether the proposed goal of learning has been achieved or at most as a way of studying what else is needed so that this learning is produced, and never that it would be an educational activity to help the student in self-management and therefore form part of the learning and teaching cycle (see chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”). When it is positive it indicates that the cycle has terminated, when it is negative it has to begin again.

In short, the different conceptions forming the interpretative theory begin with a realistic idea according to which the goal of learning is to obtain a copy of reality which is similar to the direct theories described above. However, they share with constructive theories, and we will describe in the following section the belief in the activity of the learner to achieve the goals and in the necessary mediation of cognitive processes within that learning activity.

### 3.3 *The Constructive Theory*

At the beginning of the previous section we said that participation in learning and teaching situations meant that the direct theories held by very young children were modified and progressively gave way to more interpretative theories (Scheuer & Pozo, 2006). This more or less natural progression, the fruit of experience, does not seem to occur in the same way in the passage of interpretative theory to constructive theory (see Hofer & Pintrich, 1997; Scheuer & Pozo, 2006; Strauss & Shilony, 1994).

This lack of evolution suggests that the constructive theory has traits that distinguish it from the two previously described theories. It is probable that the constructive theory is not so much an intuitive theory as the fruit of the explicit learning and teaching or a deliberate and conscious reflection on the processes of learning and teaching, as we shall discuss later on. As we saw before, the constructive theory shares with the interpretative theory the assumption regarding the active nature of the learner, but differs from it as much as from the direct theory in its conception of the agency of learning and in its implicit epistemological suppositions (see Table 1), since the constructive conception accepts the existence of multiple sources of knowledge. It therefore breaks with the connection between acquired knowledge and reality (see chapter “[The Psychology of Learning Music](#)”). All knowledge is a contextualized construction and therefore relative. However, this statement does not mean that the context is the only or main determining feature of the representation, nor that just by adapting to the context the different representations have the same value. There are more general and comprehensive representations which may include other representations at a different level and therefore give rise to more appropriate responses in different contexts, in addition to further comprehension and learning.

The teaching methods of a constructive teacher would be characterised by the most important goal being to transfer the agency to the students. Unlike the picture we had for Nieves, the teaching of a constructive teacher would usually focus more on establishing the conditions so that the students, (Juana) learned not so much the interpretation of certain musical pieces as how to define their own objectives, to regulate and control their own action, although this learning would be completed through learning and teaching of the reading of musical score, the technical mastery of the instrument or the interpretation of certain compositions (see Bautista & Pérez Echeverría, 2008; Pozo et al., 2008; Torrado & Pozo, 2008). As they showed Nieves on the courses she took, to teach one has to start with the knowledge of the students. It is not a question of changing this, as the more direct teachers could think, but more that only from that knowledge could the student find sense in their own study and learn to self-regulate. In other words, when a student begins their musical interpretation studies, s/he already knows a lot about music. S/he knows what happy and sad sounds are (faster, slower, with more or less attack, etc.), what type of interpretation moves him or her more and which less. The constructive teacher must base him or herself on all this knowledge to help give a meaning to the procedures of different types which are taught to the student. Between chapters “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)” and “[The Choir Conductor:](#)

[Interpreter or Maestro?](#)”, we can see examples of how constructive teaching could be achieved and of the difference between this type of teaching and a more interpretative teaching.

This does not mean to say that they do not use imitation/modelling like the typical direct teacher, or that they do not work on technical aspects, or encourage their students to practice procedures. They do, but all of these techniques are aimed at making the student aware of the procedures they use and why they use them. The following example where a student sends a WhatsApp to their teacher commenting on a video taken whilst they practised the violin may serve to illustrate this idea (Pozo et al., 2019): “[I have to] *increase the sound and expressivity and hold concentration in all of the notes that come out of my head and I think I have not felt much, it has not moved me very much because sometimes I am concentrating too much on other things. And I cannot think of so many things at once, but I think that I did it quite well because the bow was straight and close to the bridge and I think that is really good. What do you think*” (other examples of this type may be found in chapter [“Learning Music Through ICT”](#)). From this text we may infer that the teacher has given the student instructions on how s/he has to work (position of the bow, movement, notes) and has also, in this case through TIC, given the student a tool to reflect on what they are doing. The video lets them watch and analyse their practice. Apart from having to communicate their impression, s/he has to think about what s/he has done and why. Although this student still depends highly on the instructions of the teacher and his or her opinions, it also seems that they are building their own individual agency.

Also, this transfer of control or construction of agency in learning bestows greater responsibility onto the students for their own learning. From this perspective, motivation mainly involves the sensation of learning and for this learning to occur the student knows they have to act, but also, they have to be in control and take decisions. Some studies on the learning strategies of these students (Marín et al., 2013), show that the more instruction a student has and therefore the greater knowledge of music the more strategic they also are and capable of distinguishing what they have to do for different learning objects and goals. However, this statement does not imply that one has to wait for the students to have relatively advanced knowledge of music or any other discipline for teaching to be aimed at the development of strategic students. In chapters [“The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning”](#) and [“Learning Music by Composing: Redescribing Expressive Goals on Writing Them”](#) there are clear example of how very young students can be taught not just to read musical scores but to use them to compose music (chapter [“Learning Music by Composing: Redescribing Expressive Goals on Writing Them”](#)) or how to acquire instrumental dexterity in string instruments, giving meaning to their learning and therefore teaching them to control what they themselves do (chapters [“The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning”](#)). In these examples, or in those appearing in different chapters, assessment also plays a different role (see chapter [“Re-thinking How to Assess Students of Musical Instruments”](#)). Assessment is not made to find out whether they have learned what the object of learning was, but to analyse what they learned, how they could continue learning and improving that learning. Learning

goals do not entail precisely what is learned but how it is learned and how one could continue working. Assessment is not the be all and end all, it is a follow-on, or a gap. For this assessment it is very important what the actual student feels they have learned and how much they have learned. Similarly, it is also important how others approach them. Although music classes continue being individual, cooperative work with peers, sharing feelings and viewpoints is also a major source of learning (see chapter “[From Individual Learning to Cooperative Learning](#)”).

In the next chapters we will look at numerous examples of constructive practices in learning and teaching of musical interpretation. All these examples seem to assume that it is the actual mental activity of the student that should lead them, under the supervision or guidance of the teacher, accompanied by peers with similar learning to their own, to construct an artistic representation of the musical score and similarly construct the actions that will allow them to interpret their own representation of it.

### ***3.4 Are Teachers and Students Direct, Interpretative or Constructive? What Does This Depend On?***

As we have just seen, implicit theories differ with regard to the different suppositions underlying them. These differences give rise to conditions, processes and results of teaching or learning that also vary in each of the theories, several of which are contained in Table 2. We can see in this table that learning conditions become progressively more complicated from direct theories to constructive theories. Whilst in the first it is sufficient for the teachers to have a profound knowledge of the discipline, to be able to clearly and methodically put across this knowledge and create learning conditions that ensure this transmission and class control, an interpretative teacher should also be aware of the learning processes of his or her students and create the right conditions to ensure these processes are properly put into effect. The constructive teacher would also have to have the disciplinary and process knowledge of the other two groups, and to know what intuitive knowledge their students had and how it was structured. It would not be a question of increasing the necessary conditions but that the relationship between these conditions would be different. Whilst in the case of the direct teacher the most important condition is knowledge of the discipline, in the case of the constructive teacher this knowledge would serve to design the path from the student’s intuitive knowledge to the learning objectives.

In the students’ case, learning conditions get increasingly complicated in a similar fashion, from direct to constructive theories. Whilst in the first case it is enough to be a polite, attentive, and conscientious student, in the latter case reflexion is required which changes the dynamics of the class. Having sufficient knowledge for this level of learning is not enough. The student is also required to be aware of their own activity and to participate in their own teaching. These different conditions mean that different processes are put into place in both learning and teaching and they become progressively more complex from the direct to the constructive theory of

**Table 2** Conditions (C), processes (P) and results (R) of the teachers (T) and students (S) according to the implicit theories of learning

		Theories		
		Direct	Interpretative	Constructive
<b>C</b>	<b>T</b>	Knowledge of the subject matter Organisation of content depending on the discipline Clear and ordered presentation of the information so that it can be reproduced Capacity for control of behaviour, activities, and attitudes of the students	Knowledge of the subject matter Organisation of content depending on the discipline bearing in mind student processes Clear and ordered presentation of the information adapted to the student level Capacity for control of behaviour, activities and attitudes of the students bearing in mind their characteristics and processes	Knowledge of the subject matter. Knowledge of the students Organisation of content depending on the intuitive and prior knowledge of the student and of learning objectives Clear and ordered presentation of the information aimed at the student reflecting upon it Capacity for proposing questions and activities which lead students to be aware of their knowledge and progressively take control of the situation
	<b>S</b>	Sufficient knowledge for the level Attitudes for receiving information without criticism for following the teacher's advice	Sufficient knowledge for the level Attitudes related to maintaining physical and cognitive activity necessary for learning	Being aware of knowledge Participative, critical and reflexive attitudes
<b>P</b>	<b>T</b>	Processes of control of student activity	Management of attention and motivation	Comprehension processes of organisation of student knowledge and attitudes
	<b>S</b>	Passive and repetitive, externally controlled Superficial comprehension	Cognitively active, externally controlled Superficial comprehension	Metacognitive, active Internal control processes and comprehension of in-depth structure
<b>R</b>	<b>T</b>	Assessment of knowledge due to similarity with objective	Assessment of knowledge due to similarity with objective, bearing in mind the level	Assessment of knowledge due to progress from prior knowledge to the common objective
	<b>S</b>	Reproduction of the knowledge on the subject	Partial reproduction of the knowledge on the subject	Construction of own point of view

learning which, in turn, gives rise to different types of learning results (see chapter “[The Psychology of Learning Music](#)”).

The implicit theories we have just described do not exactly correspond with the types of teachers or practices. On rare occasions we find a teacher or a student who is totally direct or whose practices may always be identified as absolutely constructive. As we previously indicated, the data provided by different studies (Bautista et al.,

2009, 2010; Corbalán et al., 2019; López-Íñiguez et al., 2014; Marín et al., 2013; Martín et al., 2014; Pozo, 2017b) show that both the teachers and the students usually present profiles where several characteristics of these theories are combined, but also that these combinations are not random. These research studies apparently show that there are multiple alternative representations coming into play, depending on a set of variables. As we said, these alternative representations are not random. Only on extremely rare occasions do we find in the same person or for the same activity or scenario, representations from direct theories together with representations from constructive theories, surely because they are based on premises that are contradictory to one another. It seems that these representations are organized around profiles, which organize or integrate different implicit theories in such a way that we may find inter-direct, inter-constructive or constructive profiles (see for example Martín et al., 2014; Pozo et al., 2016). In other words, we can find teachers with complex practices on teaching, where they try to help to manage the students in their processes but when they assess the results they assume that this assessment should be based on proximity or distance to the object and that the only aim of assessment is to find out how much a student has learned. We could therefore say that this teacher's approach is closer to constructive theories when they prepare the teaching conditions, but closer to interpretative theories regarding outcomes (see Table 2). The profile of this teacher would definitely be inter-constructive. Curiously only constructive theories appear alone in profiles, which suggests, as we shall see later on, that these theories have characteristics which differentiate them from the other two.

When a teacher or student maintains they have produced learning where the student was able to reproduce the model (they are capable of playing a certain piece of music which the teacher considers correct) (direct theory) it is highly improbable that they will start recording activities which serve to contrast the way in which different students play the same piece and to analyse what characteristics make these interpretations different (constructive conditions, see chapter "[Learning Music Through ICT](#)"), but they may record and reproduce these different auditions so that the students are motivated or so that they differentiate better the reproductive objectives proposed (interpretative conditions). We would therefore be presented with an inter-direct profile that is possible due to the interpretative theory sharing learning objectives with a direct one, but recognition of the essential role of the student activity is common to the interpretative theory and the constructive theory. A strategic student who knows how to organise their study and work time to achieve an individual and expressive interpretation of a certain piece, who thinks about and analyses how they play, etc. also uses reproductive procedures and repeats the same passage many times. These activities, related without a doubt to the necessary conditions of learning of the piece are also shared with more passive students, who try above all to obtain reproductive objectives. However, it is not probable that students with a more reproductive profile will carry out analysis of the work or programme their study according to different objectives.

We see therefore that there are a series of activities and conditions common to the three theories and others where the situations themselves rarely coincide with the direct theories and the constructive theories. However, it appears that this set of

alternative representations is set up for different scenarios or situations. As we saw in the previous examples, it is not the same to have an assessment scenario in which it is possible that beliefs relating to epistemological principles predominate (see Table 1), as a teaching scenario related to the learning of a highly complex piece where the student's attention has to be managed and sustained and where it is more probable that more conceptual premises will be activated (see Table 1). These combinations of actions and conditions dictate that it is not enough to observe a situation or moment of a teacher or a student for us to affirm that this teacher or this student is acting in accordance with a certain theory, or a certain profile, and research on the theories is therefore rendered arduous. The next two chapters will be dedicated to analysing how we can research conceptions and how we can analyse practices.

#### **4 The Change in Mentality: How Can Theories and Practices Be Modified?**

At the beginning of this chapter, we suggested that it was difficult to change learning and teaching practices in instrumental education, despite a growing need for this change. Among other factors relating to the actual culture of the centres and with what Ertmer (1999) called extrinsic barriers, we saw that the intuitive conceptions of teachers and students about what learning is and how the conditions for facilitating this learning should be worked out could act as a hindrance to obtaining this change. Despite all her courses and efforts Nieves only changed some aspects of her teaching practice, but not others, and particularly those relating to assessment. Juana did not develop conceptions that allowed her to become the main player and agent of her own learning.

As we have seen there appears to be an evolution of implicit conceptions of teachers and students, related to the exposure to complex situations of learning which means that the most direct conceptions are integrated and transformed into profiles in which the processes and agency of the person who is learning are taken more closely into account, although this change is insufficient for a more systemic theory of the relations among the conditions, processes and results of the constructive theories. It gives the impression that the advance towards a constructive theory requires a different type of more radical and in-depth changes (Scheuer & Pozo, 2006), than those made from the passing of more direct profiles towards more interpretative ones. This is surely the reason why in the different research studies mentioned in the previous section profiles with constructive characteristics are found, but no teachers or students with an exclusively direct or exclusively interpretative profile are found. For a change to occur towards constructive assertions it seems necessary to confront complex learning and teaching practices, and also explicit process of instruction (Martín & Cervi, 2006; Pérez Echeverría et al., 2001; Scheuer & Pozo, 2006). However, as we have stated several times, mere explicit presentation of constructive theories to modify the conception on learning is insufficient (see Pozo, 2014), and



neither is exposure to these complex situations of learning and teaching enough. We already saw at the beginning of this chapter that Nieves had participated in different teacher training courses aimed at constructive theories and had also read different things about this type of theories, but had not managed to resolve the problems she faced and had not produced this type of change despite facing complex learning and teaching situations on a daily basis.

But, although explicit exposure is not enough to modify concepts and practices, the processes of change are increasingly supported by learning and teaching spaces designed for this end (Pozo, 2014). Studies on learning and teaching conceptions show that the conceptions of the teachers with the longest experience (and therefore the old ones) are usually less complex and closer to the traditional conceptions, to the inter-direct profiles than those of the teachers with less experience (and therefore younger) who were usually closer to the inter-constructive profiles. This result was found in both primary and secondary teachers (see Martín et al., 2006, 2014; Pérez Echeverría, Pozo, et al., 2006), and in music teachers (Bautista & Pérez Echeverría, 2008; Bautista et al., 2010, 2011; Corbalán et al., 2019, López Íñiguez et al., 2014; Marín et al., 2012, 2013, 2014). Although we imagine that this idea is close to the perception that the students have of their own teachers (if not ask Juana what happens every time she was with a teacher older than Nieves, with that rather obsolescent professor regarded as an ogre) it does not correspond with what happens in other areas of knowledge where experience is usually linked to a greater complexity of theories and conceptions (see e.g., the book edited by Ericsson et al., 2006, on the effects of expertise), nor the concept of “maestro” usually below the surface of the music teacher/student relationship. It is difficult to know why this happens, since normally greater experience is usually also associated with being older, but it is definitely also associated with a more traditional early teacher formation. Notwithstanding, the reverse of these data show us that less experience (and therefore less years and less traditional early formation) also give rise to teachers with more complex conceptions. It is therefore more likely that one can find teachers who are close to constructivism among younger teachers. It is probable that the education of these younger teachers has been closer to the constructive approaches or the constructive practices, but we cannot confirm this. It is also possible that generational changes lead to the presence of needs and experiences in learning and teaching too. Therefore, it appears that type of instruction is a major variable in the change towards more constructive conceptions and practices, although data also show that this is no longer sufficient.

In the case of the students, the relationship between experience, understood as the long time spent studying the instrument and therefore greater musical knowledge held, seems to have an inverse relationship to that of the teachers so that the greater the experience would correspond to more complex theories on learning and teaching (Bautista et al., 2009; Marín et al., 2013, 2014). The more formation the students have the more complex their theories are, and this complexity is shown, for example, in the time management of studying the composition and in a differentiation in activities played out in the different rehearsals (Marín et al., 2014). In other words, management of learning itself is related to musical knowledge but, as before, this knowledge is insufficient to develop the more constructive assumptions and neither can control

management be left until a certain level of musical knowledge has been achieved. Therefore, we can hope that as Juana advances in her piano studies, she will also develop more sophisticated conceptions about music and will plan and increasingly be more in command of her own learning.

To sum up, the level of musical knowledge, the type of training and the experience as a teacher or as a student are factors which affect the change in mentality and modify practices as teachers or learners. We should also consider that students' conceptions seem to be related to those of their teachers. Usually, the same student has many teachers and this relationship is difficult to assess as a result. However, in the case of instrumental music where the relationship between teacher and student is normally dyadic, and the teachers usually continuously teach the same students for a long time, it is easier to study this relationship. Chapter "[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)" contains clear examples of how the teachers' conceptions affect the students' conceptions, at least in the case of the youngest students (López-Íñiguez & Pozo, 2016). This suggests that the students who are the agents of several practices in their instrumental education, or in other learning areas, aimed at developing competences, with activities which promote the activation and clarification of previous knowledge, reflection and metacognitive aspects, and the progressive cession of control to the students, could help teaching conceptions and student learning to become closer to the constructive profiles. However, despite these factors we have just highlighted in the path towards more constructive approaches, data appear to indicate that guided instruction is required here (see Pozo, 2014). The change from more interpretative to more constructive approaches requires a conceptual process of change since the initial epistemological approaches are changed (see Table 1), which in turn implies that learning should involve processes of clarification, restructuring and hierarchical integration. Very briefly (the interested reader may turn to Pozo, 2014 or 2016 for a broader explanation), the progressive clarification process consists in becoming aware of actual implicit knowledge, i.e., the first step to bringing about change must be an awareness of what the starting point is. If we take Nieves as our example this process would involve becoming aware of the principles underlying the organization of her practices, not what she normally thinks and explains. For this clarification help is usually required from others. Once the clarification has taken place, the next step involves the contrast between these clarified pieces of knowledge and the new knowledge and proposals. Therefore, analysis of the similarities and mainly the differences between the different approaches is required, together with the consequences of these differences both theoretically and practically. In the theoretical case, this comparison would lead to more complex models, with consideration of the different alternatives. From a more practical viewpoint Nieves would have to analyse the differences between holding an interpretative theory or a constructive theory in different scenarios (treatment of previous knowledge, teaching-learning activities, assessment, etc.) and in different contexts and with different people. These analyses would then also progressively lead to a restructuring of the personal schemas in which the different ideas and approaches would be reorganized and combined with one another, which would lead to hierarchical integration of the different forms of knowledge. Nieves would not necessarily

abandon her previous ideas and activities with this integration. It is possible that on occasions she would correct Juana whenever an error was made, but she would definitely only do this in the face of certain technical errors. However, there would be other occasions where she would make Juana reflect, or would not point out the error. Hierarchically integrating implies changing the way in which different ideas and theories are related to one another which means then reconstructing them and re-writing prior learning and knowledge.

These processes of conceptual change which we have just cursorily described are actually extremely cognitively costly. However, this change is linked to change in practices, as described above (see Mateos & Pérez Echeverría, 2006). For students to experience this type of practice it is necessary for the teachers to establish the conditions in which they can arise. The chapters of Part II of this book illustrate conditions of this type in several different learning scenarios. Again, the change of theories and practices seem to be linked to the subject of teacher training and classroom experiences. Chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)” of the book will centre on these aspects, and here we will just refer to a few of them. Studies on conceptual change of learning and teaching conceptions (Poza, 2014) show that this process requires the presence of new designs of learning and teaching spaces aimed both at the object of learning and the actual manner of learning (Martín & Cervi, 2006; Mateos & Pérez Echeverría, 2006) and are finally centred on the process through which one learns and the actual identity as learner (Poza, 2014). Several proposals exist with this relationship in common, between the object of learning (learning to read a score, mastering the technical aspects of an instrument, interpreting a certain composition, etc.) and the presence of teaching conditions which help the student who wishes to become a teacher specifically and progressively manage his or her own learning processes, as shown in chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”. There are two types of underlying arguments here. On the one hand, the design of learning and teaching spaces based on this type of principle provides the future music teacher with both knowledge of constructive theories and also knowledge and experience of constructive practices. Also, these practices help them to develop metacognition of their own learning processes which it is hoped will help them perceive them in other people: their future students. On the other hand, this knowledge of their own processes helps them develop, as shown by Martín and Cervi (2006) (see also Marchesi & Martín, 2014), into a reflexive professional (Argyris & Schön, 1996; Schön, 1983, 1987, 1991). This is necessary for the teachers to construct the knowledge that allows them to adapt themselves to the characteristics of their students and to the actual contextual changes of the learning and teaching scenarios. In short, this is about creating conditions that create knowledge through action and reflection in and on action (Argyris & Schön, 1996; Martín & Cervi, 2006).

Changes in the conceptions of the musical interpretation students and in the practices they use to learn musical interpretation is also closely related to the teaching processes and conditions in which they see themselves involved. In this sense, as we saw before, the students of constructive teachers also maintain theories closer to

constructivism (López-Íñiguez & Pozo, 2014a, 2014b). This *experiential* learning breaks away from the idea of learning having to stem from a rational analysis of the characteristics of the learning object (what does a good piano professional do?) and asks what knowledge is needed for a specific student or some specific types of students to learn to play the piano? How can we through reflection on individual actions help them to take the decisions that will lead them to developing their knowledge on music? On the instrument but also on their body and themselves as a learner (Torrado & Pozo, 2008). Constructive teachers help their students to reflect on how they learn and therefore promote a metacognitive process that constitutes the agency in learning. Undoubtedly if Nieves and Juana adhere to this they will mutually contribute to the development of their own constructive theories.

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# How to Know and Analyse Conceptions on Learning and Teaching



María Puy Pérez Echeverría  and Juan Ignacio Pozo 

## 1 Introduction

In the previous chapter we saw that learning and teaching conceptions clearly have a strong impact on any decisions made regarding teaching contents and outcomes. They also impact the conditions of learning they promote, and the methods of assessment used to decide whether the student has achieved the proposed learning objectives. The following chapter will address the relationships between learning and teaching conceptions and practices and above all will show how we can observe and analyse our own practices and those of others. This analysis may be directed for research purposes or at optimisation of our own learning and teaching practices as teachers or learners. Meanwhile, in this chapter we will deal with the ways in which we can analyse teachers and students' conceptions on learning and teaching. As a result, although we think this chapter may be particularly useful for people who wish to research into these aspects, it may also help teachers who wish to become familiar with their students' conceptions, people who are dedicated to teacher training and working with future teachers, who will need to analyse and change their own conceptions, and even those who wish to probe into their own conceptions, knowledge, and approaches. There are no set rules or recipes for good teaching and good learning but, as we mentioned in chapters “[The Psychology of Learning Music](#)” and “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, for learning to be effective and durable, teaching has to always start with the learner's knowledge and be aimed at helping them to transform it. Within that learner knowledge lie their learning and teaching conceptions.

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In chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” we saw that Nieves, a piano teacher who was interested and concerned about her work and about the progress of her then student, Juana, had attended numerous professional development courses and had read and reflected on different learning and teaching theories. When questioned about these theories Nieves usually defended constructive theories in a well-argued manner, compared with other learning and teaching theories. For example, she was also inclined to insist that the starting point had to be what her student Juana knew in order to help her transform her own knowledge. However, when we analyse the practice of Nieves, we find that she does not always work from Juana’s knowledge to transform it, sometimes she simply tries to eradicate it (*Haven’t I told you hundreds of times that you have to change your posture?*). It is not that Nieves is posing or getting carried away by such a fashionable constructive mode or, more technically speaking, that she is a victim of social desirability. On the contrary, Nieves is deeply convinced about her statements, but as we saw in the previous chapter, conceptions are markedly implicit and are difficult to change. Therefore, even if Nieves defines herself as a constructive teacher her implicit conceptual profile may not exactly respond to this vision, as suggested in chapter “[Teaching Music: Old Traditions and New Approaches](#)” and developed in detail in chapters “[The Psychology of Learning Music](#)” and “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”. Given her personal history, first as a student and later as a teacher, it is possible that she still unknowingly retains many beliefs and attitudes which we referred to in chapter “[Teaching Music: Old Traditions and New Approaches](#)” as part of the “conservatory model”.

We also saw (see chapters “[The Psychology of Learning Music](#)” and “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”), that there is always a certain gap between what one says and what one does. As will be defined in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, the different conceptual profiles extracted from the studies on implicit conceptions (see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”) lead to the identification of different practical modes or styles of learning and teaching (Bautista, 2009; Bautista et al., 2010; Casas-Mas et al., 2015a; Corbalán et al., 2019; López-Íñiguez & Pozo, 2014b, 2016; Marín et al., 2014). This is such that we can interpret these conceptions as the zone of proximal development of practice itself (see chapters “[The Psychology of Learning Music](#)” and “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”). Furthermore, as shall be explained in the following chapter, practices are always more complex than theories or conceptions and are influenced by contextual and other grounds which do not affect the conceptions. In other words, the conceptions usually always come before action (Torrado & Pozo, 2006). Thus, awareness of our own conceptions, or those of the students who are preparing to become teachers, or those of the musical interpretation students, helps to design spaces of re-description and reflection that may modify those same profiles or conceptions.

Now the interested reader will be thinking: if what I say, present or argue does not entirely correspond with my conceptions or my conceptual profiles and if what I

do does not provide precise information on these conceptions or profiles either, how can we know what these conceptions are, either for using them when we are teaching how to play the piano or any other instrument or to change them?

## 2 Researching Implicit Conceptions

It is unquestionable that the actual characteristics of these conceptions make researching into them more difficult and as we shall see throughout this chapter, all the methods we use also suffer from some type of drawback. Apart from the presence of profiles we have just shown, we may also highlight, as we saw in the previous chapter, that due to their implicit nature, the conceptions are not directly verbalisable. Verbal responses cannot therefore be directly interpreted, and observation of practice is not always a good indicator because there are circumstances (demands from the medium in which this behaviour occurs, lack of technical resources to develop certain methods, etc.) that may impact this practice without affecting the conceptions. However, this is not to suggest that the conceptions are mysterious, and we have to resort to strange or esoteric methods to discover them. Rather it is a question of knowing what the restrictions of these methods are and bearing them in mind to ensure that our conclusions correctly represent the theories of the people we have studied or with whom we wish to carry through an educational intervention.

Table 1 contains the most frequently used methods for analysing the conceptions with the restrictions to which we have just referred, and also their indications and contraindications in a similar vein to a medical product prospectus. Although further detail shall be given in the following chapter, this table contains the observation practice methods to which we have just referred. Practice observation is a very onerous method to analyse and therefore only a very limited number of teachers and students are observed during a limited number of sessions. The outcomes of these methods are therefore very useful for analysing specific practices but very difficult to generalize, unless the observed samples have been selected with the use of a meticulous prior study (Casas-Mas et al., 2015a; Corbalán et al., 2019; López-Íñiguez & Pozo, 2016; Marín, 2013). On many occasions practice observations are accompanied by interviews before and after that usually serve to clarify previous aspects where observation was insufficient to infer intentions or the aim of an action or a set of actions.

Table 1 illustrates the different probing methods or techniques displayed in the second column. Several of these methods are often used jointly or successively to respond to the different research questions. Throughout the chapter we will be talking about these interactions between methods and giving specific examples of them and of the research studies where they were used. Apart from practice analysis to which we have already alluded, they represent the majority of methods used to analyse the conception of teachers, students and in some cases families and professionals attached to education, in both the case of music and other different contents.

**Table 1** Methods for conception analysis

	Participants	Sample size	Design diff	Correction diff	Type of analysis	Advantages	Disadvantages	Usage
Questionnaires	Teachers and teenage and adult students	Large	High	Small	Quantitative, parametric and non-parametric	Ease of administration May be administered to a lot of people	Questions too general and out of context; explicit social desirability	Know differences between groups. Know how the items are grouped together
	Teachers and teenage students and children if they adapt	Medium and large	High	Small	Quantitative, parametric and non-parametric	Contextualised and specific questions. More implicit than Likert ones	Social desirability, Participants' high cognitive load	Influence of independent variables: differences between groups, establish profiles. Know how the items are grouped together
Interviews	Teachers and students of any age	Small	Medium	High	Categorical, qualitative, quantitative	Easy to design and carry out	Questions too general and out of context Explicit Social desirability	Hypothesis can be extracted to design other activities

(continued)

**Table 1** (continued)

		Participants	Sample size	Design diff	Correction diff	Type of analysis	Advantages	Disadvantages	Usage
	On problems	Teachers and students of any age	Small	Medium	Medium	Categorical, qualitative, quantitative	Contextualised and specific more implicit representations	Cost of correction	Differentiation may be made between the situational and the more general "Fine tune" outcomes to problems obtained
	On observations	Teachers and students of any age	Small	Medium	Medium	Categorical, qualitative, quantitative	Contextualised and specific more implicit representations	Cost of correction	Differentiation may be made between the situational and the more general "Fine tune" outcomes to problems obtained
Problem Solving		Teachers and students any age	Small	High	Medium	It depends on the activity	They depend on the specific activity	They depend on the specific activity	Access may be made to the implicit in highly specific aspects

(continued)

**Table 1** (continued)

	Participants	Sample size	Design diff	Correction diff	Type of analysis	Advantages	Disadvantages	Usage
Observation of the practice	Teachers and students of any age	Small	Medium	Medium	Categorical, qualitative, quantitative	What is said and what is done is observed	Subjectivity. Need for a good observation tool	Contrast may be shown between what is said and what is done

We have classified these techniques (first column) according to the activity the research groups or participants should do. For many years, conceptions on learning and teaching were analysed through oral or written interviews where the teachers or students were asked about their ideas on different issues related to learning and teaching, or about how they would act in certain contexts and situations, or through questionnaires where they were asked to give a statement referring to motivation, classroom organization or learning strategies, etc. (see for example the methodology used in different studies on conceptions that are contained in Hofer & Printich, 1997, 2002; Pérez Echeverría et al., 2006a). Although the questionnaires and interviews are both based on explicit responses, in the former the participants have to *select* an answer from a set of opinions offered by the actual questionnaire, similar to the traditional multiple choice tests or evaluations, or to show their level of agreement with a certain type of information. In contrast the interviews demand that the respondent *generate or construct* their own responses or reasoning and arguments regarding their teaching or learning endeavours.

This difference is contained in the columns of Table 1, where a distinction is made between *Selection* and *Construction of responses*. Although these measures apparently essentially collect explicit participant knowledge it is possible from them to infer the implicit theories or suppositions underlying this explicit knowledge, in accordance with different levels of representational analysis. This may be through the design of the items (creation of response alternatives where social desirability is not obvious, showing the costs of some of the responses, etc.; see the risks in the last column) or through appropriate posterior analysis (use of statistical techniques to show how the responses overlap and show more profiles than percentages of isolated responses; see types of analysis in the corresponding column).

In addition to these two types of research, which are probably the most broadly used, we have added a third *Problem solving* category that aims to collect a set of more indirect techniques which generically propose a problem or a situation and the students or teachers are asked to try to resolve them. Thus, for example, classification activities have been used (Pérez Echeverría et al., 2003; Pérez Echeverría et al., 2006b) or activities where the teachers were asked to think of the most important subjects they wished their students to learn in their classes and to rank these subjects accordingly (Bautista et al., 2009, 2011; Corbalán, 2017; Marín et al., 2012, 2013, 2014).

Lastly, another different methodology used in other studies which seems to be apparently closer to the study of the most implicit representational levels is, as we saw before, that used in the most qualitative or ethnographic approaches. Here, the presence of the implicit representations is inferred from observation in natural contexts of interaction, learning and teaching and this will be addressed in detail in the next chapter. In this type of observation, analysis of real material used by the teachers to assess, may serve for analysis of the conceptions within specific contexts. However, we must not forget that during practice other factors may have an impact: those relating to both context and to techniques and skills developed by the teachers and students.



In the other columns we have sought to include categories which help the reader to make decisions when they want or need to use any of these methods. Thus, in column four an estimation is made of technique or activity design complexity. Usually, although not always, there is an inverse correlation between the time dedicated to the design of a technique and the complexity of analysis (column 7). Dilemmas, for example, are very difficult to design since apart from attempting to overcome social desirability and other difficulties shown in the last column (“risks”) other factors have to be monitored and it is necessary to carry out pre-experiments to ensure that the design responds to the objectives. However, apart from allowing the study to be conducted with larger samples (column 4), and since no posterior categorisation needs to be made, they are usually easier to analyse and very diverse parametric and non-parametric statistical analysis techniques can be used to ensure reliability of outcomes. In statistics, reliability is understood to be the extent to which similar results will be obtained in a test if it is repeated. In other words, reliability offers us a measure of security with which we can generalise an outcome to other cases. In contrast, there are activities which are much easier to design, such as interviews or ethnographic data collection methods, but their subsequent analysis is much harder because categories for analysis have to be designed that demand inter-judge agreement (measurement that tells us if different people have separately categorized a certain response in the same way) and they usually require many hours of data transcription, and can therefore only be used with small samples (Column 4). This type of measurement is usually analysed non-parametrically, or qualitatively, which means there is less reliability than the previous ones although it is possible that validity increases. In statistics validity is understood as the extent to which a certain measurement accurately analyses the content to be analysed. The advantages and limitations of each of the methods are also included in the table.

Although the table is very extensive, some of the method characteristics are not reflected. For example, although there is a column dedicated to sample size, there is no description of the differences between the populations to which the analysis or research is targeted. It is not the same to have to fill in a questionnaire as to respond to verbal questions. Some people may have difficulty in understanding the written language and, in these cases, interviews are more useful (see chapter [“Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures”](#) for the work carried out with people from the flamenco music culture). The same occurs with children who may have difficulty understanding the questions on the printed questionnaires where they write their answers. Due to this, it is not surprising that interviews are also used with children, often together with the solution to an activity (see chapters [“Early Initiation to Music Learning: Little Children Are Musicians Too, The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning”](#) and [“Learning Music by Composing: Redescribing Expressive Goals on Writing Them”](#) for example). However, as we shall see later on, on some occasions, to avoid these difficulties the information of the questionnaires has been converted into scenes which are interpreted and recorded by actors (see chapter [“The Impact of Teaching Conceptions and Practices in Early](#)

**Musical Instrument Learning**”, or also López-Íñiguez & Pozo, 2014b). The interviews with children are usually about specific problems the child had tried to resolve previously and are useful in focusing on the responses (Scheuer et al., 2006a, 2006b). Although obviously interviews have also been used with teenage students and young people or with teachers and adult musicians, the use of pen and paper questionnaires is also very common because more responses from a larger number of participants can be reached. As we shall see in the next section, the type of questions asked are usually those that range from in-depth general knowledge to those that attempt to assess the conceptions by putting the person into a specific situation.

At this stage of the chapter we imagine that the imaginary reader with whom we began this section will be even more confused than when they began to read it, although we also hope that things will become clearer in the following sections. From our point of view, both the most declarative methodologies and those referencing to analysis of practice are insufficient in themselves for the study of teacher and student conceptions on learning and teaching, but both are essential. As in other complex research areas, we cannot look for the Holy Grail of methodology, but instead for a mix of methods, the results of which complement one another and at the same time limit one another. In general, research studies on conceptions in music show that there is usually a small gap between the most declared conceptions and practice (Corbalán, 2017; Corbalán et al., submitted; López-Íñiguez & Pozo, 2016; Torrado & Pozo, 2006), but that these declared conceptions are normally a good predictor of what would happen in practice. In the next few pages, we will analyse some of these methods in slightly more detail.

### **3 Selecting Between Multiple Options: Likert Questionnaires and Dilemmas**

As we said before, many research studies on learning and teaching conceptions in music and other contents have based their conclusions on the analysis of questionnaires. Here we will consider two different types of questionnaire. The *Likert* questionnaires, which are so named because of the scale used in the responses, and the dilemma questionnaires which we will refer to later on, and which have been used in many studies in which some of the proposals presented in Part Two of this book are based.

The *Likert* questionnaires are those where a statement is made and the person is asked to respond by showing their level of agreement or disagreement with that statement, on a numerical scale. Many of the people reading this book will surely have completed similar activities, since a large number of psychological tests on personality, attitudes, motivation, study habits, etc. use this technique. These questionnaires have also been widely used in research (see for example, the different studies that appear in Hofer & Pintrich, 1997, 2002; in the field of music, among many others, are the studies by Hallam, 2006; Nielsen, 2012). An example of usage

of the *Likert* questionnaires in Spain may be found in the study by Bonastre et al. (2016) on conceptions about the learning and teaching of musical expressivity in conservatory teachers and students in Spain and Great Britain. This questionnaire probes into the beliefs on expressivity of teachers and students, and also the forms in which expressivity can be taught and the relationship between both types of conceptions. Participants are asked to demonstrate their level of agreement with different statements on a scale of 1–4 (not at all = 1; a lot = 4) The conceptions on expressivity are analysed using the response to the different items (Bonastre, 2015):

The construction of this type of questionnaire is fairly expensive (see Table 1) since it requires designing a large number of items which are subsequently reduced, and different pre-tests to analyse whether the way in which the items is expressed is correct and to study the reliability level. The number of necessary items is increased geometrically according to the number of factors or variables to be studied. However, due to the fact that many research studies use this type of method, statistically pre-validated questionnaires may be used, with the added advantage of having a previous model with which to contrast the results. The cost of this design is worthwhile since it can be administered to a large number of people at the same time; little effort is required to complete them; the time dedicated to resolve them is usually limited (around one hour) and analysis is relatively easy to perform. Lately this type of activity is usually applied online, so that a far wider population can be reached and the platforms themselves usually carry an initial descriptive analysis of data and of the demographic variables used which simplifies subsequent activities.

There are a large number of statistical techniques of a descriptive nature (which serve to describe the characteristics of a sample, for example, the larger part of the voters of party X are aged between 40 and 50 years; in the last three years the rate of withdrawal in professional conservatories has been X) and of an inferential nature (serving to make inferences beyond the data. For example, the probability of a student of X characteristics withdrawing from the conservatory without having terminated their studies is 0.47) which may be used to analyse these questionnaires. The user-friendliness of these questionnaires means they can be used on very large samples and this in turn means that parametric (factorial, correlation, regression variance, covariance, etc.) analysis can be performed. These analyses facilitate study of the impact of the independent, usually personal variables (sex, age, study years and types, level of experience, etc.) on the results obtained in the dependent variables (responses to the questionnaires), and therefore the results can be fine-tuned. For example, in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” it was stated that the most experienced teachers tended to be less constructive than those with less experience, whilst this impact of experience was reversed in the case of the students. This statement is only possible when inferential type analysis is made. With other types of tests that do not require such large samples, like the nonparametric ones (analysis of multiple correspondence, clusters, etc.) these statements would be less emphatic because the margin of error is greater and reliability is therefore lower. Apart from analysing the differences, as we have just seen in the examples, some parametric and non-parametric analyses are aimed at studying

**Table 2** Some of the items used to measure the conceptions of expressivity in Bonastre (2015, p. 348, with permission from Carolina Bonastre Vallés)

Item 60	Musical expressivity is essentially innate	1 2 3 4
Item 66	The speed of a composition is associated with a specific expressive character	1 2 3 4
Item 79	I control my emotions when I play	1 2 3 4

how the items to be studied are grouped together. For example, if participants demonstrate or do not demonstrate common profiles that can identify them in some way (see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”) or in what settings the theories tend to be grouped. Another example is that there may be teachers with a certain level of experience, who are neither new nor highly experienced, who tend to give constructive responses in scenarios on social classroom organisation or the role of practice in learning but who give more interpretative responses in scenarios on assessment or treatment of errors.

In contrast to the advantages we have just described, this type of activity, as shown in Table 1, has the drawback that the type of questions refer to very general and non-contextualized aspects, when we know that the conceptions on learning and teaching may vary depending on the context (see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”). For example, we can imagine that the same person may demonstrate different degrees of agreement to a general statement like that presented by item 79 in Table 2 (*I control my emotions when I play*) than to more specific statements such as “*I get deeply moved when I play Beethoven’s 9th symphony*”, “*I get very nervous when I have to play in front of a lot of people*” or, paraphrasing Woody Allen in *Manhattan Murder Mystery*, “*Whenever I listen to Wagner it always makes me want to invade Poland*”. However, all these assertions refer to the control or decontrol of emotions. Furthermore, it is often difficult to prevent social desirability, i.e., prevent the person answering what they believe to be politically correct in their group of reference than what they actually usually do or think. We are not saying that people lie in these situations but that the memories that spring to their minds at a certain moment are influenced by their social context and group. Thus, for example, it is probable that a musician from the culture of flamenco will consider it negative not to show emotions when interpreting because in his or her culture repressing emotions when playing is looked down upon, demonstrating practically no *duende*, regardless of what he is really doing, whilst for a musician of classical culture, control of these emotions is more highly regarded because the elegance of the execution takes precedence (see chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”).

Some of these drawbacks may be compensated for by the design. Thus, for example, Bonastre (2015, p. 346), in the previously cited study, analysed the teachers’ conceptions by proposing *Likert* questions, referring to a previously exposed situation or context, such as in the following example:

**Table 3** A dilemma used for measuring the conceptions of piano teachers in Bautista et al., (2012, pp. 102–103, © Fundación Infancia y Aprendizaje reprinted by permission of Taylor & Francis Ltd., <http://www.tandfonline.com> on behalf of Fundación Infancia y Aprendizaje)

Three teachers discuss what is the best way of sending weekly homework to students on their course. Who do you most agree with and who do you least agree with? What the teacher should do is

- 
- a. ...choose the most appropriate homework for each student, show them how they have to do it and teach them what the technical or interpretative result they have to achieve is
- 
- ... choose the most appropriate homework for each student, explain or substantiate why they have to do it and also give them instructions on how to carry it out
  - ...involve the students in their homework choice, so that they think and reflect on why, what for and how they have to do it
- 

The teacher offers advice to the student after listening to him: I think this passage is very cold and it is not what the author intended, all the sounds are very similar and you are playing them all strong and long. Look for melodious sounds, differentiate the articulation of one voice from others; here you could make the melody more vibrant and resonant and the accompaniment lighter.

After giving the example, Likert questions were asked to probe into the extent to which the respondent agreed with the assessment method of this teacher and justification of the response was also demanded which was subsequently analysed categorically.

The idea of choosing between different options or classifying them is also in the so-called “dilemma” questionnaires (Martín et al., 2006, 2014; Pérez Echeverría et al., 2006b). Here we could see a dilemma proposed by Bautista et al. (2012), in a questionnaire with 16 dilemmas, aimed at analysing conceptions on learning and teaching of intermediate level piano students (Table 3).

These questionnaires are based on the idea that when a certain option is chosen, be it on teaching, learning or any other issue, the choice also entails acceptance of the positive and the negative consequences (for example, *this type of teaching might help the student learn to think more but it is more time-consuming and all the set contents for this level cannot be taught*), thus leading to a dilemma which complicates the choosing of more successful social options or those apparently considered to be better. In the dilemma questionnaires the options are more or less explicitly exposed, and the consequences of these options, so that a difficulty or a “but” always falls within the options.

In addition to this, unlike with the majority of Likert type questionnaires, these questionnaires do not propose notions or beliefs of a general nature. The choice is situated within a specific situation of learning and teaching (called scenarios usually) where the protagonists have to make a specific decision, as seen in the example. With the design of this type of activities some of the usage difficulties of explicit activities are intended to be avoided to measure implicit aspects that we mentioned previously. As we saw in chapters “Teaching Music: Old Traditions and New Approaches” and “The Psychology of Learning Music”, there is a difference between knowledge that is explicitly acquired and conceptions or beliefs that are related to the implicit mind.

Whilst knowledge is more general and based on what “must be”, the implicit mind is always more settled and related to the specific contexts and contents in which action resides. Therefore, the questions do not refer to general opinion on previous knowledge, how to work in a group or the management of motivation, but on taking decisions in which these or other issues on learning and teaching are implicit.

In an activity like that given in the example, each of the options has been taken from one of the implicit theories described in the previous chapter. We would encourage the reader to try to decide which of the options is direct, which interpretative and which constructive and also to decide with which of the opinions they agree more or less.<sup>1</sup> If we have accurately performed in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, the reader will surely have identified which option corresponds with the direct, interpretative or constructive theory. However, it is probable that the reader has had doubts in deciding which option they agree with most and which least, since some aspects in each option appear to be highly valid. Thus, for example, it may seem totally right that the student knows what result is expected of him, but also possible that it seems desirable for the student to reflect. The difficulty stems from the fact that each of these actions or decisions is a single different option and you can only choose one as the best and one as the worst. None of the responses is ideal. These doubts mean that the respondents need much more time to answer each question than in the *Likert* type questionnaires and the dilemma questionnaires therefore have a smaller number of items.

The result is that the choices in the dilemma questionnaires are normally harder than in the *Likert* type questionnaires. The dilemma type design is also very complex (see Table 1). Firstly, the researcher has to decide which teaching or learning scenarios will allow them to describe alternative options that correspond to each of the theories. Also, the redaction of these alternatives has to be as cautious as that of the *Likert* questionnaire (interpretation and comprehension of the language, avoidance of social desirability etc.) and, therefore requires that pilot studies be conducted where it is ensured that the language used is appropriate and the different options are interpreted in accordance with the researchers’ intentions. Once this work has been carried out, validity of each of the options must be ascertained. The relationship between action and decision and the implicit theories as described in the previous chapter must be ensured. These proofs of validity demand that the questionnaires be submitted to an analysis by expert judges acting independently from the researchers. The judges must indicate to which theory each of the options belongs, carrying out the same activity which was requested from our example given above. After this analysis the level of agreement obtained among them is measured (for example, using Cronbach’s *alpha*). If the level of agreement is not sufficient the item or dilemma must be rejected.

Although they may be administered to very broad samples (e.g., Bächler, 2016; Martín et al., 2014), usually medium-sized samples are used, much smaller than in the case of the *Likert* questionnaires, because of how difficult it is to respond to this type of questionnaire. As we saw before, the sample size determines the type of statistical analysis to be performed on the data. When the samples are not sufficiently

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<sup>1</sup> (a) Interpretative; (b) Direct, (c) Constructive.

large, some measurements such as factorial analysis cannot be used, although other parametric analyses (variance analysis or mean difference analysis, etc.) and non-parametric analyses (cluster or correspondence, for example) may be employed. The former are able to compare what type of options different groups choose, created according to independent study variables (age, level of experience, type of education, sex, etc.) and the latter show how the responses to the different items are grouped or how the participants are grouped according to their responses (see Table 1).

These questionnaires can be used for research and also in the classroom to analyse the students' conceptions or those of future music teachers. They can even be used with the same people who resolved them. Group analysis and discussion may be conducted as to why certain responses were chosen instead of others. Study may be made of the consequences in planning individual learning strategies or the consequences of certain teaching conditions in the processes learners initiate. As a result, these conceptions are clarified, awareness is raised, metacognition increases, and the management of possible changes is initiated.

There are situations in which certain circumstances (age of the study participants, their educational level, etc....) prevent this type of activity being appropriate since a high level of reading comprehension is required, together with sufficient reflection to take the decision on which options they agree more or less with. In these cases, the dilemmas may be designed in other formats. Thus, for example, in the study by López-Íñiguez and Pozo (2014b, see also chapter "[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)") with small children, theatrical simulations of teaching situations were recorded similar to the printed dilemmas representing forms of confronting different problems corresponding to the three conceptions we described and in which, as in the previous example, the children who participated were asked to indicate which situation they preferred and which they least liked. They also had to explain their selection (an example of mixed technique, since this included selection but also the production of responses). In the cases where the cultural context of the participants hindered comprehension or execution of the test, the dilemmas could also be read or explained aloud, as occurred in the study conducted by Casas-Mas et al. (2015b; see also chapter "[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)") with gypsy flamenco musicians. In this case, the idea is to try to approach the activities with the participant so that they are as comprehensible as possible and with as high a validity as possible too.

## **4 Producing or Introducing Discussions or Actions**

The techniques we saw in previous pages were based on choosing options designed by others, and they may therefore have the problem that they do not precisely represent the ideas of the participants. In this section we will analyse those techniques designed to infer the conceptions of learning from actions or responses produced or constructed by the teachers and students.

## 4.1 Discourse Analysis

One of the disadvantages of multiple-choice questionnaires (see Table 1) is that the options are put into the mouths of the teachers and students, rather than listening to what they themselves say. Oral or written interviews (open-ended questionnaires) are therefore seemingly able to get more “first hand” access to theories. We can differentiate between three types of interviews or the uses of interviews aimed at this objective. There are interviews which have been used as an essential and direct means for probing into learning and teaching conceptions (see Hofer & Printich, ). Together with the *Likert* questionnaires this type of interview where there are questions on specific or very general aspects of learning and teaching has definitely been the most widely used method of research. A second type starts with actions towards an activity or a specific problem so that questions are designed towards some aspect of the conceptions. In other words, these interviews focus on more specific questions regarding an action or a decision. This type of interview has been used with small children (e.g., Scheuer et al., 2002, 2006a, 2006b, 2006c, 2010; in the case of music, e.g., Sorlí, 2016; López-Íñiguez & Pozo, 2014a) Lastly, interviews have also been used to complete practice observations (Corbalán, 2017; Corbalán et al., submitted; Marín, 2013).

In the first category, with the interview as a single source of information on the conceptions we can in turn distinguish between two subtypes. Some theoretical streams, particularly more phenomenological ones, have directed their form of probing to the way in which the participants conceive of learning in general and consequently the questions on learning and teaching are also non-specific (*What does learning mean to you? What do you do to learn/teach music?*). These interviews, of a semi-structured nature (i.e., with clear objectives, several previously prepared and structured questions and others resulting from participant responses) are particularly aimed at knowing what it is to experience and interpret learning by its protagonists. The questions made are open enough for the actual respondent to choose the dimensions they prefer. The second type of interview is a little more specific. Since the act of learning is always directed towards something -in other words, it is inseparable from the content that is learnt—the questions that usually guide these interviews are those relating to “what” it is or what it means to learn and “how” one learns certain things (Marton et al., 1993). Within musical research, this type of interview has been used to analyze the differences between profound and superficial focuses in learning by different types of learners and their relationship with different learning strategies (Cantwell & Millard, 1994; Sullivan & Cantwell, 1999) or the ways in which choir directors with different formation and experience conceive the teaching activities they should carry out in the choirs (Corbalán et al., 2019).

The design of this type of interview is much easier than the design of questionnaires (see Table 1). Mainly what is required are clear research objectives. However, conducting the interview as the moderator requires previous formation on both knowing how to ask in a friendly manner and encouraging the respondent to answer and explain him or herself, but without influencing the response in any way,



and knowing when to repeat a question or when insistence would be excessive and would fail to produce more or better answers. Usually, oral interviews are individual, and the sample to be interviewed is therefore not very large. Also, analysis is very arduous, much more so than that of questionnaires. Interviews are usually recorded in video and/or audio. In either of the two situations, analysis requires first watching and transcribing this interview. Once the interviews have been transcribed, there are two ways of analysing them. The first and most common is based on categorical analysis, i.e., on the design of systems of categories to analyse the verbal production. These systems may be previously designed together with the interview, according to theoretical principles that guide the research or from previous results, or they may be created inductively from the analysis of a set of responses. Prior to the application of the categories the text is divided into meaningful units, such as the response to different questions or the different contents to which they allude (these may be the same response or divided between several) etc. (in the next chapter we show how to fragment a discourse or a sequence of actions in a unit analysis system). These fragments are classified within a category which in turn forms part of a supra-category. The researchers must agree on the design and use of both the fragmentation of the text and the categorisation in the analysis. Here, statistical techniques need to be used to measure the inter-judge agreements to ensure validity, as we saw before in the dilemma questionnaire design. Techniques measure the level of agreement between one group of people who assess the inclusion of certain statements or expressions into the previously defined categories. A high degree of agreement shows that the inclusion within a category does not respond to subjective impressions and that the categories are clear and well defined for the set aim. A low level of agreement usually shows that the categories which have been defined are unclear or inappropriate for analysis of the facts on the statements being judged. After this type of analysis, the categorical results may be qualitatively described or submitted to non-parametric statistical techniques to contrast the differences between the groups.

All these analyses take a great deal of time and require great effort. However, paradoxically, the biggest problem these techniques have is that they are directly based on what people say. As we saw in the previous chapter, there is a clear difference between knowledge and conceptions. Through the interviews it is not very clear whether we are accessing the most explicit or the most implicit knowledge. A second more indirect and slightly more implicit way of analyzing the interviews is the use of lexicometric techniques (Lebart et al., 2000). Through statistical analysis based on correspondence these techniques analyse discourse and vocabulary used by different groups and identify different ways of speaking, related to the underlying conceptions on learning and teaching. Going into detail about how these analyses are performed would require a lot of space. We would refer the interested reader to Bautista et al. (2009) or Casas-Mas et al. (2015b), for detailed explanations on how lexicometry works in research on instrumental learning and teaching conceptions. Other examples of this type of analysis in research studies on music and other contents may be found in Marín et al. (2013) and Scheuer et al. (2002, 2010). Lexicometry works on the complete discourse expressed by participants (for example, when faced with a question), without dividing it up into fragments and serves to analyse if there are

differences in the vocabulary used by the groups previously defined or not, regarding any independent variable (age, experience, etc.). People who express discourse are not aware of the systematic differences they use when speaking. Taking decisions on the lexicon of the speakers is mostly implicit. Lexicometry shows whether a group uses one word more significantly than another. For example, to a question on assessment we can find that one group of people use words relating to objectivity, rigour, and qualifications more frequently and statistically significantly, whilst others use words referring to progress or feed-back. It is therefore an inductive technique where the categories are formed from the concordances between texts of the speakers. They are not previously defined. For example, with this type of technique one could see that the teachers with different amounts of experience (Bautista et al., 2010) or the students with different levels of studies (Marín et al., 2013) carried out differentiated discourses which could be identified with different conceptions as was described in the previous chapter. The use of lexicometric analysis has also been employed in situations where the discourse of a teacher or a group of students is directly recorded. Access to aspects which the respondents are usually not aware of is possible, but these methods require long and arduous training.

Lexicometric analysis may be used in general types of interviews and in other more specific ones or those based on activities or problems. This second type of interview is also semi-structured, always starting with a specific situation with an activity or problem or decision, around which several questions are asked (e.g., Corbalán et al., 2019; Scheuer et al., 2002, 2006c, 2010). This type of interview on a real or imagined action, that guides the object of the research towards decisions taken on practice and not so much on discourse or direct opinions helps to better distinguish between knowledge (what one should do) and implicit theories of learning (what I do or would do) (see Chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”). As a result it is more difficult for the answers given to be interpreted as constructions derived from the exam situation where possibly only the more superficial and easier to explain levels are accessed, constructed by the interpretations that people create in response to specific demands (see previous chapter) but not to more profound levels of representations that restrict and give meaning to our way of interpreting the different situations.

Lastly, interviews have been used to complete practice observations (see chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”) (Corbalán et al., 2019; Marín, 2013), or observations of students whilst studying music (Marín et al., 2012). These interviews are usually conducted by viewing audiovisual recordings of practice and aim to clarify the aspects of these recordings that cannot be inferred, such as, for example, the objectives with which a certain action is executed, the presence of silences, or those moments in which the actors appear to be thinking or meditating, sounding out solutions (e.g., Casas-Mas et al., 2015a). This type of interview is usually conducted straight after the recordings to avoid recall problems and the questions always refer to specific aspects present in these recordings. There are no questions on opinions or general ideas, merely probing

on possible reasons for an action. These interviews may be regarded as complementary to practice observation. They are usually analysed in a complementary fashion, as an explanation for the action or from categorical analysis, as we saw before.

## 5 Other Activities for Conception Analysis: Problem Solving

Apart from the questionnaires and interviews other types of probing methods have been used to probe into learning and teaching conceptions. The literature indicates there are far fewer of these studies than those that serve as questionnaires or interviews (for a review see Hofer & Printich, 1997, 2002; Pérez Echeverría et al., 2006a), but they also serve to analyse these conceptions close to practice analysis without some of the contextual restrictions that this practice has. For example, in one study we already mentioned when referring to studies based on presenting “dilemmas”, López-Íñiguez and Pozo (2014b) presented children aged between 8 and 12 years with simulations of previously recorded teaching actions that respectively represented a teacher resolving a tuning problem from each of the three theories (direct, interpretative and constructive) as described in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”. The student had to choose which of these three options they thought was the best and this was followed by an interview to probe into the reason for this decision, to identify the underlying conceptions for that preference.

Within the field of instrumental music teaching with older students, Bautista et al. (2010) asked the piano teachers of intermediate and higher conservatories to imagine a typical student from a certain year they were teaching, and to decide on a piano piece to teach these typical students. After selecting the piece, the teachers were asked to point out ten learning objectives which their student had to achieve on learning the piece, ranked from the most to the least important. Lastly they were asked to focus on the three objectives they had considered the most important, describing the instructional strategies which would best help them to achieve these objectives and the best way of assessing if they had been achieved or not. Similarly, in the study by Marín et al. (2013) intermediate professional conservatory flute students were asked, among other activities, to choose a baroque piece they were familiar with for a colleague to learn. The student had to try to help their colleague at different times during this learning (the first day of study, more or less in the middle of their learning and when they were about to play this piece at a concert). The question guideline and objective is contained in Table 4.

Different elements relating to the learning and teaching conceptions may be analysed through this activity and other similar ones made by the students (Bautista et al., 2009) or teachers. It is possible to analyse, for example, whether the objectives relate to the learning of specific contents or are more directed at skills. Also, the variety of teaching strategies or modes of assessment may be studied. However, what is

**Table 4** Formulation and objective of the questionnaire questions, for each study phase (Marín, 2013, p. 8 of the digital version. Free translation), with permission from Cristina Marín Oller

Formulation of the question	Question objective
The most important piece of learning from phase X for me is...	<b>Results:</b> choice of the most important learning from this phase
Why is this piece of learning important? Do you think it is important to do this in a specific phase? Why?	<b>Results:</b> justification of the choice and appropriateness of the learning
How is this learning achieved? Explain the things that Juan should do to learn	<b>Mediums:</b> activities through which the learning is made and artefacts used
What difficulties might Juan have when learning this?	<b>Difficulties:</b> that may arise for the proposed learning
How can they be resolved?	<b>Solution:</b> simplifications for overcoming difficulties

not chosen is every bit as important as what is chosen regarding the objectives and methods of teaching and assessment. Lastly, the degree of coordination between the objectives, teaching and assessment methods is another major source of information. When one of the teachers indicates that one of the most important objectives is the development of expressivity but they do nothing to help this develop (see chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”) they may be demonstrating the idea that expressivity emanates from technique.

The studies on problems or situations for analysing conceptions are usually focused on highly specific aspects. Their advantage is that they are not influenced by individual elements and restrictions of practice, but decisions still have to be taken. Also, in one study that is described in greater detail in chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, Torrado et al. (2016), higher conservatory students were asked to play a short musical fragment from a simple musical score. After playing it as they believed appropriate a new condition was introduced, whereby they had to play it with a fixed expressive goal (e.g., express all the sadness you can). The comparison between one and the other interpretation (attack, tempo, etc.) led to the determination of how these students who were already quite expert musicians, depicted the different parameters they could use to arouse the emotional force of the composition. In order to make these inferences in their performance the participants had to necessarily maintain control (i.e., in both interpretations) over a series of variables (Torrado et al., 2016).

The difficulty of the activity design here is highly variable (see Table 1), depending on the type of activity and problem proposed and the same occurs with the correction and type of statistical analysis. Usually this is more demanding for participants than in the questionnaires or the interviews, but it also varies according to the type of activity. Some of these activities, such as the one we have just described is highly appropriate in research and may be very useful in teaching situations, particularly those directed at the education of future teachers. The design of these activities

relates to the framework of results, processes and conditions described in chapter “[The Psychology of Learning Music](#)”, according to which, when we think of learning any content, be it declarative, procedural or attitudinal, we have to think of which objectives and which outcomes we set ourselves with that teaching and what type are useful for achieving these contents.

## 6 Familiarity with Conceptions to Improve Music Teaching

If Nieves were reading this book and we asked her to reach a conclusion of what she had read up until now, she would surely say that for the authors educational conceptions are one of the key points for learning and teaching. As we saw in the preceding chapter, implicit conceptions are one of the most important factors when making decisions on how to teach and how to learn. It is possible, or at least we hope so, that we have convinced Nieves of this importance and of the differences between implicit theories and explicit knowledge and that becoming familiar with these conceptions helps to improve musical education. As we saw in the previous chapters, and particularly in chapters “[Learning and Teaching Music in the 21st Century](#)” and “[The Psychology of Learning Music](#)”, learning objectives have become increasingly complex, partly due to cultural and social changes. This means that the processes that need to be activated to obtain them have also become more complex. Teaching aimed at promoting constructive learning should therefore be set in motion and would encourage the achievement of complex learning. However, these new points of focus often clash with the implicit theories of teachers and students, and therefore knowing what these theories are will help initiate processes of change and improve the actual processes of learning and teaching. In addition to this, more constructive learning and teaching provides students with tools they can use to analyse their musical results and improve as performers or music teachers, thereby contributing to the processes of clarification, restructuring and hierarchical organization necessary for the conceptual change (Pozo, 2014) we mentioned in the previous chapter.

One sure way of finding out about these theories is to consult articles and research resources where the characteristics of the implicit theories are demonstrated. As we said at the beginning of this chapter, all in-depth probing methods on implicit theories have indications and contraindications, highlighting some aspects but obscuring others. However, they also all allow us to gain access to specific aspects of the implicit theories and to them in general. The concordance between the results found with the different methods provides sufficient assurance for eliciting conclusions. Apparently, direct practice observation should be the best method for arriving at implicit teacher and student conceptions. In this chapter we have not talked about the methods available for practice analysis or the precautions that need to be taken so that conclusions obtained from observation are not rose-tinted visions of what we are observing, but depictions of what is actually happening. The next chapter will be dedicated to this issue and we hope to help Nieves to elicit her own conclusions. The difficulties of practice analysis, and the restricted number of observations due

to its complexity are unquestionably linked to the fact we should take the necessary precautions to ensure, as already stated, that we do not only see whatever it is we were hoping to. This requires observation methods and templates, as we shall see in the following chapter, that help us to direct our attention towards different aspects and that the observations may be shared by different researchers. Moreover, practice is not always a faithful reflection of the underlying conceptions. Situations exist whereby a constructive conception occurs in a particular situation in the classroom because, for example, the teacher is unaware of the methods to use to put across their idea, or they have a large number of students or any other circumstance that prevents certain teaching conditions to flourish. However, systematic observation instead of observation of a few, specific moments, would certainly show up differences in the learning and teaching methods of the teachers and students with different implicit theory profiles. The limitations of the other methods have already been set out in previous sections.

Nieves would, however, say that music teachers are not researchers and their interests do not lie in whether they should modify their learning and teaching theories or not. Their interests focus on producing good performers and music professionals, several of whom in turn become future music teachers. We totally agree with Nieves on this but producing good professionals, as we have seen in previous chapters, involves helping those musicians to continue learning and making their work meaningful. This development of abilities is deeply related to the conceptions two-fold. Firstly, as we saw in chapters “[The Psychology of Learning Music](#)” and “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, and will go back to in chapter “[Student-Centred Music Education: Some Ideas to Improve Learning and Teaching](#)”, to teach, it is necessary to start with what the students know. This renders their learning meaningful or changes it thanks to the acquisition of new knowledge. In this knowledge, implicit conceptions on learning and teaching play a major role, because they impact both objectives proposed by teachers and students and the way in which they assess whether those objectives have been reached or not.

It is not a question of identifying or classifying our theories or those of our students, but of knowing how they are impacting specific activities and moments. Knowing, for example, that the difficulties Juana has when Nieves asks her to analyze the way in which she has just played a piece on the piano are due to the fact that up to that moment Nieves had been concentrating on the sound or on the instrument and therefore Juana has never considered the processes or procedures that were set in motion. This type of knowledge is useful for designing scenarios that change the way Nieves teaches, Juana’s objectives and helps them to think jointly about these processes. It is possible that Juana has not even understood what Nieves wants, when she asks her to analyse her interpretation. She is facing one of the most basic difficulties to problem resolving: not recognizing the activity that is being demanded of her (Pozo & Postigo, 2000). Being aware of Juana’s conceptions will help Nieves propose the activity in a different manner so that she can deal with it. Of course, Nieves’ activity is not to change Juana’s learning conceptions but to teach her to be the best piano performer she can. However, if the practice of Nieves becomes more

of a constructive teaching practice, it is very likely that Juana's implicit theories on learning will change, without her realising, towards more constructive ways of understanding learning (see Mateos & Pérez Echeverría, 2006; Scheuer & Pozo, 2006).

If Nieves were a teacher of musical education as well as a conservatory piano teacher and was therefore partly responsible for educating future music interpretation teachers (see chapter “Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the 21st Century”), her teaching objectives should focus slightly more on changing her students' conceptions, making them more constructive. To do this her own practice must be constructive. Her teaching design must also promote clarification, restructuring and hierarchical integration as we saw in chapter “How Teachers and Students Envisage Music Education: Towards Changing Mentalities”, through the comparison of methods and reflection at different times.

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# SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices



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## 1 What is the Point of Analysing Instrumental Learning and Teaching Practices?

As we have just seen in previous chapters, ways of learning and teaching are determined by how teachers and students conceive of their learning and teaching functions: what do they think learning and teaching is? What are the goals they hope to achieve? What must the student do to learn and how can the teacher help them? What should evaluation consist of? etc. We have also seen that in music classes a considerably large or small gap may exist between what is said and what is done (López-Íñiguez & Pozo, 2016; Torrado & Pozo, 2006). In actual fact, this is quite common to the way we think in any area. There is always a dissociation between our implicit and our explicit mind (see chapter [How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)). It is clear that our most explicit ideas on the environment and how to care for it are not always, on a more implicit level, rendered into sensitive and meticulous actions, in the same way as our explicit attitudes to any discrimination (be it gender, ethnicity or social conditions) are not always congruent with our implicit behaviour or attitudes (Gawronski & Strack, 2004; Gawronski et al., 2017).

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This distance between what we think or say (to others, but also to ourselves, our conceptions) and what we really do (what someone would see if they observed what was happening in that class, our practices, in the most objective way possible) is not just a phenomenon of the classroom and still less of instrumental teaching. This disassociation is fairly inherent to the human mind (Pozo, 2014), and therefore particularly important to be aware of if we wish, as appears desirable in our case, to reduce that distance between what is said and what is done (Torrado & Pozo, 2006) to improve musical education and more specifically instrumental learning. Although students, families and other educational agents are exposed to teachers' beliefs and ideas, they are not exposed to their teaching methods: what they do, the activities they propose. Students are not normally inclined to read curricular programmes, but they go to class and try to respond to the demands made on them there.

As a result, if we wish to understand learning and teaching from *research* we have to be capable of analysing and deciphering what is happening in the classroom and what practices occur there in the most objective way possible, without of course losing sight of how these practices come into play within the framework of conceptions analysed in previous chapters. Equally, when contemplating educational *innovation*, for achieving the goals of a new education (see chapter “[Learning and Teaching Music in the 21st Century](#)”, also Ballentine, 1984; Elliott, 2007; Hallam, 2010), we should not only change the discourses and theories which to a large extent has been done already (see chapters “[Teaching Music: Old Traditions and New Approaches](#)”, “[The Psychology of Learning Music](#)” and “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”), we also have to change practices, what is happening on a daily basis in the classrooms.

Finally, as we shall see in the Part Three of the book, these attempts to renew musical education and more specifically instrumental education mainly come about through a new form of conceiving *teacher training*, where the key issue is to help teachers rethink and restructure their teaching practices (see chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the 21st Century](#)”). They need to start from where they already are, through reflection on their own teaching (Schön, 1987; also Martín & Cervi, 2006), so that new forms of learning and teaching may be fostered, in keeping with the new approach to music education.

## 2 What Actually Happens in Music Classes?

For the advance of research, innovation and teacher training it is essential to analyse and reflect on learning and teaching practices. These are the three pillars upon which educational change would be upheld. In this chapter we shall demonstrate how this analysis requires probing into practices, but also becoming familiar with the conceptions of teachers and students, in the knowledge that it is only from these conceptions that we may interpret what happens in the classroom. Notwithstanding, and above all, instruments beyond intuition and subjective personal experience are required to

help us describe as objectively as possible, and based on shared categories, what is actually happening in a classroom, what actions are being taken, how they are being organised and how they are being experienced by teachers and students. Let us see why this is important.

## 2.1 *From Conceptions to Practices*

As stated, this emphasis on the importance of analysing practices does not mean that we do not also need to be familiar with the conceptions. Although there is a distance between what people believe they do and what the “really” do (in music education, for e.g., López-Íñiguez & Pozo, 2016; Torrado & Pozo, 2006; in other fields, Buehl & Beck, 2014; Clarà & Mauri, 2010; de Aldama & Pozo, 2016; Lim & Chai, 2008; Pozo et al., 2010), it is also true that the conceptions reflected through the conceptual profiles mentioned in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, are usually a decent predictor of these practices (Pozo, 2017; Pozo et al., 2016).

For a start, we may state that these different conceptual profiles help to identify different learning and teaching styles in practice (in different musical cultures, see Casas-Mas et al., 2015b; in choral rehearsals, Corbalán et al., submitted; in instrumental teaching contexts, López-Íñiguez & Pozo, 2016). Knowing what a teacher or a student says or how they interpret what happens in a classroom, allows us to infer several essential traits of what that teacher or student does in the classroom. In a similar light, an explicit attitude towards sex discrimination is a pretty good prediction of how that person will behave in these situations, especially when the circumstances of that situation help them to be aware of how they are acting (Girvan et al., 2015).

Repeating what was explained in chapter “[The Psychology of Learning Music](#)”, we may say that there is a critical distance between conceptions and practices which, from a bolder or more promising but as yet not completely empirically validated interpretation, would suggest that the conceptions would act as the *zone of proximal development* of practice itself (Torrado & Pozo, 2006). In other words, people could explain what they propose or would like to do, but they are not always capable of effectively doing or putting it into practice due to external or internal circumstances or barriers (Ertmer, 1999; also see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”). This may be due to the experience and strategies they had learned along the way. According to this interpretation, conceptions would always be some steps ahead of action, and would be an essential element in changing these practices through reflection on them, as we shall see in Part Three of this book.

However, if according to this interpretation the conceptions define what teachers and students would be capable of doing if they had the help they required or the right conditions and necessary processes, but they are still not able to do themselves (i.e., their zone of proximal development according to Vygotsky, 1978), the fact

is that students and teachers in their daily work in classrooms are exposed mainly to more or less intuitive practices, to effective actions, that one and all programme and execute. However much the teacher verbalises ambitious, even grandiose, objectives to the class regarding the skills the student has to develop (expressiveness, sensitivity, self-governance, etc.), the latter will be more concerned with fulfilling the activities and assessments they are to face the following day (that passage with complex modulations, that rapid succession of arpeggios), that are not always in tune with such ambitious plans. For better or for worse students do not usually read curricular syllabuses or teaching guides. They go to class, they get more or less involved in the activities carried out or proposed there, in what *is done there*.

Therefore, if we wish to become familiar with and possibly restructure instrumental learning and teaching, we have to analyse the practices that take place in these classrooms, without losing sight of other levels of analysis, whether these be the organisation of this teaching (see chapter “[Teaching Music: Old Traditions and New Approaches](#)”) or the conceptions maintained by different educational agents (chapters “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, “[How to Know and Analyse Conceptions on Learning and Teaching](#)” and “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”). One could think that knowing what really happens in the classroom is simple and that both teachers and students could easily explain to us what happens, since they are the ones responsible. However, we must move beyond this intuitive belief that the person who best knows what is happening is the one experiencing it and that it should be enough for teachers and students to explain to us what they have done and what they are doing. The truth is, observation, analysis and comprehension of educational practices is one of the most complex challenges of educational research, both theoretically and methodologically (Barberà, Mauri & Onrubia, 2008; Clarà & Mauri, 2010; Coll & Sánchez, 2008; Lemke, 1990; Sánchez & Rosales, 2005; Sánchez et al., 2008).

## ***2.2 From Intuition to Analysis of Practices***

Although intuitively students, but above all teachers, may believe that they really know what is happening during music classes since they are the ones deciding, supervising and assessing the activities, the truth is that in a classroom and even in the context of a traditional instrumental class with one teacher and one student, so many things happen at the same time (actions, gestures, movements, emotions, verbalisations, sounds, silences, etc.) that it is impossible for any teacher or students to capture all of them *on the fly*.

Anybody who has recorded a class for any reason, be it for research or an innovation or professional development project, knows that analysing what has occurred takes up far more time than the time in class, because so many highly significant things happen and they normally are not initially noticed. The teacher or the student may well be unaware of them happening (that fleeting look of displeasure when

the students start their interpretation; the obsessive stare of the student at the sheet music whilst they are playing; the authoritarian gestures which accompany the verbal instructions of the teacher or the smile of satisfaction on seeing how the student regulates their breathing before starting a phrasing; the tremble in the student's voice when they ask a question or the appreciative look of the teacher when a passage sounds expressive and finely tuned).

An hour's class is always much richer than any theory or explanation we can give to those who participate in it (this explanation is very important to help understand what has happened, as we have seen), since, as we saw in chapter "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)", many of the actions and representations that occur are much more implicit in nature (unconscious) than explicit (conscious) (Pozo et al., 2006). It will therefore be necessary to record or note down that class in some way, observing in detail what happened with some sort of guided analysis system in order to bring to light a good part of these hidden actions, most of which are submerged, occurring in an apparently simple or routine class.

However, it is not just the complexity of what happens in the classroom interactions (or for that matter, any other social context) that makes those who participate in it disregard so much of what happens and only be capable of explaining a minor part of these interactions and their consequences. What one person or another perceives is biased by their own expectations or beliefs, by their conceptions, but also by the focus of attention on learning activities. Attending the same classes, teachers and students normally perceive different things because their expectations and conceptions are different and similarly different students also perceive different things. Only a third person's outlook can help to reconcile these different interpretations, so that each individual can go further than what at first sight, or intuitively they perceive or feel in that class. In this way, developing instruments for practice analysis, in our case within the framework of instrumental learning and teaching in music, is an essential resource for adopting an experiential focus in innovation and teacher training, a new vision may be formed, or a re-description determined by this system of analysis, from the real experience of the teacher and student. This has been supported by watching videos by the people taking part (see chapter "[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the 21st Century](#)" in this respect), because the researcher also has his or her own bias. A global view of the different empirical investigations of several proposals for analysis of learning and teaching practices will now be made.

### 3 Proposals for the Analysis of Learning and Teaching Practices

#### 3.1 *Analysis Models and Dimensions of Interactions in the Classroom*

Over the last few decades much research has been conducted on learning and teaching practices in classrooms (Barberà et al., 2008; Clarà & Mauri, 2010; Coll & Sánchez, 2008; Lemke, 1990; Sánchez & Rosales, 2005; Sánchez et al., 2008). Among the different types of focus and methodologies analysed, definitely one of the most influential approaches in this new research agenda has been the study of the classroom as a space for interaction determined by the way in which educational agents speak, determined by an analysis of discourse, i.e., of what is spoken there. From a socio-cultural viewpoint, Mercer (1995; Edwards & Mercer, 1987) proposed a model of analysis of the interaction sequences, in an attempt to reveal the mechanisms of educational influence that teachers use for joint construction of knowledge with their students (Coll et al., 1992), and the different types of conversation that take place between the students themselves (discussion, accumulation, exploration) that make it possible for increasingly complex levels of collaboration and construction to occur (Engel & Onrubia, 2013; see also chapter “From Individual Learning to Cooperative Learning”).

Other different but complementary approaches have emphasized the content of interactions between teacher and students and on how the discourse in the classrooms is managed by the teacher, to encourage a more complex appropriation of educational contents. Thus, Cazden (1988) for example proposed analysing talking in classrooms in terms of a series of communicative strategies or dialogues, among which the IRE sequences would stand out, so-called because they would begin with (I) (“interrogar” which in Spanish means to question), a question formed by the teacher which would give place to (R), one or several responses by the students and finally (E) to be evaluated or reconsidered by the teacher. These interactive sequences would give rise to different variations (e.g., Coll et al., 1992; Edwards & Mercer, 1987; Lemke, 1990; Sánchez & Rosales, 2005; Sánchez et al., 2008), from those where the teacher could take on a more directive role in each of their phases to those others in which final evaluation of the process would remain open and which the students themselves would have to close.

However, this analysis of the structure of participation in a class (in terms of IRE, IRF, symmetrical patterns, etc.), according to Sánchez et al. (2008) would reveal *how a class is executed*, but it would be necessary to complete this with another two dimensions of practice, *what is done*, i.e., the content of the representations and processes carried out and *who does it*, depending on the level of participation of the students and the type of hot and cold assistance received from the teacher. Other studies have also stressed what is done, but not necessarily what is said, emphasizing other dimensions of learning and teaching practices like, for example, the explicitly



or implicitly cognitive processes managed by the teachers and students, the cognitive demand of activities, the level of the meta-cognitive management the students require of them, the memory or recovery strategies used, their level of involvement or motivation, etc. (Hora & Ferrare, 2014; Hora et al., 2013). Other forms of analysis have also incorporated other non verbal actions present in learning and teaching practices. But which also play a role in the construction of knowledge in the classrooms, such as gestures, actions, private singing with different types of internalisation and bodily representations (Casas-Mas et al., 2015a, 2019; Goldin-Meadow, 2003; Neill, 2017).

As shown therefore, classroom occurrences may be analysed from many dimensions or planes and are always richer or more complex than the models and methodologies that attempt to analyse them. However, if none of the approaches we adopt can capture the entire wealth of interactions taking place in the classroom, a more complete vision would require a multidimensional analysis that takes into account the different components outlined. etc. (Hora & Ferrare, 2014). To do so, we would start from the analysis proposed in chapter “[The Psychology of Learning Music](#)”, based on three essential components of all learning: *results*, *processes* and *conditions* (Pozo, 2008). As we shall see later on, each of these essential components or dimensions is again divided into different categories or sub dimensions, the interaction of which provides us with a joint pattern of educational actions and intentions taking place in the classroom at any given moment and which may be adapted to different contexts and contents of learning and, in our case, specifically in instrumental learning.

### ***3.2 Instrumental Learning and Teaching: Didactic Interactions, Based on Visible Actions***

Research has introduced different forms of analysing instrumental practice and teacher-student interaction in this field. Compared with other educational scenarios, there are two traits which generally characterise instrumental music classes, that make them particularly apt from a theoretical and methodological viewpoint for these analyses. For one part, their generally dyadic nature (one teacher and one student), compared to most educational scenarios where a teacher works with a class of 25–30 students, makes analysis of interactions and identification of voices in the classroom much easier. Although incipient workgroups have been attempted (see chapter “[From Individual Learning to Cooperative Learning](#)”), for the most part classes are still individual, making analysis easier but possibly impoverishing learning. On the other hand, if we compare this to a language or mathematics class, a great part of what happens in the instrumental music class is observable: the movements and actions of the teacher and student can be discerned. This includes where they focus their attention, what they do with their body, with the instrument, even listening to the sound their actions produce and feeling the expressive direction of their interpretation and how they manage their emotions. However, when the student is thinking about how to resolve a problem or how to form a phrase, it is much more difficult

to infer their cognitive, embodied and emotional activity. Naturally, as we will see, similar situations also exist in music to those we have just described and there is a cognitive activity which is not directly observable that needs to be inferred but when they become obvious most, actions are easier to reconstruct and analyse.

Notwithstanding, not many structured systems of analysis for practice exist within the context of instrumental learning. In their time both Hallam (1997) and Jørgensen (1997), proposed theoretical models to analyse instrumental and vocal practice. Thus, for example, Jørgensen (1997) considered that the primary component of this model were the conditions which restricted or enabled learning opportunities: personal, instrumental and environmental factors. The second component was made up of factors which the learner can determine in every given situation, such as the goals of learning, strategies, content, time and means. The final element refers to the level of achievement in instrumental execution. Jørgensen's proposal (1997) is suggested as both a model of analysis and also as a tool for teaching students to practise and to help them develop their own learning strategies (Marín et al., 2012).

Several later studies dealt with the content of interactions between teachers and students regarding a specific teaching-learning process. These studies have a factor in common which is having been made through the analysis of class video recordings. Several subjects were analysed, including the analysis of verbal interaction understood as a means of constructing shared musical meanings (Viladot et al., 2010); the different patterns of group configuration produced in a group instrumental class (Baño, 2018; see also chapter “[From Individual Learning to Cooperative Learning](#)”); the particular attention paid to instrumental technique by instrument teachers (López-Íñiguez & Pozo, submitted); the intensity of interaction between instrumental music students and teachers (Heikinheimo, 2009); support from the teacher to encourage self-regulation of students during practice (Pike, 2017) and the critical analysis of restructuring pedagogic and reflexive processes with music students at different levels (Carey et al., 2017; Coutts, 2018).

Other authors such as Chaffin and Imreh (2001) analyse the structure of the instrumental learning sessions, fragmenting every session into two typical activities which are called run-throughs—playing top-down—, and works—working passages in depth. For her part, Zhukov (2004) speaks of a typical structure comprising three parts, clearly organised in time: warming up (tuning up, sound exercises, getting the fingers going, etc.), the main body of the class (technical work and repertoire) and closure (when homework is assigned and the time the student must dedicate to each activity they have to do at home). Other elements analysed and which are entwined in the previous structures are the waiting or “dead” times, which have been called digressions and which will be described in more detail later, due to their importance in interaction and learning (see chapter “[The Choir Conductor: Interpreter or Maestro?](#)”; also Casas-Mas et al., 2015a; Corbalán et al., submitted; López-Íñiguez & Pozo, 2016, submitted).

## 4 A System for the Analysis of Instrumental Learning and Teaching Practices (SAPEA)

In consideration of this background, the system of analysis presented below (SAPEA, for its initials in Spanish),<sup>1</sup> tries to unite several characteristics (GIACM, 2011). Initially, as with several of the models cited, it is a system which is based on a theoretical model, in this case the model presented in chapter “[The Psychology of Learning Music](#)”, from recent developments in the psychology of learning. However, unlike those proposals, it has been empirically validated, applying it to different scenarios of instrumental learning both in contexts of conservatories (López-Íñiguez & Pozo, 2016, submitted; Marín, 2013), and in other contexts of informal and non formal learning contexts (Casas-Mas et al., 2019; Pozo, 2014). It has also been used to analyse contexts of vocal learning (Corbalán et al., submitted) and even in group learning in formal and informal contexts (Baño, 2018). These applications, the results of which some are included in several chapters in Part Two of this book and supported in the SAPEA, have led to a fine-tuning and completion of the initial proposal (GIACM, 2011) into a system which adapts to each new setting of musical learning. This system of analysis has also been adapted to other contexts of teaching which are removed from music (de Aldama et al., 2017).

Together with the above, SAPEA proposes a multidimensional analysis by integrating different components (results, processes and conditions), but also different levels of practice analysis, which include not just verbal interaction (what is said in class, who says it and how it is said), but also the instrumental actions: what is done with the instrument, and also with the body. It is therefore a system which differentiates between different types of activities, leading to the breakdown of what happens in the classroom into different units of analysis. As a result, following analysis, the identification of several components or types of actions simultaneously leads to a global or holistic vision of each episode or sequence of actions that take place in the classroom.

### 4.1 *Units of Analysis of Instrumental Practice*

Our proposal adopts the *musical unit* (piece of music, song, composition) being practised as its more basic level of analysis. Since several musical units are usually worked upon in one session (in a fragmentary or complete manner), analysis can also be arranged around a time unit (the teaching/learning *session*), whether this be a class, a rehearsal, etc. The musical units may differ from one another depending on their nature and musical content, at least in technical exercises, compositions, improvisations, creations, etc. In any event, the development of musical units occurs in one or several time units or practice sessions, wherein different *typical activities*

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<sup>1</sup> Also called SAPIL by its English initials (System for Analysing the Practice of Instrumental Lessons) in some of the studies mentioned.

may be identified, according to Sánchez et al. (2008), on the understanding that these are the different parts into which a session is organised or structured in time. Depending on the meaning or function of these activities for musical execution or interpretation they would be:

- Warm-up/tuning up (preparation prior to the musical execution or interpretation).
- Musical production (or actual interpretation).
- Symbolic production: oral, gestural or written (referring to the musical production itself or to the warming up and preceding, interrupting or accompanying this production or after it has finalized).
- Other activities without musical content (digressions, pauses, etc. For example, a student saying to the teacher in the middle of any classroom activity: “*teacher, did you know that today is my grandmother’s birthday? And yesterday my parents bought me a 400€ bike*”).

These four main activities may also be divided into several subtypes. Thus, musical productions may be based on the actual instrument itself or on additional musical resources (humming, singing, clapping, etc.). Similarly, the symbolic productions with musical content may consist of oral or gestural communications or in writing. Finally, several of these activities may be combined with one another, creating mixed productions. Table 1 details all the possible activities that can be observed from these criteria:

Once these typical activities have been defined in an instrumental class or rehearsal, each activity could be segmented into different practice episodes. In our case, the Instrumental Episodes could be typically differentiated (when one or several of the educational agents, students or teachers are interpreting music, practising with the corresponding instrument) and the Discursive Episode (when one or several of the same agents talk or explain their representation on these instrumental actions). A Discursive Episode would normally be the result of communicative imbalance (a problem or a challenge) between what is expected to happen and what actually does, usually in the form of managing an error, a difficulty or a new challenge in student learning (or perhaps suggesting or reaching out to a new goal, maybe a Standard Activity). Therefore a Standard Activity would be broken down into a Sequence of Episodes (instrumental and discursive).

Each Session would therefore be broken down into different Episodes which could be analysed as units in themselves (either just the instrumental or discursive ones or both). An Interpretative Episode would be identified from the moment the musical production began until it was interrupted. Similarly the Discursive Episode begins when the interpretation is interrupted and ends when it restarts (or when another Standard Activity starts). The discursive Episodes may in turn be broken down into each of the cycles shaping this verbal interaction, in keeping with the model proposed by Sánchez et al. (2008). At this level of analysis a more micro description would be made of the interaction sequences.

**Table 1** Typical activities involved in the teaching and learning of instrumental music activities. López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Category	Definition	Examples
Warm-up/tuning up	All activities aimed at getting the body and instrument ready and energised for class work (beginning to play/sing)	Tune the instrument Warm up with scales or warm-up exercises for each instrument or for the voice in the case of choral music
Instrumental musical production or interpretation	Student or teacher production through an instrument or the voice	Interpretation of scales, of a composition or part of it Interpretations using additional resources (clapping humming, singing, rhythmic beats, etc.)
Symbolic production	Oral, gestural or written productions, which accompany or refer to the interpretation or to the warm-up/tuning	Student and/or teacher verbalisations which accompany the musical production as it is produced Student and/or teacher verbalisations which evaluate or refer to the musical production after or before it Body movements or gestures of the teacher which accompany the musical production and may be interpreted as corrections, instructions, motivational aids, etc. Body movements or gestures of the teacher which accompany the musical production and provide information on the production Body movements or gestures of the teacher or the students prior to the musical production or following it Written reports which serve as instructions or evaluations of a musical production
Activities without musical content	Verbal or gestural activities which are unrelated to the class content or the musical content	Other types of digression Pauses to rest or relax

## 4.2 Dimensions and Components of the Analysis System

As stated, we understand that analysis of practice must be multidimensional in its nature, so that different components may be identified and their relationships may also be described or interpreted. From the distinction established by Sánchez et al. (2008) between *what is done*, *how it is done* and *who does it*, SAPEA assumes,

from Pozo (2008), that in all instructional activity or practice there are at least three components connected to these three questions which we must respond to: results, processes and conditions (see chapter “[The Psychology of Learning Music](#)”).

In our case then, the *how it is done* would be broken down into two components: the interactions and aids that are measured in learning and the cognitive and metacognitive processes which the student puts into effect. Moreover, unlike the proposal by Sánchez et al. (2008) one of our hypotheses would be the close interdependence between these three components since they would form an integrated system but with different degrees of coherence (Pozo, 2008; Pozo et al., 2006). Similarly to the studies by Sánchez et al. (2008), the distinction between these three analysis components would enable their relationships to be empirically contrasted, although in our case we would foresee interdependence between these components. For each of these dimensions it is necessary to also develop specific analysis categories or dimensions, and the most precise as possible indicators for each of them, which are presented below.<sup>2</sup>

### 4.3 *The Results of Learning*

An initial classification of these results would begin with the distinction between *symbolic*, *procedural* and *attitudinal* learning, established in chapter “[The Psychology of Learning Music](#)”. These three types of results could be observed both in verbal and instrumental episodes. Equally, the same episode could work on different results in a related or simply juxtapositioned manner.

#### **Symbolic Learning (Verbal)**

This would correspond to the mastery of languages and codes of musical representation, particularly to sheet music, differentiating between several levels of processing (Bautista & Pérez-Echeverría, 2008; Casas & Pozo, 2008; Marín et al., 2012; Marín et al., 2013a) from the differentiation established by Postigo and Pozo (1998) between the explicit, implicit and conceptual processing of external representations (see also Pérez-Echeverría et al., 2010; Martí & Pozo, 2010; Pérez-Echeverría & Scheuer, 2009). In the case of musical notation learning, these three levels of increasingly complex processing, as explained in detail in chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, would be:

- (1) *Notational* (corresponding to the explicit marks or notations in the musical score, such as notes, rhythms, fingering, etc.). For example, in a classroom of any string instrument a teacher could say “*in this bit of the song there are little clues for you, numbers*” [referring to the fingering].

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<sup>2</sup> All of the examples which illustrate the different dimensions were taken from the before-mentioned research studies.

- (2) *Syntactic* (corresponding to the implicit information in the musical score), which would be divided into two (see Table 2):
- (a) The actual syntax (harmony, melody, scales, arpeggios, etc) so that in a string instrument class the following dialogue could occur:
    - Teacher: *What chord do we play this melody in?* [Pointing to the musical score]
    - Student: *Well on the bear string and, no, wait, yes, on the mummy string* [talks whilst playing the complete passage with pizzicatos]
  - (b) The analytical-structural (which involves a structure analysis or more overall organisational guidelines in the musical score). In this sublevel, we may find ourselves, for example, in a rehearsal of brass instruments with the following situation:
    - Trumpeter: OK, I'm lost.
    - Trombonist: In the four bars that you do on your own, what do you do? I mean, do you go in on a cadence?
- (3) *Referential* (corresponding to the conceptual relationship of the composition with its production and interpretation context, considering expressive, communicative, historic elements, etc.). A situation at this level could be that of a musician in a rehearsal saying:

OK, in the first chord, ¿What note shall we use? An E natural, isn't it? A D sharp? so it is A major, let's see if we can tune it in.

As demonstrated in previous studies (among others Bautista et al., 2009; Casas-Mas et al., 2015a; Marín et al., 2012; Pérez-Echeverría, 2017), the more complex levels (syntactic and referential) are usually associated with conceptions of more complex musical learning, at least interpretative if not constructive whilst the teachers and students most oriented towards reproductive learning, close to direct conceptions and practices, tend to reduce the processing of the musical score to decoding of their more explicit notational components (see chapters “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)” and “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”).

Similarly, within symbolic result learning, identification could be made of those components related to the literal content learning of a piece. In the case of direct or more traditional practices resources requiring memorizing would be used, compared with more comprehensive or significant learning which is characteristic of constructive teaching. This would require linking parts of the same content to one another and then these in turn to other works or musical material external to the piece being learned. Again, literal learning tends to be more associated with direct or reproductive conceptions whilst a learning aimed at comprehension is characteristic of more constructive focuses (Bautista et al., 2009; Casas-Mas et al., 2015b; Marín et al., 2013a).

**Table 2** Categories of analysis of symbolic learning in SAPEA, based on the levels of comprehension of musical scores (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”). López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Category	Definition	Example
Notational	Teacher or student verbalisations where the main objective is to learn, decode or practice the symbols or explicit graphic marks of the musical score, and to add other basic marks	Read the notes of the musical score (and their corresponding activity) Produce the rhythm that the musical score indicates Insert bowings and fingering Dynamics Reading of the chords as mere decoding of graphic symbols (in American jazz terms, the <i>basso continuo</i> in the baroque period)
Syntactic	<b>Syntactic sublevel</b> Teacher or student verbalisations and activities about any term which in itself requires a syntactic processing of the musical score: melody, accompaniment, modality, tonality, motive, theme, phrases, voices, etc.	View the composition harmony in a functional way, relationships between chords (e.g., II–IV, 6b) Play the arpeggios of the piece Be aware of the composition key
	<b>Analytical-structural sublevel</b> Teacher and student verbalisations and activities which involve relating several notational and/or syntactic elements of the musical score that result in a new element with its own entity. This also refers to the structural, melodic and general harmonic analysis of the piece	See the changes in harmony and their relationship with the themes Harmonic, melodic, formal, textual analysis, etc., without this affecting other parameters
Referential	Relationship of the composition elements which belong to the previous levels with their communicative, aesthetic, stylistic, expressive, semantic, perceptive and psychological dimensions	Express the composer’s idea of the piece to the audience Invent a story to help express the music that is being learned Understand the meaning of the musical score, its style and aesthetics

## Procedural Learning

This concerns knowing how to do it, not knowing what to say. Differentiation may firstly be made between motor or psychomotor procedures aimed at learning instrumental technique and body control. As a result, cognitive actions and procedures (e.g., Lehmann et al., 2007; Williamon, 2004) related to mental processes could effectively be made and these would in turn regulate actions such as the production of sound, expressiveness or memory.

In the first psychomotor case, a choir director could say to the choir singers “*Listen to the piece whilst you move freely around the room, paying special attention to the changes in intensity and the variations of the melody*”. Also, the following situation could occur in any instrumental classroom:



- Teacher: Now, do you see this secret mark there? That little bird? I told you at the beginning of summer that the little bird is a natural harmonic that you can find here [pointing to the fingerboard]. Now you can do it like this [with one finger specifically], and now the other [finger] pressing close to this other one [whilst they place the fingers of the student in the right place]. This other one is a bit more complicated, let's see how you do it.
- Teacher: Now we let our wings [arms] rest.
- Student: [humming and moving their body in a relaxed way]

Regarding the cognitive procedures relating to the expressive aspect, in a brass rehearsal this could be practised in the following way:

- Trumpeter: We should sound stronger in bar 33.
- Horn: But afterwards there is a very tragic strong note.
- Trumpeter: Yes, but that moment is sweet and intense.

We could also find teachers and learners of instruments commenting on issues such as:

- Teacher: “I’m going to lend you 20 records so that you really get into the Baroque style”.
- Student: “I used to play like this [plays it], but the teacher wants it to sound like this [plays it differently], like dancing”.

Memory resources could be reflected in a dialogue like the following:

- Teacher: Memorise the piece for the exam.
- Student: The best way to learn a piece by heart is dividing it first into sections and practicing them separately.
- Teacher: Can you play the piece without the musical score?
- Student: *Yes, I already know it* [plays the whole piece by heart]

In both cases, in keeping with the distinction established in chapter “[The Psychology of Learning Music](#)”, we would be able to distinguish between more technical procedures, aimed at automated reproduction of action sequences that would be more common in direct didactic approaches and the more strategic ones either related to the use of techniques with specific expressive goals with metacognitive management of the actual learning processes (review of this subject in Bathgate et al., 2012; Concina, 2019), that usually appear in the framework of interpretative practices (under the teacher’s supervision) or constructive practices (when it is the student who manages these procedures) (Table 3).

## Attitudinal Learning

This refers to learning to know how to be and how to feel. The frequency and repetition of behaviour patterns in our daily lives lead to a series of attitudes which in turn build up values towards what surrounds us. This social learning allows us to

**Table 3** Procedural learning analysis categories in SAPEA. López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Category	Definition	Examples
Psychomotor	Necessary motor contents for learning the musical score or the specific instrument technique	Any of the following terms and similar: tuning, technical exercises, first position, <i>detaché</i> , gestures, relaxation and body posture, breathing, agility and precision of fingers, bow mastery, hand coordination, etc. Passing from finger 1 to finger 2 Bow distribution Tuning the instrument at the beginning of the class Breathing before each phrase to relax the body Trying out different fingerings
Expressive	Interpretative-intuitive type contents where the notational or psychomotor elements that would have to be learned to acquire them are not specified, but which actually help us to aesthetically embellish these symbols and where holistic or referential types of comprehension are mentioned of the composer or the music that is learned	Use a faster <i>vibrato</i> in the long notes Phrasing with an idea of continuity Differences of character Understand the “spirit” of the piece Listen how the teacher plays and ensure the student understands the concept, the gist of it more or less Understand what the author who composed the piece wishes to say, what they wished to convey
Sound production	This refers to the specific work of searching for the appropriate sound or sounds that can be taken from the instrument, to adapt it to the technical-musical idea of the piece	
Memory resources	All those procedures (both mechanical and strategic) which are related to the faithful reproduction of the piece or a passage of it, without using external memory, paper or audio tools	References to any type of memory (working memory, muscle memory etc.)

develop an identity, which becomes our social calling card that changes throughout our development depending on how our beliefs evolve. Attitudes and values towards music and its learning are promoted by learning and teaching. The foremost among these is the training of an approach to the so-called “stage presence”. Learning this stage profile implies attention to aesthetic ideas and skills for performance as well as the implicit or explicit development of an attitude towards the audience, which is by no means always successful.

**Table 4** Attitudinal learning analysis category in the SAPEA. López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Category	Definition	Examples
Stage presence	Public performance preparation contents, such as sequences of action, verbalisations and self-instructions in anticipation of interpretation	<ul style="list-style-type: none"> <li>– Student: <i>I'm going to be calm, I'm going to be calm</i></li> <li>– Teacher: <i>You go out that side and greet in the centre</i></li> <li>– Teacher: <i>Let's practice bowing to the audience in the mirror</i></li> <li>– Student: <i>I sit down on the stool and before I begin to play I imagine the music to relax myself and detach myself from the music stand</i></li> </ul>

This critical learning may overshadow a large quantity of potential skills and important aesthetic ideas. In music education and research institutions there has been an upsurge in recent years for the gradual and deliberate incorporation of preparation for public performance. For example, an awareness has been made of the beliefs, sequences of actions, verbalisations and self-instructions in anticipation of performance (e.g., González et al., 2018; or also see, for example, the research projects on improvement of interpretation in the *Centre for Performance Science* in the United Kingdom<sup>3</sup>; or the online teaching initiative<sup>4</sup> of teachers from Finland, United Kingdom, Holland and Australia where they offer free resources in this respect for students of musical instruments in higher education). From our theoretical focus and our research, we know that children exposed to the more traditional teaching models appear not to pay much attention to this aspect, whilst those who belong to constructive models do usually indicate that preparation for facing an audience and the communication of expressive ideas to the listener is important (see the card activity with children in chapter “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”) (Table 4).

#### 4.4 The Learning Processes

This dimension refers to the management of the different processes that help to produce learning and that contribute to the different types of learning, either more repetitive or more significant. It therefore refers to procedures which seek the mobilisation of certain processes. Thus, for example, the demands of the teacher at a given time may encourage a student to learn repetitively and aim at syntactic comprehension from a musical score or at other levels. There's a difference between asking a student to have learnt the scale of F major and bringing it to class to asking them to recognize it or how it is used as a harmonic transition in any movement of a sonata.

<sup>3</sup> <https://performancescience.ac.uk>.

<sup>4</sup> <http://web.uniarts.fi/practicingtipsformusicians/index.html>.

As studies prior to those of our group have shown (e.g., Bautista et al., 2010; Casas-Mas et al., 2015a; López-Íñiguez & Pozo, 2014; Marín et al., 2013b; Torrado & Pozo, 2008), teachers and students with closer conceptions to a constructivist focus tend to attach greater importance to cognitive and metacognitive processes gained from learning, whilst those which adopt closer models to a traditional focus (associative or reproductive) focus mainly on results.

However, with greater or lesser frequency, many references to processes the student should activate in order to achieve fixed learning goals (see chapter “[The Psychology of Learning Music](#)”) are produced in all class interactions. Thus, reference may be made to the mediation of more cognitive (Table 5) or motivational and emotional type processes (Table 6).

Regarding cognitive processes, as analysed in chapter “[The Psychology of Learning Music](#)”, references are usually made regarding how to manage information recovery, to the actual processes of learning that should be used (either repetitive or comprehension directed), to how to manage attention, the use of different types of mental representations (auditory, visual, corporal, etc.) and to the actual metacognitive management of these processes to achieve the foreseeable goals, in terms of planning (see definitions and examples in Table 5). The frequency with which reference is made to these different processes, and to the nature of the same, is usually indicative of different conceptions and practices of learning and teaching (Baño, 2018; Casas-Mas et al., 2015a; Corbalán et al., submitted; López-Íñiguez & Pozo, 2016, submitted; see also chapters “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”, “[The Choir Conductor: Interpreter or Maestro?](#)” and “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)” of the book for further examples). Thus, as we have seen, from a more direct focus (in keeping with the taxonomy established in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”), identified with a type of ingenuous conductism (Pozo et al., 2006) less reference is generally made to mediator cognitive processes and when they appear, they refer mainly to associative forms of learning (literal recovery, repetitive learning based on blind practice and revision). However, with the interpretative focus greater reference is made to cognitive processes, even of higher complexity, which are not only aimed at associative learning but at some forms of constructive learning. Notwithstanding, the regulation of these processes—who mentions them and who manages them—is up to the teacher alone. Finally, from a constructive practice, greater emphasis is placed on the student to manage and regulate their cognitive processes, which are also mainly aimed at more complex forms of learning (recovery with transference, comprehension, planning, use of many different representational formats, etc.; see references and previously mentioned chapters).

Motivational and emotional processes (see Table 6) follow a similar pattern. They are closely linked to the evaluation and interpretation of right and wrong acts. In this case, however, there is a clear presence of references to motivation and attributions, even in the direct conception, although they are usually clearly directed

**Table 5** Categories of cognitive process analysis in the SAPEA. López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Category	Definition	Examples
Literal retrieval	Verbalizations or gestures from the teacher or student where previously learned knowledge is requested or alluded to	<ul style="list-style-type: none"> <li>- Teacher: <i>Let's now look at the scale of F major which we studied last week</i></li> <li>- Teacher: <i>Do you remember the melody we played at the beginning of the class? Let's see if you remember it all</i></li> <li>- Teacher: <i>Does this sound familiar?</i></li> <li>- Student: <i>I remember a bit of the song about the puppy, but only a bit</i></li> <li>- Teacher: <i>You are completely right but I didn't want to tell you so that you would guess. It actually sounds the same as the puppy song</i></li> <li>- Student: <i>This part is the same as in the other song (pointing to a passage in the score)</i></li> </ul>
Retrieval with transfer/activation and management of previous knowledge	Verbalizations or gestures from the teacher or student where knowledge which has already been acquired (past) is requested or alluded to so as to use as an anchor for a new learning (this may be more superficial or profound)	<ul style="list-style-type: none"> <li>- Teacher: <i>Do you remember how you got the sound of E sharp in yesterday's song? Shall we see if it works for F as well?</i></li> <li>- Teacher: <i>Imagine the wolf comes, let's see what he would sound like</i></li> <li>- Student: <i>Why don't I try the same fingers 1-2-3 that appeared in yesterday's song?</i></li> <li>- Teacher: <i>I'm going to give you a clue, what song is this one?</i></li> <li>- Student: <i>The duck song</i></li> <li>- Teacher: <i>Very good, how did you know?</i></li> <li>- Student: <i>Well, I just thought what song has that silence and then I looked at the music and it is very similar. And then I realized</i></li> <li>- Teacher: <i>Yes, that's exactly how it is done, first you realise what things they seem like and then you realise what other things are there. And that is how you learn</i></li> </ul>

(continued)

Table 5 (continued)

Category	Definition	Examples
Repetitive-revision learning	Verbalizations or gestures from the teacher or student which allude to the repetition of a musical fragment or motor skill action with or without the instrument to consolidate this learning	<ul style="list-style-type: none"> <li>- Teacher: <i>We are going to repeat this 10 times</i></li> <li>- Student: <i>I'm going to study this for 5 min every day</i></li> <li>- Student: <i>The day before the concert I always study slowly, it's the only way it comes out right</i></li> <li>- Trombonist: <i>We should repeat it again</i></li> <li>- Tuba: <i>Let's repeat! Shall we do it da capo?</i></li> </ul>
Comprehensive learning	Verbalizations or gestures from the teacher or student, which promote the creation of knowledge and which cannot be included in any other category, e.g., prioritising, associating, comparing or selecting information	<ul style="list-style-type: none"> <li>- Student: <i>In the breaths between question and answer I have to maintain the whole line of the phrase</i></li> <li>- Student: <i>This type of attack is very different from all the previous ones because I have to hold my hand higher</i></li> <li>- Teacher: <i>"What dynamics would you use in this passage?"</i></li> <li>- Student: <i>If this were mezzo piano, I'm going to try to continue in piano and end in pianissimo</i></li> <li>- Student: <i>Wait a second, one second, what does this mean?</i></li> <li>- Teacher: <i>Think a little, what could it be?</i></li> <li>- Student: <i>It's a zero</i></li> <li>- Teacher: <i>And what does that mean?</i></li> <li>- Student: [moves the fingers on the fingerboard, whilst thinking and counting fingers] <i>it means...</i> [touches the string in the air whilst the teacher corrects their position with the instrument]</li> <li>- Teacher: <i>Yes, that's where the E is [the student plays the E correctly]</i></li> <li>- Student: <i>My teacher is one of the best teachers. She understands what I am thinking. She helps me if there is something I do not yet know how to do and during the classes I play better each time because I understand things</i></li> </ul>

(continued)

Table 5 (continued)

Category	Definition	Examples
Planning	Verbalizations from the teacher or student aimed at establishing a plan through which to organise the acquisition of a piece of knowledge	<ul style="list-style-type: none"> <li>- Student: <i>I am going to study this to note down the best fingering for me</i></li> <li>- Teacher: <i>First study the passage slowly and then do it faster until you are at the speed indicated by the score</i></li> <li>- Tuba: <i>OK, before carrying on, just so it's clear, shall we cut at the beat or before?</i></li> <li>- Trombonist: <i>At the beat</i></li> </ul>
Attention management	Verbalizations from the teacher or student which are related to focusing the attention and maintaining it through present and immediate actions	<ul style="list-style-type: none"> <li>- Teacher: <i>Watch how you are moving your elbow</i></li> <li>- Teacher/Student: <i>This is important because it might come into the exam</i></li> <li>- The teacher points to some element in the musical score or any other item in the instrument</li> <li>- Teacher: <i>Can you clap this from here?</i> [pointing to the score of the puppy, touches her hand. The student plays while the teacher guides her through the score, when the student gets lost while reading the teacher makes funny faces]</li> </ul>
Mental representation	Verbalizations from the teacher or student where activities are proposed in order to work or generate a mental, sonorous, tactile image regardless of whether it is related to a specific piece of music or sound or not	<ul style="list-style-type: none"> <li>- Listen to the score internally</li> <li>- Visualise the piano keys with your eyes where the chords are</li> <li>- Do exercises just with your fingers, the same as with the piece, but without the instrument</li> <li>- Teacher: <i>Can we make the beginning sharper?</i> [sings it]</li> <li>- Student: [plays it]</li> <li>- Teacher: <i>Can I ask you that every time this note appears the bow soars?</i></li> <li>- Student: [plays it]</li> <li>- Teacher: <i>Try it a bit sharper</i> [whistling]</li> </ul>

**Table 6** Categories of emotional process analysis in the SAPEA. López-Iñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Category	Definition	Examples
Extrinsic motivation management	Verbalizations or gestures through which the teacher, parents, colleagues (external agents) or students (internal agent) manage external elements to the learning process, that are used or serve to drive activity development	<ul style="list-style-type: none"> <li>– Student: <i>I hate studying, but if my parents see me practising they will buy me trendy trainers</i></li> <li>– Teacher: <i>Come on, do the scale again and we will play the duet you like so much</i></li> </ul>
Intrinsic motivation management	Verbalizations or gestures through which the teacher, parents, colleagues (external agents) or students (internal agent) manage internal elements to the learning process, that are used or serve to drive activity development	<p>Personal challenges referring to the learning of a piece</p> <ul style="list-style-type: none"> <li>– Student: <i>I really like playing this piece from top to bottom, because it is so pretty</i></li> <li>– Student: <i>I want to play this because it's really difficult to get right</i></li> <li>– Student: <i>Why is there a 2 here?</i></li> <li>– Teacher: <i>There are tricks, here and there, that's all I can tell you, there are tricks of the type you so like [the student finds the correct fingerings whilst playing]. Oh...</i></li> <li>– Teacher: <i>I'm sure you have studied, but maybe not enough or you have not organized yourself well, how could you do it better?</i></li> </ul> <p>Teacher: <i>although they have hardly studied at all its obvious they have talent and play well</i></p> <p>Student: <i>the sound is very small because the acoustics are very different</i></p>
(Positive and negative) Attributions	Verbalisations of the reasons the teacher or student attributes to the success or failure of learning in the activity undertaken (past), and which may be both positive or negative with regards to the individual (internal) or learning results, processes or conditions (external)	<ul style="list-style-type: none"> <li>– Teacher: <i>Now the passage has come out right</i></li> <li>– Student: <i>Respecting the breathing spaces is something I haven't yet mastered</i></li> <li>– Teacher/Student: <i>Good!</i></li> <li>– Teacher: <i>You are playing it really well, this is much better</i></li> </ul>
(Positive and negative) Assessment	Verbalisations of the teacher or student aimed at making a judgement on the action undertaken, which may—or may not—allude to the achievement—or lack of—of the objective at that time	



at extrinsic motivation (maintaining efforts through rewards and punishments, see chapter “[The Psychology of Learning Music](#)”) and to attributions which are more generally negative than positive. Given the importance of error correction in this direct or traditional conception (see chapters “[Teaching Music: Old Traditions and New Approaches](#)” and “[The Psychology of Learning Music](#)”) it is highly frequent that this practice involves attributions and evaluations that focus more on errors and on negative aspects, which usually generate greater emotional tension in students (Austin & Vispoel, 1988; Hallam, 2009). These theories also make attributions to student conditions or traits, which are difficult for the student to change or control, such as talent. In contrast the adoption of an interpretative focus is the sign of an attempt to promote a good classroom environment, with more positive evaluations, focused often on explaining the reasons for error, not just correcting them. Finally, from a constructive stance more actions and verbalisations are made which are aimed at promoting intrinsic motivation and carrying out attributions to factors which can be controlled by the student, helping them take over control of their own learning and getting as close as possible to their own goals.

#### **4.5 Teaching Conditions**

In this analysis, the conditions refer to the type of teaching–learning activities that take place and to the participation of the different agents (teachers and students) in these activities—in short, who intervenes in these activities and how they do so. It is a question of identifying the different actions carried out by music teachers to manage their students’ learning and the way in which they interact with them, giving rise to different participation structures. Depending on the interaction between all these conditions and the objectives involved, learning may be more associative or more interactive. For example, the first action in Table 7, informing, may be a condition for associative learning if it is carried out in an isolated or predominant manner and it is hoped that this is enough for the student to learn. However, if apart from informing, they also ask questions, argue, propose, etc. we may understand this would be a condition for significant or constructive learning. Although a great part of learning in instrumental music is supported in dyadic interactions, it is of particular interest to also analyse cooperative learning spaces (e.g., Baño, 2018; Gaunt & Westerlund, 2013; Vidal et al., 2010; see chapter “[From Individual Learning to Cooperative Learning](#)”), where several interpreters interact, by themselves or under the supervision of a teacher. From the different works which identify typical teaching activities (e.g., Coll & Solé, 1990; de la Cruz et al., 2006; Viladot et al., 2010), we would distinguish between the following types of actions:

But apart from observing the actions taken and their sequencing we are also interested in identifying the agents which fulfil them and the function they adopt in these didactic sequences. In this sense, Sánchez et al. (2008), who take as the unit of analysis the cycle from which episodes are composed, identify the three components of the already mentioned proposal by Cazden (1988): a teacher asks something which

**Table 7** Categories for analysis of the conditions in the SAPEA. López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Action	Definition	Examples
Inform/transmit knowledge	Verbalisations of the teacher or student where basic knowledge is exposed	<ul style="list-style-type: none"> <li>– Teacher/Student: <i>On a 4/4 beat there can be different notes: a round one, two white ones, four black ...</i></li> <li>– Horn: <i>Yes, it's asking me for another phrase too</i></li> </ul>
Respond	Verbalisations or musical interventions of the teacher or student where a positive or negative response is generated	<ul style="list-style-type: none"> <li>– Teacher/Student: <i>is this an F?</i></li> <li>– Teacher/Student: <i>I think so</i></li> </ul>
Explain/argue	Verbalisations of the teacher or student where an idea is justified	<ul style="list-style-type: none"> <li>– Teacher/Student: <i>This phrasing is more appropriate because this one is a question and goes up to that note</i></li> <li>– Trumpet player: <i>No, we should play more piano, but not lower the tempo because of it</i></li> </ul>
Correct	Verbalisations of the teacher or student where an execution or action considered inappropriate is made explicit. An alternative option may be given or not	<ul style="list-style-type: none"> <li>– Teacher: <i>Don't lower your head whilst you are playing</i></li> <li>– Teacher: <i>You made a mistake in that bit, it's A sharp</i></li> </ul>
Give instruction/orders	Verbalisations of the teacher or student through which the sets to follow to carry out an action are made explicit	<ul style="list-style-type: none"> <li>– Teacher: <i>When you begin to study a musical score, before you play you look at the key signature and the beat</i></li> <li>– Teacher: <i>Let's do a breathing exercise for this passage</i></li> </ul>
Model/demonstrate	Actions or verbalisations of the teacher or student which show an action which should be imitated	<ul style="list-style-type: none"> <li>– Teacher: <i>Look, you have to put your finger like this, rounded [making the gesture]</i></li> <li>– Teacher: <i>We're going to do a breathing exercise here. Breathe in and breathe out ... [whispering and demonstrating]. Two, three...</i></li> </ul>
Ask/doubt	Verbalisations of the teacher or student which involve—or not—a response for the interlocutor, although the objective is that the inter-locutor responds	<ul style="list-style-type: none"> <li>– Teacher/Student: <i>What style does this piece belong to?, whose is it?</i></li> <li>– Teacher: <i>What elements of this piece do you find striking?</i></li> <li>– Student: <i>I don't know how to do this so that the piano is heard...</i></li> <li>– Teacher: <i>How would you play this if you did not have any written harmonics?</i></li> </ul>

(continued)

**Table 7** (continued)

Action	Definition	Examples
Propose/suggest	Verbalisations of the teacher or student where a possible action to be taken is made explicit tentatively or as an alternative	<ul style="list-style-type: none"> <li>– Teacher: <i>Now try to play this in a different register</i></li> <li>– In a brass rehearsal:                             <ul style="list-style-type: none"> <li>– Horn: <i>I think we should repeat it</i></li> <li>– Tuba: <i>Shall we play it da capo?</i></li> </ul> </li> </ul>

**Table 8** Types of cycles in instrumental teaching and learning practice in the SAPEA. López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Open cycle	Response cycle	Evaluation cycle
<p>The teacher or student suggests a certain activity is done which serves to close a certain cycle within an episode, without any evaluation or response being made. A question which is left in the air would also form part of the closure of this type of cycle</p> <p>– Teacher: <i>Well, let's play this other song...</i></p>	<p>The teacher or student responds through verbalisations such as informing, responding, singing or playing, to some of the actions proposed by one of them (asking, ordering, suggesting...) without any evaluation being made and serving as closure to a certain cycle</p> <p>– Teacher: <i>Can you sing it?</i></p> <p>– Student: <i>Do-Re-Do-Re-Re-Do-Do</i></p>	<p>The teacher or student assesses or attributes (both positively and negatively) the success or failure of the activity carried out in a certain cycle</p> <p>– Teacher: <i>What do you think of this song?</i></p> <p>– Student: <i>It's pretty. I can play it more or less</i> (whilst they play pizzicatos without any feeling and the teacher thinks)</p>

the student should know (I = *enquiry*), a student responds (R = *response*) and the same teacher evaluates what has occurred (E = *evaluation*). As we saw previously, this structure is known as IRE (for its initials in Spanish) There are also more open patterns of activity such as IRF (F = *feedback*), or more symmetrical where both the student and the teacher could begin the cycle, respond or evaluate. From these patterns, as shown in Table 8, we have been able to identify in each of the episodes observed, three types of cycles, which would correspond to those of response or evaluation mentioned, but also a type of open cycle which would not necessarily have any type of closure or feedback, and which could be made by the teacher or the student, as appears below:

In the SAPEA this type of help and the way in which these practices are structured would be linked to the previously mentioned implicit theories (see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”). In turn, these cycles would correspond to different teaching practices in the following manner:

- Direct teaching practices: the teacher says what they have to do, assesses or offers a (closed) response to the suggested need or problem [this would correspond to something such as an (I)RE in Sánchez et al. (2008) terminology, where RE are made by the teacher]. In this pattern the predominant actions would be *transferring knowledge, giving instructions, ordering, moulding, correcting*.
- Interpretative teaching practices: the teacher provides aid, suggestions, proposals but closes the cycle with an evaluation or a response (an IRE). In this pattern together with some of the previous categories, the predominance of actions such as explaining or suggesting would be characteristic.
- Constructive teaching practices: rather than providing responses the teacher guides and helps the student to find their own responses and self assessment or leaves the cycle open. He or she questions more than responds (this would be closer to the

**Table 9** Types of interaction identified in the different episodes in the SAPEA. López-Íñiguez and Pozo (2016) (Reprinted with permission from Elsevier)

Interaction	Definition
Teacher (P)	The teacher says what has to be done, giving the (closed) response to the need or problem that has arisen [this would correspond to something like an (I) RE) in the terminology of Sánchez et al. (2008), where RE is made by the teacher). <i>the teacher imposes heavy control, talking, arranging, communicating...</i>
Teacher–Student (Pa)	The teacher provides help, suggestions, proposals, but he or she closes the cycle (an IRE). <i>the teacher suggests, proposes...</i>
Teacher–Student (PA)	Rather than providing the answers the teacher guides and helps the student to find their own answers. He or she asks more than responds (this would be closer to the IRF or open participation structures or where the closure, in the cases of IRE, would be made by the student). <i>The teacher suggests, guides, control is shared ...</i>
Student (A)	The teacher lets the student work, supporting him or her, at the most questioning, but not suggesting or providing answers. Maybe this would be relevant in the case of symmetrical structures. <i>the teacher leaves the students to their own devices...</i>
Student–Student (Aa)	A student provides help, suggestions, guides or responds to another
Student–Student (AA)	Instead of being a single directional information or help structure this is more two directional or multi directional if there are two students. Characterised by reciprocity between the students

IRF or to open participation structures or where the closure, when there is IRE, is made by the Student). Here the pattern should be different with a predominance of categories such as suggesting or asking by the teacher, even with the additional presence of explaining, but it is especially the student participations which should increase, with them discussing, doubting and correcting their own actions.

We divided interaction into different sections depending on who the participants are (see Table 9). Firstly, we identified the predominant interactions in musical instrument teaching, with dyadic classroom formats (1–1), i.e., teacher-student. In this interaction we distinguished different nuances in the importance of participation and management of processes, results and learning conditions establishing as predominant the structures of Teacher (P), Teacher–Student (Pa) and Teacher–Student (PA) described below (the structure of just predominant A is much less frequent in the case of formal music teaching, but we have included it to be able to identify exceptional cases).

## 5 Analysis of Practice as Resource for Changing Musical Education

The system of practice analysis we have just described seeks to be an exhaustive tool for the observation of most activities taking place in instrumental music classes. We believe it would be impossible for observation to be totally objective. The eyes with which we observe, and the tools we use are influenced by what captures the attention most or what we concentrate on most at each moment in time. In the SAPEA construction we have tried to contemplate the majority of situations which could occur in the instrumental teaching class as well as the relationships of these situations which are more or less directly observable with the processes and type of learning produced.

Our aim was not just to describe what happens in the classes, but mostly to better understand what happens in them, providing a theoretical meaning to what is observed. To this end, Table 10 is an attempt to present a summary of the characteristic traits of the musical learning and teaching practices in accordance with each of the conceptions described in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”.

It is important when interpreting the content of this summary table to bear in mind that the actions of a teacher and a student are not always aligned within the same conception or theory. This was already made clear in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” relating to conceptions and is all the more so when real practices in the class are involved. Instead they respond to summaries or profiles which, in keeping with the principle of hierarchical integration mentioned in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, embody several of these conceptions to a variable degree (Pozo, 2017; Pozo et al., 2016). Also, as reflected in Table 10, some of these traits have a continuity from a simpler conception to another more complex one (from left to right in the Table 10), which is reflected with continuous or discontinuous arrows. The same trait may appear in different conceptions with a similar frequency (continuous arrow) but also stay the same whilst considerably reducing their frequency or relevance (discontinuous arrow). In fact, as shown in chapter “[How to Know and Analyse Conceptions on Learning and Teaching](#)”, the change of some theories or conceptions to others, in keeping with the principles which govern conceptual change (Pozo, 2014; Scheuer et al., 2006), are initially supported by a hierarchical integration, according to which new conceptions accept some of the traits of the previous theories, but redescribe them or reconstruct them, in this case in new practice structures.

Another major trait of the SAPEA which the Table 10 attempts to reflect is that one has to consider not just what is done but also who does it. It is not the same for processes to be managed by the teacher, or the student or that their management is combined. These different forms of managing activities are contained in the last row of the table.

**Table 10** Characteristic traits of the practices of teaching and learning according to different conceptions (The continuous arrows indicate that this characteristic is maintained in the following conception; discontinuous arrows mean that although it may still appear, it is undertaken with less frequency and relevancy)

	Direct	Interpretative	Constructive
<b>Results</b>	<ul style="list-style-type: none"> <li>- Notational</li> <li>- Syntactic</li> <li>- Psycho motor</li> <li>- Reproductive memory resources based on repetition</li> <li>- Scenic presence focused on success</li> </ul>	<ul style="list-style-type: none"> <li>↑</li> <li>↑</li> <li>- Analytical → structural</li> <li>↑</li> <li>- Reproductive memory resources based on arbitrary relationships or not</li> <li>- Sound production</li> <li>↑</li> </ul>	<ul style="list-style-type: none"> <li>- - - - - ↑</li> <li>- - - - - ↑</li> <li>- Referential</li> <li>- Expressive</li> <li>- - - - - ↑</li> <li>- Activation of significant and relational memory</li> <li>- - - - - ↑</li> <li>- Scenic presence for communication with the listener</li> </ul>
<b>Processes</b>	<ul style="list-style-type: none"> <li>- In general little reference to processes, but when they appear they are always managed by the teacher</li> <li>- Literal retrieval</li> <li>- Repetitive-revision</li> <li>- Establishment of fixed action sequences, planning, as routines fixed by the teacher</li> </ul>	<ul style="list-style-type: none"> <li>↑</li> <li>↑</li> <li>↑</li> <li>Higher frequency of processes but usually managed by the teacher who invites the student to bear them in mind</li> </ul>	<ul style="list-style-type: none"> <li>Greater emphasis on the processes and especially on self-regulation of them by the student</li> <li>- - - - - ↑</li> <li>- Transformations and variations on what has been learned</li> <li>- Joins search for new strategies and plans of action</li> </ul>

(continued)





**Table 10** (continued)

	<p>– Open cycles of response and evaluation</p>		<p>– Open cycles, of response and evaluation                  – Emphasis on interaction between students                  – Promote situations of cooperation between students where they necessarily regulate their learning processes</p>
<p><b>Who takes decisions on it</b></p>	<p><b>P:</b> The teacher says what has to be done, gives the answer (closed) to the need or problem proposed</p>	<p><b>P y Pa:</b> The teacher provides help, suggestions, proposals, but he or she closes the cycle.</p>	<p><b>Greater protagonism of the student in taking decisions and actions:</b>  <b>PA:</b> guides and helps the student to find their own answers  <b>A:</b> the teacher lets the student act, supporting him or her, only asks, does not suggest nor provide answers  <b>Aa:</b> A student provides help, suggestions, guides or responds to the another/  <b>AA:</b> two-directional or multi-directional if there are more than two students. This is characterized by reciprocity between students.</p>

In any event, Table 10 should be regarded as an ideal or prototypical characterisation of actions which both the teacher and the student undertake in an instrumental music class, according to the three positions previously mentioned (direct interpretative and constructive). However, as pointed out several pages ago, at the beginning of this chapter, practice is always richer than any model attempting to contain it (including of course the SAPEA, however exhaustive it purports to be), and the use of this system for analyzing specific practices usually leads to more complex, varied and infinitely richer patterns than those reflected in it.

In addition to this attempt at thoroughness and the provision of theoretical meaning to teacher and student practices for a better understanding of them, we have tried to make SAPEA a versatile tool that can adapt to different circumstances. We believe it is therefore a living and alterable tool which must adapt to the objectives and people using it but also to the characteristics of the instrument that is being learned or the circumstances and conditions of the classroom and the students. As may be seen in the following chapters, it is not the same to observe the dyadic interaction in a beginner's cello class (see chapter "[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)"), as that of a choral class where there is a teacher-conductor and several students (see chapter "[The Choir Conductor: Interpreter or Maestro?](#)") or the analysis of informal learning spaces (see chapter "[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)"). The works upon which these chapters (and many other chapters in Part Two of the book) have been based are supported by the SAPEA, but the categories used in each case may vary in keeping with the actual conditions and the direct observation objectives.

SAPEA therefore seeks to offer a structure which will be used differently, depending on characteristics and objectives and where categories used may be selected and new categories may be introduced. However, this versatility means that the tool may also be used with different objectives. As shown in the following chapters, it is a valid tool for research on learning and teaching of instrumental and vocal music. Furthermore, with this common but versatile structure we are able to compare results which in other situations using different tools would be impossible without falling into an inferential, and at times not well justified practice. We believe this tool may also be useful in innovation spaces, in educational change where a teacher analyses his or her own practices to improve them. So too in teacher training spaces. Practices are undoubtedly essential tools during initial teacher training or continuous professional training and they should include knowing what to say and knowing what to do (Martín & Cervi, 2006). The same occurs with the observation of practices undertaken by others. However, as underlined in chapter "[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the 21st Century](#)", these practices serve for very little if they are not combined with reflexive processes that foster comprehension of what is happening at each moment. It is SAPEA's aim to accomplish this reflection.

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# **Learning and Teaching in the Music Classroom**

# Early Initiation to Music Learning: Little Children Are Musicians Too



Anna Sorlí, Juan Ignacio Pozo , and José Antonio Torrado

## 1 Intuitive Musical Knowledge

Clara, who is a music teacher in a school, has recently noticed that the boys and girls are no longer interested in her classes. She has realised that when she tries to explain musical notes, silences, intensities, etc. in a fun, dynamic manner the children talk amongst themselves and do not participate in the classroom dynamics. She has always thought it very important for children to learn the musical code because only then can they begin to play the class instruments—piano, bells, metallophones, xylophones—and to make music. However, for days she has been wondering how to present the activities to capture their attention. One day she decides to arrange the classroom into small musical spaces: one space for metallophones, one space for small percussion instruments—maracas, triangles and claves—and one space for movement-inducing materials—silk scarves, small rubber balls and feathers. Her aim was to observe what the children, aged between 3 and 8 years, would do with these materials during the 45 min of class, where there was just one request: to play with the instruments and the music. To her great surprise the children of all ages invented an infinity of melodies and rhythms and did so playing with all the different instruments and materials she had offered them. The children sang whilst displaying intensities, counting time, and changing the duration of the sounds and the attack, depending on the game context or their actions. What sense then did it make to show

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them concepts if they were already intuitively managing without having received any specific formal musical education?

It is often believed that to be a musician, there must be special learning conditions, but the truth is that almost all of us human beings are capable of tapping out a beat with our foot when listening to our favourite music, moving our body to the rhythm of rock, blues, jazz and pop, or even humming or inventing melodies when we are inspired. We can do all of this without knowing any musical language and without having received specific music lessons. So, are we musicians from birth? According to Trehub (2015), a Canadian specialist psychologist and researcher in the field of music from first infancy, there are reasons to think that we have all been endowed with the genetic ability for good musical development since both linguistic and musical skills are naturally developed in all human beings universally, except in highly exceptional circumstances of developmental adjustments (Hallam, 2010). It is important, however, to stress that these skills change, in keeping with the predominant musical patterns in each culture. As we shall see later on, since birth we have been immersed in a musical culture, which allows us to appropriate implicitly and spontaneously the musical parameters and shapes that characterize them. Therefore, thinking that only those who know how to read music or play an instrument are musicians is to restrict and separate music from our biology and history as human beings. Throughout almost the whole world and during most of human history, music has been as natural an activity as breathing and walking. Human activity without music is unimaginable; there is no culture without music. Although music appears in a different light in different cultures, all human beings, since birth, are immersed in social activities mediated by music.

Notwithstanding, the music teaching system has focused on the learning of the musical code as a means of acquiring the necessary tools and techniques for learning to play an instrument, to compose, or to manage an orchestra, leaving to one side the musical experience which we have been acquiring since birth and which will shape, as we shall now see, our intuitive musical knowledge. Anybody who is familiar with the schools where one learns music will know that for decades this has been, and continues to be, the aim of all learning (see examples of this educational culture in several chapters of this book, e.g., [Instrument Mastery Through Expression: Learning Instrumental Technique, From Individual to Cooperative Learning](#) or [The Choir Conductor: Interpreter or Maestro?](#)). It is very common for children to start by receiving explanations on the musical code without having previously shared and adjusted their intuitive musical knowledge. We know that children experience, sense and feel music since birth but in the centres that promote abstract and disembodied knowledge (see chapters “[Teaching Music: Old Traditions and New Approaches](#) and [Instrument Mastery Through Expression: Learning Instrumental Technique](#)”, also Torrado et al., 2005) they not only refuse to take into account prior knowledge of learners but often do not question or analyse other forms of teaching and/or learning. This way of teaching is a culture based on specific practices, text books and instrument methodologies which, removed from the most recent research on developmental psychology and music, have ignored the communicative nature of

music and the intuitive knowledge we have of it to focus on theoretical explanations on the code of the music itself and the instrument.

Although much ground still needs to be covered, the learning and teaching of music in early childhood has dramatically changed, with new forms of dynamic learning and teaching music with materials that help to arouse musicality (e.g., Bamberger, 2013; Paule-Ruiz et al., 2017; Watts, 2018). But, do these new methodologies adjust to and connect with the previous knowledge of the learners? The literature on previous musical knowledge in childhood is still scarce, but what we do know is that this has, and has had over the centuries, a significant role in the first life stage. In its purest form, sounds have been and are used by mothers throughout the world to calm their babies down and communicate with them, making it a vehicle to express emotions and induce them to feel them (Bencivelli, 2007; Mithen, 2005). As we saw in chapter “[Teaching Music: Old Traditions and New Approaches](#)”, due to its nature and origin, music is a communicative and expressive phenomenon (Juslin & Sloboda, 2013) which plays a role in the area of emotional expression (Juslin & Västjäll, 2008).

As we have stated, since we were very small we have been immersed in a musical environment and we have acquired the musical forms which are characteristic of our culture. This process of acculturation (Sloboda, 1991) is the result of a process of implicit musical learning that requires no training and which occurs in informal procedural, spontaneous and unconscious contexts for the child. Acculturation in early childhood occurs in different ways: through the mother singing and through hummed language. With regard to mothers’ singing, evidence shows that in almost all cultures mothers use sounds to regulate the emotional states of their babies. In fact, lullabies are the musical genre which, due to the combination of its sounds—long, slow and soft—is able to produce certain emotional states in babies: calming them, relaxing them, etc. Lastly, regarding hummed language—known as “motherese” (Trehub & Trainor, 1998) or “LAN” language (Mithen, 2005)—we know that thanks to its musical traits, an exaggerated prosody, a broad dynamic range, expanded tone profile and rhythmic regularity (Fernald, 1991; Trehub, 2015), it is one of the first forms of emotional communication between mothers and children, since the little ones listen with greater attention to the song or melodious lyric than the words. Song is also accompanied by facial gesture and body movements—vertical and horizontal waying (Brand & Shallcross, 2008; Ghazban, 2013; Russell & Carroll, 1991)—which leads to the establishment of a more effective and significant communication between mother and baby. Although the directed music and language is of great emotional significance, it is the sounds that are the direct vehicles of the emotions’ whilst the words are indirect. It has been proven that already at 5 months of age babies demonstrate more rhythmic body movements when they listen to rhythmic patterns or rhythmically regulated sounds, than when they listen to spoken sounds (Trehub, 2015; Zenter & Eerola, 2010).

Over the last 30 years several research studies have aimed at probing into musical knowledge that children acquire by participating in their culture, although there is still not much literature existing in this regard. Thus, for example, in the 1990s, several studies showed that children control different intuitive knowledge relating to

emotional expression. Dolgin and Adelson (1990) discovered that at the age of 7 children begin to recognise fear and rage in music and do so mainly based on the *tempo* and volume (Adachi et al., 2004). One year later, Terwoght and Van Grinsven (1991) showed that children were also capable of recognising expressive intentions in music, such as happiness and sadness. Adachi and Trehub (1998) extended their research showing that children, depending on their age, gender and ability to sing, could modify several musical and body parameters. Their study consisted of observing children singing the same song happily or sadly, finding thirty expressive characteristics such as the initial facial expression, the initial pose of the look, the position of the body, etc. associated with the two emotions.

Later, apart from studying the intuitive knowledge of students relating to emotional expression, Arleo (2006) and Marsch (2008) examined the musical knowledge of children who had received no specific formal musical education. Results showed that the students intuitively managed a great variety of musical knowledge, because they synchronised the rhythm of the music with their movements, they created complex bodily rhythmic percussion games, they sang different songs using varied musical parameters, etc. Along these same lines, Bamberger (2013), a researcher specialising in the musical development and learning of children and adults concluded a study to determine the intuitive musical knowledge of children through graphic representations. After listening to a specific musical composition, a group of children drew the rhythm and metrics they thought they heard without resorting to the established musical code. Once the drawing stage was finished, their activity was to join the different graphic representations together and raise awareness so that the children realised what their own musical intuitions on rhythm and metrics were. This activity helped to activate their intuitive knowledge, and also to explain it and re-describe it (Karmiloff-Smith, 1992), achieving more functional and meaningful learning. Lastly, as we shall see in the next section, in a more recent study we showed that girls and boys between 2 and 8 years of age were capable of implicitly managing and modifying several musical parameters with expressive purposes (Sorlí, 2016).

Nonetheless, although research demonstrates some major proofs, further studies are required to look for the different types of intuitive musical knowledge possessed by the children in different stages of development. This activity is not easy since intuitive learning, understood as implicit representations, have been acquired through associative processes and due to their implicit nature (see chapter “[The Psychology of Music Learning](#)”), they are difficult to communicate and verbalise since they are represented in non-formalised codes.

## 2 Intuitive Knowledge on Musical Sound Management

We surely all recall the melody of our favourite childhood cartoons or the song we sang when we were playing hide and seek. However, if we search our memory, we could remember songs that our mother or father usually sang to send us to sleep or to distract us when we were bored in the car coming home after summer holidays.

All these melodies or songs nurture our childhood and grow with us from birth itself. As we saw above, mothers and fathers of almost all cultures use sounds to regulate the emotional states of their babies. The mother's song, not her spoken language, helps to more effectively regulate the levels of excitement and anxiety in babies (Shenfield et al., 2003; Trehub et al., 2015). When children are over one year old, they themselves sing songs to make sense of their games, and they do so in a different way, depending on the action they are taking, since they do not sing the same way when they are playing hide and seek as when they are playing at running or when they are playing with dolls. Probably, if we think of the songs which have accompanied us since childhood, we would realise that each one of them is different, depending on the context. In other words, the song of our favourite cartoons would possibly be a faster or more animated *tempo*, with short sounds and *forte* intensity whilst the song to relax us before sleep has a slow *tempo*, prolonged sounds and a soft or *pianissimo* intensity that helps us fall asleep. If we continued to ponder this we would realize that all the songs we have listened to, or even the brief melodies we invented when were content, have something in common: they are all a combination of several sounds which, depending on how they are arranged, provide us with one sensation or another.

A good exercise for listening to the first melodies invented by children would be to sit down on a park bench or even take a look during school break time and listen to the different melodies that spontaneously come from free play. Rapid, short sounds when they are playing at running, slow, long sounds when playing on the floor or short and slow sounds when playing at hiding. Here it is the children who combine the different musical parameters, depending on their game or actions. However, are they aware of this? Being aware is the first step for children to construct meaningful learning from previous knowledge. And so, coming back to the question, what is this previous learning? We have already seen that one of the goals with the highest repercussions on learning and teaching in the twenty-first century is, without a doubt, researching into the knowledge which children have acquired implicitly in the different developmental contexts since only then can goals, contents and activities be designed to fit in with it (see chapter "[The Psychology of Music Learning](#)").

In the field of music specifically, what is the point of trying to make a child learn that the combination of musical parameters to express or communicate happiness are fast, short sounds with strong intensity, if they have already known this since they were small and even use it in their everyday life? But knowing something does not mean you are aware of it. Awareness requires a process involving explanation and reflection.

Like Clara, probably many teachers have realised that when children sing they control a series of musical parameters without having received any formal education. If they already control the parameters, why teach them? Clara would no doubt have many reservations about designing new learning and teaching activities, but what she is clear on is that music does not consist of teaching the code. Changing the goal of learning involves continuously questioning oneself and tirelessly researching on intuitive musical knowledge. For this reason, Clara decided to try a new activity. This time, she wanted to observe whether the children were capable of controlling

this intuitive knowledge in relation to emotional development. If children invented songs, combining the different musical parameters, would they be able to control these musical parameters to express a specific emotion?

We will now give some examples of 4 real situations with children between 4 and 7 years of age, aimed at discovering if children are able to control musical parameters to express different states of emotion (Sorlí, 2016).

## 2.1 At the Age of 4

Clara gives Mar a doll and asks her if she would like to sing it her favourite song. Mar puts the doll in her arms and sings it “*El gegant del pi*” (The Giant of the Pine). Afterwards the teacher asks her if she would sing the same song to make her happy. Mar takes the doll by the waist and begins to sing, but this time she does it differently, using shorter sounds and moving the doll with a vertical swinging of her body. When she has finished, the teacher asks her why she thinks this song made the doll happy and she says because it is pretty and the doll would like it. Then the teacher asks her if she would sing the same song to calm the doll down because she wants to sleep and can’t. Mar hesitates for a second and then decides to sing another song and chooses a lullaby that her mother sang to her when she was little “*Son soneta*” (The Sonet). When she sings it she lowers the intensity of her voice, i.e., singing it softly, with less resonance, longer sounds and she moves her body with a horizontal swing. To finish with, the teacher suggests that she sing the same song so that the doll is not afraid and Mar responds that she doesn’t know what song to sing and that it is very difficult.

Later on, the teacher gives another girl, Luna, a doll and asks her if she wishes to sing her a song. Luna very carefully lifts up the doll and whilst looking at it sings “*Un elefante se balanceaba*” (The elephant’s song). Afterwards, the teacher asks if she would sing the same song to make the doll happy and Luna says she would, because the elephant is funny and that would make her happy. When singing, this time she uses a clearer voice, singing more loudly, faster and moving her body and vertically swinging the doll. After this Clara asks her if she would sing this same song to calm the doll down because she wants to sleep and can’t. Luna, categorically responds that she wouldn’t, because she would sing a night-time song. So, she begins to sing “*La luna*” (The moon), totally changing the context of the previous song: she sings slowly, with a soft intensity, less resonance, longer sounds and moving her body with a horizontal swing. Finally, the teacher asks if she would sing the same song if the doll were afraid and she says no, because she would not know which song to sing.

## 2.2 At the Age of 7

The teacher gives Etna, a girl aged 7, a doll and asks if she would like to sing her a song. Etna chooses one of her favourite songs, “*Sol solet*,” (Sun, little sun) and she sings to the doll, holding it in her hands. Clara then invites her to sing a song to make the doll happy and she sings it again but this time in a different way. She begins the song with a *staccato*, attack, singing it more loudly, using short sounds and moving her body with a vertical swing. When finished the teacher asks why she thinks this song would make the doll happy and she says because it is very animated and fast. Then, the teacher asks if she would use the same song to put the doll to sleep and she says no, she would sing a night-time song which was softer and slower, “*Lluna la pruna*” (The moon, The prune) because it is quieter and slower. When she sings it, Etna begins with an initial *legato*, attack, low in intensity and pitch height, with less resonance, longer sounds and moving her body with a horizontal swing. Finally, the teacher asks if she would sing this same song for the doll not to be afraid and she says yes, because it is soft, but when she sings it, she does so with a soft intensity, using short sounds and with no body movement.

On another occasion, Clara gives Irta, another 7 year old, a doll and asks her to sing it a song. Irta decides to sing “*Estrellita dónde estás?*” (Twinkle twinkle, little star), takes the doll in her arms and sways horizontally because she says “she will relax like this”. Clara asks her if she thinks this song will make the doll happy and she says yes, but when she sings it, although she continues to move her body horizontally, she begins the song with an initial *staccato*, attack, singing louder and using short sounds. When she has finished, the teacher asks why she thinks this song would make the doll happy and she says because it has rhythm and is animated. Then Irta tells Clara that the song is actually good for sleeping because her mother used to sing it to her when she was little and it really relaxed her. Then, she sings the same song again but with an initial *legato* attack, low in voice intensity, singing softly and using long sounds. To finish with, the teacher asks if she would sing the same song if the doll were frightened and she says she wouldn’t, because she would sing the song of the light and so there would always be light and the doll wouldn’t be afraid. Irta begins to sing a melody with long sounds, a soft intensity and with no body movement. The teacher asks her about the song and she says she has invented it.

### Musical Parameters

Levitin (2006) suggests that music is organised sound. From this viewpoint, any sound possesses certain basic elements which are those we perceive of when we listen to music: intensity, tone, contour, duration, tempo, timbre, spatial location and reverberation. When these elements are combined and interrelated significantly, they lead to more complex structures which are capable of raising different emotions in the listener. If we bear in mind this organization, we can observe that the four



**Table 1** Musical patterns (Adapted from Gabrielsson and Lindström [2010]). Reproduced with permission of the Licensor through PLSclear

	Definition	Levels
Sound parameters		
Attack	Initial part of a sound	<ul style="list-style-type: none"> <li>– Staccato: more explosive initial beat of sound</li> <li>– Legato: less explosive initial beat of sound</li> </ul>
Resonance	-perception of the amount of resonance (Among of resonant body)	<ul style="list-style-type: none"> <li>– More resonance</li> <li>– Less resonance</li> </ul>
Duration of sound	Duration of the sound relating to the temporary space expected from it	<ul style="list-style-type: none"> <li>– Short</li> <li>– Long</li> </ul>
Intensity	Range of sound intensity	<ul style="list-style-type: none"> <li>– <i>Loud</i></li> <li>– <i>Soft</i></li> </ul>
Height of sound	Real frequency of a sound and relative position on the music scale	<ul style="list-style-type: none"> <li>– Higher</li> <li>– Lower</li> </ul>
Parameters of movement		
Body movement	Body gesture made for producing a sound	<ul style="list-style-type: none"> <li>– Vertical: from front to back</li> <li>– Horizontal: from side to side</li> </ul>

girls, when singing, organize these elements and several others shown in Table 1, depending on the emotion they wish to convey to modify the emotional state of the doll (Sorlí, 2016). Due to the study situation, some of the patterns suggested by Levitin were not able to be controlled, such as spatial location, which would not change, or reverberation—doll and child maintained the same distance always. Neither was it easy to compute timbre, since the girls were in a situation where this could have led to some discomfort or embarrassment.

However, for our analysis, and as shown in chapter “Teaching Music: Old Traditions and New Approaches”, we were able to focus (see Table 1) on patterns such as the three moments when a sound was produced (Torrado et al., 2014) and that we understand are for daily use, and very intuitive: the beginning, if it is more, or less, explosive and what we will call *attack*; the *duration*, if the expected temporary space for a sound is filled with it or the sound production only occupies a part of that temporary space. We would also have the difference of sound produced between saying “sch sch sch sch”, for example on lulling a baby to sleep, where the body of sound is low or we saying “grrr” when we are angry and we cannot shout, where the body of sound is larger. We will call this pattern *resonance*. Another parameter would be the *intensity*, relating to the greater or lesser amount of decibels used to produce sound, so *louder or softer* in musical terms. Finally the difference existing between lower and higher pitched sounds which we will call *height* and that is measured in Hertz.

Thus, to make the doll happy, the girls used the *staccato* attack, more resonance, short sounds, a loud intensity and vertical body movement whilst to make the doll

go to sleep they used the *legato* attack, less resonance, long sounds, a soft intensity and horizontal body movements. It would appear that the four girls with whom Clara worked not only possessed implicit representations on control of musical parameters with expressive ends, but also possessed implicit representations on emotions. However, if we look more closely at this, we realise that between the two ages minor differences appeared: on the one hand, the two girls aged 4 managed the sounds using the simplest musical parameters, those related only with the sound, whilst the girls aged 7 took into account others, such as the initial attack and the height of the sound. On the other hand, although both the girls aged 4 and those aged 7 managed the sounds similarly to express simpler emotions (Terwogt & van Grinsven, 1991), only Etna and Irta, aged 7, sang a song to the doll so it was not afraid. In this case, as Dolgin and Adelson (1990) showed, it seems that at the age of 7 children begin to recognise fear and possess more sophisticated representations for this emotion, so that they are able to better manage sounds. Finally, minor differences were also observed with regard to the explanation they offered: whilst the girls aged 4 offered explanations relating to aesthetic factors—it is pretty or animated—, the girls aged 7 referred to musical factors—it's fast, it's slow or it has rhythm.

### **The Evolution of Implicit Musical Representations**

Having analysed the four examples, it seems clear that the 4 girls possessed intuitive musical knowledge relating to sound control. These narrative examples form part of a research study (Sorlí, 2016) we conducted in Madrid and Reus where we found that 29 boys and girls between 4 and 7 years of age modified their musical parameters according to the emotional expression they wished to convey. In the study we also found there were differences between the two age groups which, as shown by Adachi and Trehub (1998), appear to be indicating that as age increases, socialisation and musical knowledge does too, and the girls modify more musical parameters when they communicate happiness and sadness. This evolution of implicit representations has been studied from different angles (see Scheuer, de la Cruz & Pozo, 2022; Scheuer et al., 2006). In the area of mental developmental theory, it has been seen that around 4 or 5 years of age, a substantial change occurs in the way in which children resolve different mental activities. According to Wellman (1990), children aged 3 already have a representational theory of mind which would correspond to the direct theory described in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”. However, from 6 or 7 years of age, children already possess an interpretative or constructive representational theory. Moreover, these findings would be in line with the results of studies on learning conceptions carried out by Pramling (1996) in children aged 3 and 8 years. Data showed that the youngest children conceived of learning in terms of success in action, and were incapable of distinguishing between doing and learning, whilst the older ones became aware that they could influence their own learning through experience.

Although there is a general pattern for maintaining more sophisticated representations as age advances, this progression could also come from the teaching level,

since a child aged 7 has already spent more hours singing and experimenting with music than a child of 4. In other words, the level of experience in learning songs and receiving music classes may play an essential role in understanding the differences between the two age groups. However, these are not the only conditions for producing an evolution of implicit representations on learning and teaching, since as we have seen in the previous section, reflection and explanation of them is required.

### 3 From Intuitive Musicality to Formal Musicality

At the beginning of this chapter, we talked about the conflicts Clara was facing in her music class. If she had known that prior knowledge or intuitive musicality needed activating to construct knowledge, she would surely have organised her educational practices differently. She would have designed real goals, adjusting them both to the knowledge and maturity of the children, such as the real concept of music—understood to be emotion, energy and movement. Clara, up until that moment, had never asked herself what it was she had to teach or how she had to teach it, since she had assimilated an educational model where the goal of learning was merely the code.

However, as we have seen, before learning music, the children already knew many things about it: they knew how to make happy and sad sounds—faster, slower, with more or less attack, etc.—, they knew which type of interpretations made them more emotional (see chapters “[Teaching Music: Old Traditions and New Approaches](#) and [Instrument Mastery Through Expression: Learning Instrumental Technique](#)”) and which less, etc. An intuitive musicality, understood as a set of implicit representations, which had been acquired through processes of implicit learning and which, bearing in mind the associative nature of these processes and the social nature of the representations on learning, could only change through explicit learning processes. This explicitation process not only let them become aware of, or activate their musicality, it also let them control and regulate it. To do so, it was necessary for the teacher to help her learners reflect on their own metacognitive processes and construct the agency of learning.

Understanding the construction of knowledge in learning as an increasing explicitation of our own implicit representations is necessary for designing activities in the classroom that foster consciousness-raising and help children to construct learning with meaning and sense. Although the activities which Clara organised have helped us to realize children have intuitive musicality, what can now be done so that the children become aware of this and can construct new musical learning from their own previous knowledge? What type of activities can she design to promote reflection in the classroom on that intuitive musicality?

We know that learning occurs when the learner is forced to reflect on their own implicit representations and that it is at the age of 3 or 4 when children begin to ask questions and to look for new information and the available representations, concepts or elements to construct new answers. From this age upwards is when full knowledge

is gained, meta-representations, in the form of theory of mind. Therefore, for learners to reflect, seek new answers, and construct knowledge, they have to create conditions that promote knowledge in action, and reflection on and about that action (Martín & Cervi, 2006; schön, 1987).

Regarding music, learning by reconstructing the actual implicit representations implies that the students may offer responses relating to their sensations and put into practice their ideas on the emotion and the music, aimed at giving them complexity and meaning to develop competences on their usage. Intuition (Atkinson & Claxton, 2000; Hogarth, 2001) is what will help children to manage their skills in the different activities proposed by the teacher. Some activities which, as we will show below, are aimed at promoting reflection on knowledge through the resolution of conflicts, individually and collectively, and through the differentiation and contrasting between several conceptual alternatives.

We will now give an example of an activity with different steps for learning to reconstruct implicit individual representations. This is an exercise in individual and collective explicitation through body and movement, where children will play with different elements of music. We know that the initial response when coming into contact with music is body movement, closely linked with the emotional reaction we feel. As we have been saying, music is emotion, energy and movement, and this we can only understand through our body. For this, we will also use 3 types of materials: silk scarves, small rubber balls and *boomwhackers* (brightly coloured percussion tubes). These materials will help us to capture the attention of the children and to involve their body in the movement and action.

1. The teacher invites the children to sit down in a circle on the floor. Once seated, she suggests they choose a song between them to work on during the class. The chosen song may be a traditional song or one they have been working with at school—it is important that they are all familiar with it so they can participate in the activity. The song they will sing without lyrics, using monosyllables (LA, PAM, BAM) so that the melody and rhythm is not obscured behind the lyrics, and this helps the children to listen to the musical score.
2. Whilst they all sing, the teacher also moves her body fluidly and freely, inviting the children to also move their bodies whilst they sing. The song can be repeated several times, changing the types of movement: they may be stationary (movement without displacement) or locomotor (movement throughout the classroom space), making different shapes with the body (open/shut) or lines (curves/straight lines), doing fast or slow movements, etc. Whilst they sing, the teacher will observe the different types of movement which, according to Laban (1971), may be grouped together into four elements: fluidity, weight, space and time. Provided that we move around with a certain vigour and intention, a combination of these four elements may be observed.
3. Once the song has been experienced through the body and movement, the teacher asks the children if the song they have sung has aroused any emotion. Perhaps happiness? Maybe sadness? If, for example, it has given them happiness, the children are invited to sing the same song but in a sad way, using movement to

feel and experience the song through their bodies. The teacher carries out the activity with them, incorporating a new parameter of movement: levels. So, when they sing they are making movements which are from the low level—movements on the floor—, to medium level and high level—movements with their arms outstretched to increase the distance in the body movement (Jacques-Dalcroze, 1921; Laban, 1971).

4. When they have finished, the teacher invites the learners to reflect on the elements that distinguish a happy song from a sad song, and asks the children to draw or write on the board. This moment is highly important because they will collectively reflect on the sensations of the action and provide explicitation on its elements. As we said previously, this is about knowledge in action and reflection on and about the action. (Martín & Cervi, 2006; Schön, 1987).
5. Once they have reflected on the different parameters, the teacher puts three wooden baskets in the classroom with three types of materials inside: silk scarves, small rubber balls and boomwhackers. She tells the children that they are now going to invent a happy song on their own and are going to feel their elements or musical parameters—rapid, short sounds, strong intensity, etc.—through body movement and through the material. When they have finished she asks if someone would like to demonstrate their song to the others and invites them to reflect on whether the example has the parameters of the happy song established in the previous exercise. Then she asks them to repeat the exercise inventing a sad song and selecting other material.

To conclude, we see how, through this activity the children can both control and regulate their intuitive musicality and also reflect on it—on the different parameters or musical elements—without having received theoretical explanations. For years, the acquisition of music has been considered a slow, arduous process (Patel, 2008; Pinker, 1997) and as a process where the necessary skills for playing an instrument can only be acquired through formal education. But if we talk of musical skills as a sub-product of social, cultural and experiential interaction which is acquired, like language skills, why are we determined to try to only teach the code, imagining that children know nothing about music? As we have seen throughout this chapter, the enculturation of music from a given country or location is a developmental process in which the associations and regularities are internalised, at least implicitly, through repeated exposure (Swaminathan & Schellenberg, 2015). It makes no sense, therefore, that the many musical learning and teaching methods and teachers turn their backs on all of this musical experience that children have been collecting since birth. Transforming that intuitive musicality is the first step in ensuring musical learning is meaningful and valid. We are sure that Clara, our teacher, will try to carry out this activity in her classroom with pen and paper to hand to continue jotting down ideas that will lead her to asking further questions and seeking new answers.

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# Reading Music. The Use of Scores in Music Learning and Teaching



María Puy Pérez Echeverría and Cristina Marín

## 1 Musical Scores as External Representation Systems

If we looked through a conservatory window or the window of a music school, or even a classroom of any primary or secondary school where music was being taught, we would no doubt see different people practising an instrument, in front of a music stand holding a score. Similarly, to many other areas of knowledge, in music there are countless different notation systems that have been developed and created as a response to a set of common needs, including the transmission, preservation and creation of new knowledge. This chapter will solely focus on one of these systems, known as the musical score. It is an extension of the written support on which notations are made and the most widely used system in Western music teaching in conservatories. Normally in these centres in addition to auditions, the different compositions are introduced with musical scores and this system is also used for teaching and developing skills with the instrument. In musical learning and teaching processes and especially those imparted in formal, regulated environments, musical notation is almost always present as the goal and medium of learning and teaching. It even becomes one of the keystones of these processes (Hultberg, 2002; Marín et al., 2012, 2013).

Elena, a pre-professional education flute teacher believes that musical scores are one of the key elements in music teaching–learning. She is meticulous about Irene, her student, being capable of clearly and faithfully interpreting the musical scores both out of respect for the composer and because she thinks that before anyone can be capable of providing their own version of a composition s/he has to know

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how this composition was conceived and considered in its origins. As a result, she continuously insists that Irene practices and repeats the composition a sufficient number of times until she is able to play the notes accurately and assess and control in class whether this learning has been successfully achieved or not, calling Irene to attention when she detects errors. They are now working on the J.S. Bach's Partita for solo flute and specifically the first movement, *Allemande*. For her part Irene, who is currently studying this composition in her house, has the score in her music stand and, as shown by her teacher, is repeating the first part of the piece by putting all her attention into playing the correct notes and breathing in the right places so the musical phrase will not be broken. She has been continuously practising the first part of this movement, from beginning to end, all week although she is aware that, for her, some passages are more complex than others and she is trying to concentrate more on them.

If we asked Elena what a musical score was for, she would probably say something along the lines of it being a representation of a musical composition and an aid towards these compositions becoming familiar and learned. In keeping with this opinion we could conceive that musical scores are the means or tool that help Irene to learn to play music, although as we saw in previous chapters for some teachers, the ones closest to direct learning theories (see chapter "[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)"; also Casas-Mas & Pozo, 2008) the musical score is often an end in itself which should previously be accomplished to then be used on the instrument (see chapter "[Learning Music by Composing: Redescribing Expressive Goals While Writing Them](#)"). We could ask if the way in which Elena recommends Irene learns the musical score and the methods which Irene consequently uses are demonstrative of this mediating idea or whether learning the musical score is an end in itself. Later on, we will come back to this issue. For the moment we will focus on the musical score as a medium. The mediating use of the musical scores is possible for two reasons. On the one hand, Irene already has enough musical and interpretative education to read musical scores and transfer the learning extracted from that reading to the instrument so that it sounds more or less the same as that written by the composer. On the other, musical scores are External Systems of Representation (ESR). In other words, they are a structured set of symbolic expressions, which enable different types of musical knowledge to be represented (see Martí, 2003; Martí & Pozo, 2000; Pérez Echeverría & Scheuer, 2009; Pérez Echeverría, Martí et al., Pérez Echeverría, Martí, et al., 2010, for a general analysis of the ESR). Musical scores are therefore cultural products which have been passed down through a huge group of people for centuries, resulting in the progressive incorporation of more sonorous parameters and with an increasingly more precise codification (Casas-Mas & Pozo, 2008; Marín, 2013; Marín et al., 2012; Treitler, 1982). However, in certain compositional trends of the twentieth and twenty-first centuries several decisions regarding one or various sonorous parameters are left in the hands of the interpreter, which in turn affects the development of the graphic score (Marín, 2013). We could say that musical scores are living beings and therefore evolve, develop and adjust historically over time thanks to the constant efforts of many musicians to resolve the filing and interpretation problems they face

and that this evolution is still ongoing. This historical evolution is not clearly visible to Elena, Irene or any other person who writes or reads a score. It appears to be a tool which has already been produced, finished and is apparently unalterable. Just as when we write a chapter or read a novel we do not ask ourselves about the writing system, we use it to convey ideas or narratives, so when a musician reads or writes on a musical score, s/he reads the music through it. The ESR therefore become “transparent”, they are taken for granted, and they let the musician focus on the music, not on the medium through which it is communicated.

This trait converts the ESR into useful cultural tools, assisting the musician’s and the interpreter’s work in the same way as a hoe aids the farmer’s labour, although the music cannot be confused with the musical score just as a hoe cannot be confused with a certain crop. Like other ESR (writing, numbers, maps, graphics, etc.), musical scores as cultural tools have two functions. On the one hand they are a means of communicating and maintaining knowledge over time (pragmatic function) (Martí, 2003; Martí & Pozo, 2000; Pérez Echeverría, Martí et al., Pérez Echeverría, Martí, et al., 2010). We could conceive of them as a type of external memory providing access to musical compositions which, if it were not for this support, would have been lost over time or would have only been transmitted orally (or in this case “aurally”). The task of preserving the composition with as few modifications as possible and its subsequent equally faithful reproduction, which is often one of the goals in formal music teaching, would have been extremely difficult if not impossible. It would also prevent versions of the composition being made because the different versions could not be distinguished from the “original”. However, apart from this function which we could call historical or cultural, musical scores and in general the ESR act as an external memory or cultural prosthesis for the interpreters themselves. Elena or Irene does not need to know the piece by heart, right down to the letter (or note) to interpret it. The ESR and therefore the musical scores, fulfil an extremely important function in that they reduce our cognitive effort. We do not have to endeavour to remember and worry about forgetting something, and this means we can dedicate our minds or our cognitive resources to other matters. In chapter “[Learning Music by Composing: Redescribing Expressive Goals While Writing Them](#)” we can see a very clear example of how a girl aged 9, thanks to the help of her teacher, realizes that the musical score is a means of preserving knowledge, to remember or convey it.

The pragmatic function of these systems is therefore highly important, but as we shall see on the next few pages, the ESR also play a part which may be called epistemic (Martí, 2003; Martí & Pozo, 2000; Pérez Echeverría, Martí et al., Pérez Echeverría, Martí, et al., 2010) because they are related both to understanding knowledge and the creation of new knowledge and therefore to learning and creation. In addition to the pragmatic functions mentioned above, the presence of an organized and structured notational system like that of the musical scores helps us to convert the musical sounds into an object we can read, hum, and interpret through an instrument. Above all, it helps us also to think about it, work, modify, and imagine how these modifications would sound. Thinking about music cannot be the same when one can read a musical score as when one cannot (Pérez Echeverría & Scheuer, 2009). The

ESR, the musical scores, are the tools of our thoughts and our minds which transform and change them. For example, being able to interpret the composition in keeping with its historical context or to create one's own interpretation taking into account different parameters (said historical contexts, intentions attributed to the composer, target audience, etc.) does not seem possible without this tool. Also, the interpreter who reads a piece, beyond the sound s/he hears or remembers, and thinking about what s/he is reading could consider, for example, what type of instrument s/ha has to hand, to adapt the interpretation or introduce new stylistic themes. Carmen, the girl from chapter "[Learning Music by Composing: Redescribing Expressive Goals While Writing Them](#)" also realizes very early on that the musical score helps her to think when she is constructing her narratives-songs and that this would be much more difficult without the score. As Olson (1994) maintains, this more epistemic form of approach to the ESR helps "extend" our minds and create possible worlds. Without the ESR these worlds would probably fail to exist (Pérez Echeverría, 2017). Furthermore, unlike most ESR, musical scores are guidelines that help transform the symbols in music through an instrument or the voice. (Casas-Mas & Pozo, 2008).

On numerous occasions pragmatic and epistemic functions come together, particularly for experienced musicians and students whose knowledge of music is extensive. However, when the goal of the interpreter, teacher or student is essentially reproductive, as we may infer from the way in which Elena assesses Irene and in how Irene works to learn the score, the predominating use is basically pragmatic. The players' intention is to make the notes or writing appearing on the musical scores audible, in a similar vein to when someone reads a text, concentrating more on exactly reproducing the words than in understanding them or thinking about what they mean. However, when someone reads or plays from a musical score, thinking of the emotions which the composer wished to communicate, or in what the player wishes to communicate (see chapters "[Instrument Mastery Through Expression: Learning Instrumental Technique](#) and [Learning Music by Composing: Redescribing Expressive Goals While Writing Them](#)"), or thinking about the differences between the moment in which the work/piece was written and what is happening now, or other aspects, the interpreter or learner will generate their own representation of that piece (see chapter "[The Psychology of Music Learning](#)") and will help to enrich or even re-describe its concepts of, for example "baroque music" or "Bach music". But this epistemic function will only be possible if a set of related factors come together. These are related, among other things, to the level and type of knowledge of musical notation, knowledge on the music and musical styles, and the goals of student and teacher. Thus, the musical scores may be used pragmatically or epistemically, which does not necessarily involve just being able to read musical scores in order to use both functions. The use of these functions is, as we shall see later on, related to conceptions on learning and teaching or in the words of Hultberg (2002), to approaches with which teachers and students tackle musical notation (Marín, 2013; Marín et al., 2012). In the "reproductive approach" musical scores are used as an essentially authoritative document, which shows what has to be done when a piece is played or interpreted, whilst in the "exploratory approach" musical scores are considered as a tool to explore the significance of the music. Undoubtedly, depending on

the moment and the goals, both approaches may be necessary and should coexist. However, whilst a pragmatic use is relatively easy to teach and to achieve, epistemic usage is far more complex. However, for the musical score to fulfil both functions, as music teachers well known, they have to be taught and learned in the same way as with reading, writing, and other tools of thought.

## 2 Understanding Musical Scores

As any music teacher knows, musical score use depends on how they are taught. In fact, one of the differences between musicians originating from varying cultural traditions (see chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”) precisely stems from their ability to read and interpret musical scores. However, the way in which these musical scores are read and understood depends on the way in which they were taught and learned. Again, as repeatedly appears in this book, this way of learning and teaching is related to the learning and teaching conceptions or the approaches to which Hultberg (2002) refers (see also chapters “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#) and [How to Know and Analyse Conceptions on Learning and Teaching](#)”). Notwithstanding, the fact that a certain teacher’s stance is closer to constructivism is not enough for their students to be epistemically capable of using a musical score. This also depends on the objective proposed at each given moment and the level of understanding reached by a certain interpreter or student. Elena, Irene’s flute teacher, is making great efforts for her student to correctly interpret the Bach score, and she is doubtlessly intending that Irene understands the piece in the most in-depth way possible. This means that, for Elena, musical scores have many different possible readings. These possible readings cover the entire spectrum, from deciphering the code and the most obvious elements, to creating her own representation that links these elements with the intentions, contexts, listeners, etc. In other words, as we have already seen, there are many different ways of understanding or comprehending the contents of a musical score. The most superficial form of comprehension is to identify the different notes or figures whilst more complex ways are related to the extraction of the significance of the music behind the score. Expert readers do not see letters or punctuation marks when they read a text (unless it is full of mistakes), nor do they concentrate on the connectors between phrases or focus their attention on grammar. However, they perceive love encounters and trysts in the novel they are reading or the main ideas the author is proposing in expository writing. As we said above, for expert readers, words and phrases are “transparent”, they are reading about certain events or certain arguments, not separate words or phrases. The same occurs with musical notations. The deepest levels of comprehension allow the reader to rise above mere symbols and comprehend the message of the music they embody.

This power of texts or musical scores to disappear before the eyes of the reader is related to the fact that, like most notational systems, a huge quantity of information

is condensed into so few elements and thanks to grammar or, what is the same, complex composition rules, they are bound together (Pérez Echeverría & Scheuer, 2009). However, before they become transparent, a long process takes place in the eyes of the reader which focus on the different elements (notes, chords, harmony). An expert reader can also purposefully concentrate on these aspects. They can analyse the elements of the musical score on an individual or joint basis. They therefore think, for example, of other melodic possibilities that are consistent with the underlying harmony of a certain passage, or critically assess the level of appropriateness of a certain type of cadence at a specific point in a piece. Depending on the intonations therefore, the expert reader is able to address different levels of comprehension and relate these different levels to one another. In the case of texts, the expert reader may say that a text is difficult to understand because the words used are not the most appropriate for what they wish to express. The different ways of understanding a musical score or a text are arranged on hierarchical levels. The plot of a novel cannot be understood if beforehand we were not able to understand the different phrases and these phrases would be impossible to decipher if we did not know how to identify the words. In the case of Western music, reaching a complex level of understanding requires us to know musical notation signs and their rules of combination. We may like a piece of music, but the fact that we are able to analyse it at different levels of represented comprehension allows us to re-describe it and understand what it means and give it new meanings, enabling us to enjoy it in a different way. As we shall see later on, these levels of understanding also indicate or form a learning sequence.

Several studies on the ESR (reading, graphics, maps, etc.) and, specifically on musical notation systems (Bautista & Pérez Echeverría, 2008; Bautista et al., 2009; Casas-Mas & Pozo, 2008; Marín et al., 2012; Sullivan & Cantwell, 1999) show that these levels or degrees of understanding are marked by some of the characteristics of the systems, in addition to the individual characteristics of the processes followed to learn them (see chapter “[The Psychology of Music Learning](#)”). Table 1 contains a summary of the different levels of understanding (or learning) attached to musical notations, which are usually grouped into three or four categories. There was a very similar table in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)” which contained the type of symbolic results that could be observed using the SAPEA observation system. These levels are similar to those found in both the understanding and learning of other representational systems, such as maps (Postigo & Pozo, 2004a) or graphics (Friel et al., 2001; Pérez Echeverría, Postigo et al., 2010, 2018). Knowing and understanding graphic characters are processes which usually form part of the initial level of comprehension or notational processing (Bautista & Pérez Echeverría, 2008; Bautista et al., 2009; Marín et al., 2012). Examples of this level would be learning each musical element, such as the notes on the pentagram, the value of each symbol, what a sharp is for, how many parts a 4/4 has or what *ff* means. In short, understanding a musical score at this level implies recognizing and finding meaning for the explicit and individual elements that appear in a musical score. Irene is at this level when her goal is to correctly play the notes appearing in the first part of *Allemande*. Elena’s instructions will equally be aimed at this initial level.

**Table 1** Levels of comprehension of the musical score (see Table 2 in chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” on the SAPEA observation system)

Category	Definition	Examples
Level 1 Notational process	Verbalisations or actions aimed at learning, decoding, practicing symbols or explicit graphic symbols from the musical score and adding other basic symbols	Includes notes, changes, indications of rhythm, dynamic indications, articulation indications
Level 2a syntactic process	Verbalisations or actions in which terms are controlled that require syntactic processing from the musical score, i.e., from a combination of notational elements which give rise to an element with its own entity and different from any from which it is formed	Control concepts such as form, structure melody/accompaniment, modality/tonality/motif-theme/phrases, voices, texture, variation
Level 2b. Analytical-structural process	Verbalisations or actions leading to the overall processing of the piece and its analysis in relation to some of the dimensions, such as structure, harmony, melody, texture, etc.	Perform a harmonic, melodic, formal, textural, etc. analysis
Level 3 Referential process	Verbalisations or actions which involve interlinking elements from the piece belonging to the previous levels with their communicative, aesthetic, stylistic, expressive, semantic, perceptive, and psychological dimensions which are not directly present in the musical score	Try to express the composer’s idea about the piece to the public and the player’s own interpretation of that idea. Understand the significance of the musical score, its style and aesthetics

The graphic symbols of the system are interlinked, giving rise to structures and concepts with a new meaning which differs from its individual components. Comprehension of these structures is the essential characteristic of the second level. Given its complexity, in some studies in the musical domain, this second level of comprehension is divided into two sub-levels. In these cases, the division criterion is how the operations are carried out with the information appearing explicitly in the musical score. The interconnection of several graphic symbols forming a new element constitute the first of these sub-levels, the so-called “syntactic processing” (Bautista et al., 2009). Its equivalent in learning to read would be advancing from reading syllables or even words to reading and understanding whole phrases. These relationships adhere to several specific syntactic and grammatical rules which, unlike the previous level do not appear explicitly in the musical scores. Just as a phrase is not just a set of words, but that these words are organized in a certain way which is not at first visible, being familiar with notes does not imply knowing which of them, taken together, will constitute a major scale. Similarly, we know that certain notes of this scale will form different chords. Therefore, the concepts of “scale” and “chord” belong to this second level. Irene’s activity is set at this level, when she has to search for the most appropriate place to breathe without breaking the musical phrase. This means the student can identify the phrases of a piece and use this identification to take decisions on how to execute the piece. This level is extensive because there are different degrees of complexity between the elements. This level includes any type of relationship which has been established between the graphic symbols that give rise to a new element (such as a scale, chord, motif, melody or phrase).

The second sub-level goes a step further, considering the global analysis of the piece from these syntactic elements. This type of processing receives the name of “analysis” in the context of formal music teaching, and this sub-level is therefore called “analytical processing” (Bautista et al., 2009; López-Íñiguez & Pozo, 2014) or “analytical-structural” processing (see chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” for the analysis system of practice). This analysis may be of different types, depending on the nature of the elements from which it is performed. In line with the previous example, harmonious analysis takes into account only the different chords and tones that occur in the piece. Identifying the chords and the tones will form part of the syntactic level, since a chord and a tone involve a tangible relationship between different notes. However, harmonic analysis implies understanding each of the chords from the score and establishing similarities, trends, moments of inflection and change, etc. In the case of our example, an activity at this level of comprehension would be to analyse the musical phrases together, observing how the level of tension of the music ascends and descends through the implicit harmony of each phrase.

The final level of comprehension of the external representation systems involves interlinking the system with certain previous pieces of knowledge the reader has, which are not directly linked to the elements in the external representation. At this level, the actions linking the notation with the author’s intention, the recipient’s or interpreter’s intention, or with the historic moment in which the piece was written or interpreted, are coded. We could say that the system becomes increasingly more



invisible as we advance through the different levels of comprehension. The graphic symbols are explicitly illustrated in the pentagram, the chords are inferred from the position and order of these notes, harmonic analysis implies another level of inference from the chords. At this final level, a type of qualitative knowledge appears which is different from the previous levels where the previous elements were related to the musical knowledge. The interpreter establishes conceptual relationships between the information from the score (whether this be notational or syntactic) and other knowledge he or she already possesses, related to the piece's content (historical context, musical aesthetics to which it belongs, composer, etc.). In addition to previous knowledge acquired, other factors will play a part in the recipient's interpretation, such as their objectives for the piece, and even their conception about what "learning" a musical composition is and involves (Pérez Echeverría, Martí, et al., 2010; see chapter "How Teachers and Students Conceive Music Education: Towards Changing Mentalities"). Another highly particular factor is the active role of the interpreter, which involves the generation of a new product from interpretation of the composer's message, taking into consideration all the issues we have just outlined. In other areas of knowledge, this level is evident when a reader can interpret the meaning the author wished to endow a text with and compare this meaning to their own viewpoint about the context of that text, or when s/he affirms that a graph demonstrates an inverse correlation between pollution and citizens' health, or the power to predict if it will rain or not when reading a weather chart (Postigo & Pozo, 2004a, 2004b).

This level has been called "referential processing" (Bautista & Pérez Echeverría, 2008; López-Íñiguez & Pozo, 2014), "artistic processing" (Bautista et al., 2009) and "artistic level" (Marín et al., 2012), and has extensive similarities with the so-called "in-depth approach", which we spoke about before, originally detected in studies on text comprehension and later on in others about musical comprehension (Biggs, 1988; Cantwell & Millard, 1994; Entwistle & Ramsden, 1983; Säljö, 1981). This level is also likely to be taught in class. In the case of Elena, it would be taught when her aim was that Irene learned what an *Allemande* was and in what historical context it would occur, so that she could then adapt her interpretation and play it with the right style.

### 3 Learning to Read Scores and Reading Scores to Learn

As we saw previously, the music learning and teaching activities being carried out by Elena and Irene can be positioned between the first and second levels set out in Table 1. Apart from displaying the different forms or levels of comprehension, this table also demonstrates a learning and teaching sequence. It is not possible to understand musical scores referentially if there is no global or unified vision, but neither can this global vision be had if there is no ability to distinguish the different notes or the different phrases. In other words, the lower levels of comprehension restrict access to the higher levels. Few teachers would be surprised when we state that learning and teaching from the score has to begin with teaching the simplest elements, the

notes, as may be concluded from the study by Bautista and Pérez Echeverría (2008) (also see Hallam, 2001; Hallam et al., 2012). Neither would they be surprised if we said that a major part of this learning consists in repeating the notes, phrases or even that each skill involved at each level is relatively automated. It is probable that most of our readers have learned or are teaching learning to read the musical scores at the two to three first levels in this same way. However, it is also probable that our readers have not been explicitly taught to read the musical score to the third level or that they have students who find it difficult to interpret musical scores referentially.

If we analyse the way in which Elena teaches Irene we see, as we commented upon before, that she dedicates a great deal of effort to working with the musical scores, although Irene would surely have no problem in decoding the graphics, or finding general trends. The way Elena teaches centres on the transference of the symbolic code into body movements on the instrument or to controlling breathing. It seems that one of Elena's educational goals is for Irene to learn the musical score of *Allemande*, rather than learning the piece *through the score* (see chapter "[Learning Music by Composing: Redescribing Expressive Goals While Writing Them](#)"). No doubt Elena would be angry with us if she read what we have just written. Her aim would be that Irene was a good interpreter and therefore capable of playing Bach's composition, communicating the same feelings and emotions that Bach intended, or reinterpreting this piece from her own feelings and emotions. However, neither Elena's work nor Irene's work focus on these aspects. For many teachers, and especially those closest to direct and interpretative theories, it seems that the comprehension of the piece in its context "emanates" from previous levels (Bautista & Pérez Echeverría, 2008), just as many maths teachers believe that they only need to teach graphic conventions for their students to be capable of extracting the trends they represent (Pérez Echeverría et al., 2018). However, neither musical scores nor graphics, nor expository texts can be learned to be read and interpreted at this third level, unless a deliberate effort is made to direct teaching at this aim. As stated by Friel et al. (2001), the final level of comprehension involves going beyond symbols so that meaning about the piece can be extracted from them, but this meaning is not usually obvious or easily accessible.

As a result, *all* the levels of a musical score should be taught so that they can be learned by the students or so that they are learned in the way we wish them to be. It is possible that reading this, an attentive reader comes to the conclusion that, in the case of musical scores, the first years of teaching of musical interpretation should be dedicated to learning the codes and conventions that lead to attaining the first level of comprehension (in keeping with Hallam et al., 2012), whilst the teaching of the final level should be confined to the last years where the student already has sufficient knowledge in addition to technical instrumental skills and general music skills to be able to interpret the musical score to a level beyond the symbols and use it as a means of learning and extracting knowledge. When highlighting Table 1, we suggested that it presented a hierarchy of the comprehension levels of a score, with the upper levels including the lower ones, but not the reverse. We also said that these levels demonstrated a learning and teaching sequence in such a way that the degree of knowledge reached at one level would restrict what could be done at higher levels. However, these statements do not imply that teaching during the first

years has to focus on technical aspects, whilst the later years have to be dedicated to teaching musical strategies. We wish to highlight, as indicated several times in this book (e.g., see chapter “[The Psychology of Music Learning](#)”), that teaching must always and necessarily start with what the student knows. When the student begins to study an instrument s/he already knows many things about music, instruments and also about the external representation systems. Ultimately, we spend our first years at school learning the two most basic representation systems of the Western culture—reading/writing and numerical codes—which doubtless provide us with implicit skills for learning or interpretation activities of other ESR.

Although most of our skills are not interlinked and are markedly intuitive (see chapters “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#) and [Early Initiation to Music Learning: Little Children Are Musicians Too](#)”), they are essential as a starting point so that learning of the musical score makes sense, and is therefore significant and motivating (see chapter “[Instrument Mastery Through Expression: Learning Instrumental Technique](#)”). Now let us imagine an instrument teacher trying to teach students to decipher and execute a score, in an easily approachable manner, specifically from the dynamic indications appearing on the paper. The student has in front of them indications of “*f*, *mf* and *p*” appearing continuously throughout the piece s/he is preparing, indicating sudden changes in dynamics. The teacher, Elena, refers to images which are not musical to make the student, Daniela, understand what they mean:

P: *The forte (f) you see here should sound like someone who is talking loudly to a friend, who is running so as not to miss the bus, and giving her final directions about how they can find each other in the place they are going to. Imagine how you would have to do this with the flute.*

(After thinking a little Daniela starts to play whilst Elena gestures to her to raise the intensity).  
After this:

P: *The mezzoforte (mf), means playing at a medium, “normal” volume, like when we speak so people can hear us, but without shouting.*

(Again, the student practises a while and afterwards the teacher focuses on the *piano (p)*:

P: *Imagine the sound a friend will make when they are telling you something in a whisper and imitate it with the flute.*

In these examples the teacher is working at the first processing level (see Table 1), but is helped by the third level, making sense of what the student is reading, relating it to her knowledge on how we modulate sound, in a similar way to what we will see in chapters “[Instrument Mastery Through Expression: Learning Instrumental Technique](#) and [Learning Music by Composing: Redescribing Expressive Goals While Writing Them](#)”. Daniela will have to practise and train herself, to achieve the changes in dynamics, but this learning experience will be associated with sonorous images. At the third processing level, the way of working in the same situation (indications of recurring *f*, *mf* and *p* that mark sudden changes in dynamics), radically changes. In these examples, Elena, the teacher, tries to make Daniela make sense of the different

symbols by using the relationship between the symbols, sounds and the girl's knowledge. This way of giving meaning to learning is clearly different from that used with Irene, who has a much sounder knowledge of musical scores. To reinforce what she has just learned, the teacher suggests the following:

P: *Look Irene, this is a baroque piece. Do you remember what we talked about when we listened to that Vivaldi concerto? At that time, to create contrast in music and make sense of motif repetition, dynamic was used as a resource.*

(They listen to the piece again and together try to identify the changes in dynamic).

*Now think of a story that fits in with the dynamic steps we have heard and explain how you did it.*

The difference between the two levels referred to is that, in the first, certain symbols and their corresponding sounds are being learned whilst in the last, in the case of Irene, musical styles are being explicitly identified and the way in which these styles are to be played are being differentiated. The meaning of the symbols, even if they are the same ones, may change from one to another. It is not necessary to learn the symbols at the beginning. Although knowledge of them is necessary, this learning is accompanied by a meaning that will vary, depending on the student's knowledge. Similar examples may be seen in chapter "Learning Music by Composing: Redescribing Expressive Goals While Writing Them", which show that learning chords makes sense when Carmen uses them to create suspense in her narrative-songs, and how this meaning helps her to advance her reproductive and technical learning much further, as well as having fun learning music. These last two examples demonstrate a way of working in music teaching-learning contexts in line with what Musumeci (2005) considers "humanly compatible".

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# The Impact of Teaching Conceptions and Practices in Elementary Level Musical Instrument Learning



Guadalupe López-Íñiguez and Juan Ignacio Pozo 

## 1 Introduction

Previous chapters have suggested that to change the way in which music is taught, and specifically instrumental music, as prescribed, the students need to be able to learn music in new ways. More student-centred rather than content-centred teaching is required, as demanded by the new musical education approaches in Europe (see chapter “[Learning and Teaching Music in the Twenty-First Century](#)”; also Klemenčič, 2017). For example in Spain, for several decades now curricular standpoints (see chapter “[Teaching Music: Old Traditions and New Approaches](#)”; also Pozo et al., 2008), despite the Organic law for the Improvement of Educational Quality (LOMCE, 2013) have reduced the importance of musical expressivity in the curriculums, attaching greater weight as a consequence to new technical issues and thereby restricting the personalization of musical education (Bonastre, 2015; Bonastre & Timmers, 2019). The students therefore need to be trained in new competences, to a large extent centred in managing their own goals and learning processes (chapter “[The Psychology of Music Learning](#)”), aimed at the construction of musical knowledge rather than the reproduction of established instructional knowledge. We have also seen that for this didactic redirection to take place there needs to be a change in conceptions from the teachers themselves on what learning and teaching music actually means (chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”).

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Will this change in the conceptions of learning and teaching from a more direct content focus to a more constructive, student focus really change the way in which the students learn music? Do students conceive of music and learning in a different way when they experience a constructivist focused teaching? In this chapter we will attempt to highlight with the use of several studies and experiences, what impact the teaching conceptions and practices have on the way girls and boys who are beginning instrumental learning conceive this learning to be, as well as the levels of music comprehension they obtain. Our aim is to show that the change in musical education cultures in our classrooms must begin with a change in teaching mentalities, since this is the only way further changes (curricular, technological, socio-cultural) would become genuine transformations in the practices occurring in our classrooms.

## **2 How to Teach, Learn and Assess: Teachers' Conceptions on Elementary Level Musical Instrument Teaching**

Despite the increasingly pressing winds of change over the last few decades, music teaching (chapters “[Learning and Teaching Music in the Twenty-First Century](#) and [Teaching Music: Old Traditions and New Approaches](#)”), like so many other masteries in these troubled times (Pozo, 2016), has hardly been touched by any new changes in the classrooms. In actual fact they seem impervious to new theoretical and methodological perspectives and even to new curricular requirements. As was seen in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”, one of the causes of this resistance to change resides in teachers' beliefs about how to teach and how to learn which, according to several research studies, appear to have changed much less than would generally be desirable both in general (Castejón & Martínez, 2001; Martín et al., 2014; Pozo et al., 2016; Tsai, 2002) and specifically in the area of musical education (Bautista & Pérez Echeverría, 2008; Bautista et al., 2010, 2011; Bonastre, 2015; Bonastre & Timmers, 2019; Pozo, 2017; see also chapter “[How to Know and Analyse Conceptions on Learning and Teaching](#)” and several other chapters of Part II of the book). A good example of this is a recent study by Bonastre and Timmers (2019) with music students in higher musical studies in Spain and the United Kingdom (who in many cases would be the future music teachers), who mainly believe that the best way of teaching musical expressiveness is through purely technical training, particularly at higher levels. However, in the case of musical initiation the preferred teaching focus would be imitation/modelling. Both teaching strategies—technical training and imitation/modelling—are characteristic of a direct conception of musical teaching, according to the classification developed in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”, or a traditional practice, according to the criteria of the system for the analysis of instrumental learning and teaching practice (SAPEA) specified in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”.



Many other studies attest to this difficulty in changing teaching conceptions and practices beyond the area of musical education (Fives & Gill, 2015; Pozo et al., 2006). If we focus on teachers who work in a musical initiation period, with children normally aged between 7 and 12, a study by López-Íñiguez et al. (2014) showed that string instrument teachers in Spain conceived of their instrumental learning and teaching in very different (and even antagonistic) ways, depending on their teaching experience. In this study three profiles were found to be associated with the conceptions described in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”—direct, interpretative and constructive—which would in turn be associated with different levels of experience. For example, despite us not being able to speak of “pure” profiles in the sense of teachers who were 100% direct or 100% constructive, since their responses varied depending on different variables such as the educational dimension in which they taught (e.g., teaching, learning or assessment), the new teachers demonstrated significantly more constructive, complex profiles on instrumental instruction than the expert teachers (in contrast to what research studies show on experts and novices in other areas of expertise, e.g., Ericsson et al., 2006).

The results of this study may be explained in two possible ways. From an *optimistic* stance based on learning cultures described by Bruner (1996) in which it is understood that “we teach as we were taught”, these variations in teachers’ conceptions could be explained not just from the combination of years of experience and the age of the participants but also from the curricular changes experienced in Spain over the last few decades and the professional development education the teacher received (obviously very different depending on the teachers’ generation: from a traditional education relating to currently nonexistent curricular content, to a reformist education in keeping with contemporary constructivist theoretical principles). A *pessimistic* interpretation would be that all teachers would have innovative and inspirational visions and complex teaching strategies but as the years went by they would end up simplifying their teaching practices and limiting themselves to routine, or maybe the weight of conservative institutions and the conservatories (hence the name) would exert a certain amount of pressure for them to follow these instructional patterns of knowledge transfer.

Most teachers participating in this study filled in a questionnaire of open-ended questions on their teaching ideas in contexts of teaching–learning at musical instrument elementary levels. Although these data were not previously published, several of their witness accounts are able to help us in this chapter to describe the three teaching profiles found, with representative examples. As was seen in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”, the *direct* (or *traditional*) conception infers that a causal relationship exists between the teaching conditions and the result of learning pursued, and the role of the teacher is that of exposing the student to clear learning contents through a unidirectional monologue. The teachers therefore describe their practice in terms of “*if I don’t show them how to do it, especially the littlest ones, what good are explanations? we have always done it like this [...] you have to ensure they don’t get into bad habits and that the rhythms and bowings are as they are on the musical score*”.

Continuing with the *interpretative* conception which is considered a more complex version of the previous one (see chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”), the teacher is responsible for externally regulating the mental and motor processes of the student—whose role is active but reproductive—to achieve the technical mastery of the music to be learned, or in the words of one of the participants: “*for them to learn the pieces they have to repeat certain key movements, I show them how to do that and I explain it in a thousand ways so that they get it and then they understand what they have to do*”. Finally, the *constructive* conception (close to constructivism defended in instructional sciences) contrasts radically with the theoretical suppositions of the previous conceptions, since the student learns through the activation, stimulation and development of their own mental processes, through reflection guided by the teacher since “*You have to make them think, because if they don’t understand it properly themselves it will do no good at all to repeat it like monkeys [...] we prepare pieces of things they like, from a television programme or whatever, because that motivates them to study at home and to search into how things sound*”.

But if different teachers—or even the same teacher at different moments or for different aims adopt different teaching strategies—, from their beliefs, often implicit, how would these different conceptions and practices affect the way in which the girls and boys approach musical learning in their initial stages? Is it true what many teachers think, that the young students are not yet able, due to their cognitive development and/or musical knowledge, to adopt a constructive focus for their own learning? Or, as proposed in chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, can the children from day one learn to explain their expressive goals and cognitively manage their knowledge? Below is the presentation of several studies and experiences which we believe conclusively help to respond to these questions.

### 3 How Teachers’ Conceptions Impact the Way Children Learn<sup>1</sup>

Following the description of the teaching profiles of string instrument teachers at elementary level, we may now ask if the way in which those teachers conceive of learning and teaching has any impact on how their students envisage their own learning. Thus, López-Íñiguez and Pozo (2014a) selected 60 students of teachers who were participating in the study described in the previous section to analyse what their conceptions of learning were and whether there was any relationship between them and the profiles displayed by their teachers. Half of these student participants studied

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<sup>1</sup> This section is derived in part from an article published in *Cognition and Instruction* on 2014 © Taylor & Francis Ltd available online: <https://doi.org/10.1080/07370008.2014.918132> reprinted by permission of Taylor & Francis Ltd. Paginations for (quoted or paraphrased) block and indented citations correspond to the pages of the original article where the original version of such citations can be found in their original version. Other block/indented citations without pagination in this chapter are original material.

with teachers of a direct profile and the other half with teachers of a constructive profile, and they represented the string family: violin, viola, cello and double bass. All the children were shown short videos<sup>2</sup> which represented three teaching dilemmas (corresponding to the three conceptions described in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”) on how to teach a simple musical scale. In the videos they saw a small girl with her teacher, both with their cellos, and a music stand with the score of a scale, in a typical conservatory or music school instrument classroom. Versions were also made on the girl’s learning of the scale and the assessment of this learning process—always presenting the three versions of each educational situation or dimension. The activity consisted of watching the videos and selecting which of them would be a better or worse help for the children in learning or resolving their learning problems. Analysis of how these two groups of students justified their choices and rejections of the videos showed relevant differences in the form of understanding the learning and teaching between these two groups according to the function of the teaching profile of their teachers. Using the children’s own reasoning we will now describe how they conceived of musical learning and teaching and its assessment.

One of the most striking traits in the lexicon used by the children who received a traditional teaching method was that instrument learning revolved around the figure of the “maestro” (highly respectful way to refer to any teacher in Spanish). The children used this word to describe their favourite teacher in the videos, thus conferring him or her a higher place in class hierarchy. According to this group, the students’ simple exposure to the teacher’s explanation meant they could learn to play an instrument and automatically understand the complex process underlying this practice because

if, for example, a teacher does not explain it to you, you would not do it well and they have to explain it a lot so that you do it well [...] I think it would be better like I said so that, well, so that they do not get so confused alone, first the teacher explains and then the student understands it and plays it. (López-Íñiguez & Pozo, 2014a, p. 238)

Furthermore, imitation plays an important role in scale learning, in fact these students rejected the constructive video, because the teacher does not show the students what they have to do “*I think that [the teacher] did not tell her she had to put her hand more like this, nor did she show her how to do it, she only said that she knew how to do it and that was that*” (p. 238).

For these children, a good teacher should immediately correct a student’s error so that it does not become a habit and does not interrupt their learning development

I like it because she corrects her mistakes and helps her tune up better [...] because she said where she went wrong, what mistakes she had made and she made her correct them, she corrected the wrong position, she told her what the positions were and all of that [...] the girl is not going to know how to do it alone without help and she could get into bad habits, the teacher has to explain things to her, she is the one who knows. (p. 239)

With regard to this, it seems that it is in correction of errors when these children showed greater autonomy “*you have to be sure of where the finger goes and you*

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<sup>2</sup> The videos are freely available in the following website: <https://vimeo.com/psycellogy>

*must not repeat it, so when you are aware of the error you don't repeat it"* (p. 239). Although in reality autonomy is not a result in itself and the students are clear that when they don't know how to do something, it is best to directly ask the teacher, assuming again a role of non autonomous students in the classes or during study at home *"if you have a doubt, you have to ask the teacher, she has to clarify your doubts, you can't know it on your own"* (p. 239).

Furthermore, these learning problems appear to be generally related to tuning the scale or a faithful reproduction of the sound (in line with Bautista & Pérez Echeverría, 2008).

because it is of great help to the teacher that she is not out of tune, because she puts her finger where it should be and it sounds right, when she plays the note she hears it and will try to move the finger when it is out of tune. (p. 239)

and they are usually associated with a wrong positioning of the hand/finger/position, instead of being related to the process of internal listening needed for the child to understand why the scale was out of tune

because she says where the fingers must go and all that, she says where she has to put her fingers and to do it again, all the time until she does it right [...] because she has positioned her hand where it has to go [...] instead of telling her just that she is doing it too much, too high or too low, so he puts the finger as far as it should go, so she knows where, where it is and then knows and remembers, as if it were a block and so that it does not go too high or too low. (p. 239)

It seems that the students of traditional teachers tended to agree on how to correct these out of tune notes: As we commented before, this is not associated with what would be considered the most constructive—this is the internal listening followed by a process of comprehensive learning related to the positioning and pressure of the finger on the octave—, but it is determined by the area where the hand or finger has to be, without measuring the listening or the comprehensive process, only the exact production of the notes of the scale

she has to go up quite a lot, take the note up a lot because if not, it will be out of tune and she has brought it down [...] when you are playing and you don't look at your hand, you cannot hear it is out of tune so much, not as much as others do [...] I cannot play a scale of G major and put A where C should be, I have to know where my hand should go, where the first position is, where the third finger goes. (p. 240)

or repetitive practice, an activity which becomes the teacher's order, without the necessary processes being determined so that the student understands why

because it is demanded, but it is what has to be done because if not the student will not get it right, and because they are been forced to repeat it and do repeat it and repeat it until they get it right because they explained, they were stopped at the right moment when they did it wrong, it was explained, I mean how to do it was explained to them, the teacher corrected many many times. (p. 240)

Finally, and with regard to all of the above, the only and principal aim why the teacher corrects, explains, selects the contents and is the only mediating agent of learning according to the students is so that they do the exam well *"the teacher tells*

*them to be careful with the tuning, to work well at home, so that the exam which is in two weeks will go well for them*" (p. 240), which appears to generate a desire in the student to please the teacher and enable them to achieve their aim, with their motivation therefore being extrinsic

so that the teacher sees you are doing it properly [...] because the teacher also tells you what you are doing wrong and what you are doing right and she has done it right nearly every time and the teacher is happy. (p. 240)

This in turn appeared to generate insecurity in the children in the face of external assessment "*I am nervous about the grade pass exam*" (p. 240), and rejection of students who were not corrected, or were out of tune or did not study enough because "*they do not study the scale for the following week [...] they did not correct, they would not have studied more and been out of tune more*". (p. 240).

In contrast, we may see what choices children whose teachers have constructive approaches made and how they justified them. For example, they were very clear on the fact that a good teacher should help and guide their students in the learning and studying process, offering advice on how they should do things—which is different to ordering how things should be done, as with the previous group—and asking the students what is their opinion on how and what to study because

there are lots of pieces of advice, they are very important, because of experience and all that [...] because the girl asks how she should study things, and she needs guidance about where she should go with each thing in its place. (p. 241)

In fact when they rejected the most traditional videos, they argued that if the teacher just corrects and does not help the child reflect on what has happened or how to resolve things in a way so that she realises for herself what has happened and what tools she has of her own to use, it will be impossible for her to learn because

she says, listen to me and then you do it', and because she does not correct much, because you learn things if you do them badly and then you make a mistake and think, but if you do it badly and they correct you, in the end you don't learn anything [...] because she said 'very good' and 'we'll see each other next week', and that wouldn't work, because Ok, very good, you study things at home, but she does not give advice and does not ask the girl anything [...] so the teacher has made the girl think, what you cannot do is not allow her to think and say everything yourself, I mean, you have to let her think for herself. (p. 241)

These children continued arguing the need for the teacher to be a guide in the learning process, a figure they can ask and who helps them to think for themselves on their processes, resulting in increasing their capacity to concentrate on the study and their attention

she asks her if she knows what she has to study so that this is attentive [...] I think she should have said well, no I do not know, something more, something about how she should have studied it at home, focusing a bit more on how she could have studied [...] she asks the student if she can see where she has gone wrong, if she could improve at home and could study it better, she focuses better on what has to be done for the song. (p. 241)

These processes have to be achieved autonomously, using as an example the process of recovery with transference

and then she becomes the teacher so that afterwards what she said she also does when she is playing the cello because she remembers what she said when she was playing [...] she said 'imagine such and such', so then she remembers when she is playing and says 'imagine A in your head', and then she does it well [...] and she also asked how she was going to study at home so that the girl knows she has to study at home. (p. 241)

in the words of Schön (1983), reflecting on the action,

*I prefer this form of teaching, because the teacher makes the student reflect on how she has to do it and she repeats it and therefore learns far more, I mean, if they tell you what you have to do, you do it, but if you realise what you have done badly and what you have to do, you do it much better because you learn more that way, because in the other ways you learn too, but you learn to know what your errors are [...] and she thinks in her head and does it slowly", and not through the simple repetitive practice "because she says to do I don't know what and that is all, repeating it and repeating it, she reaches a limit and that does not help anymore. (p. 241)*

According to these children this type of guided and reflective practices has a direct impact on their willingness to study because

it is as if the teacher tells them how they have to learn and the girl knows more, the student knows more and then it's like she can do it, she can develop her mind more for playing the scale, because, well, her mind is developed it is more prepared for playing that song, because the teacher has explained more to her, how to rehearse and how to practice and how to study, she also has realised what they have to study and then it is like a step towards knowing more things. (p. 242)

and in the motivation to learn

also the opportunity she was given, and it is as if the girl is the teacher and now the teacher is the student so the girl corrects her, so maybe this gives her greater strength for playing and to do it better than saying 'you do it, you do this', and maybe she has done it right because the teacher has been the student and she has now been the teacher. (p. 242)

With regard to the class objectives, these children agreed that giving homework without the person understanding the reason why makes no sense because "*the teacher said nothing except to say what homework has to be brought for the next day, that was it*" (p. 242), because when studying at home the child would feel lost and without tools to solve learning problems because

when she comes, what she brings is good, but the thing is that it is wrong, because she studied badly and the teacher tells her how it has to be done, and the next day it is better, but it is better because of what the teacher said, although the finger is still not in the right place (p. 242)

As happened previously, they had no doubts about explaining how they should work on this point in the classes, in a more constructive and positive way for the student since

when she brings it, she has studied less, but when it is wrong, the teacher plays it in the same way as her and then she corrects her as if she were the teacher, telling the teacher where to place her fingers because the teacher is playing it as she had played it and she realizes this, so then she imagines she is the teacher and tells her what she has to do and how to position her fingers. (p. 242)

Lastly, this group demonstrated a great interest in internal listening, something that did not appear in the previous group, as an aid to learning, more focused on the process of listening or singing, rather than the result of tuning

she is not really looking at her hand, she is doing it, the teacher is doing it with her, but she is listening to it, but not exactly looking at her hand [...] because the girl is going to sing it in her head, to know the tune, if she sings it well she knows the right pitch for the instrument. (p. 242)

Also, and unlike the previous group, these students had a positive predisposition to assessment, as a joint process between teacher and students since *“the girl has said how she could study and also the teacher has given her an opportunity to see if she has done it properly or if she has done it badly”* (p. 242), rejecting when it is the teacher who does the assessment, without giving explanations because *“the teacher says what it is like, but she says nothing more than it is bad, and she does not say why she has done it wrong”* (p. 242).

To sum up, what teachers do in instrumental music classes has highly powerful effects on what students do (López-Íñiguez & Pozo, 2014b). String instrument students engaged with constructive teaching methods understand that instrument teachers are figures which act as guides to help and support them, and who see errors as tools to encourage learning through reflection. These students are autonomous, active, reflexive, intrinsically motivated, self-regulating and focus on study quality, creativity, learning to learn and understand music practice and its significance as a combination of complex cognitive processes.

In contrast, students who were found to be studying in more traditional environments described their teachers as being in a higher hierarchical level to them inside the classroom, the essential role of which was to give orders and correct mistakes immediately (similar to the teacher-student model of the conservatory described in chapter *“Learning and Teaching Music in the Twenty-First Century”*). These students were extrinsically motivated and did not demonstrate a great deal of autonomy in their learning, and also depended a great deal on imitation, instructions on contents to learn, and feedback from their teachers. They also viewed learning as something significant only when they passed an exam through repetitive practice, and the learning of which was mostly to perfect mastery of motor skills to reproduce the sheet music perfectly.

Table 1 contains a summary of the main issues for the justifications and differences between the children who received one type of instruction or another. As we can see, they are similar to those described in the introduction to this chapter where differences were established between the direct and constructive conceptions of teaching-learning maintained by their teachers, from which both groups of students were selected.

However, since the responses given by the children could have simply been that they selected the options according to the teaching model they had been engaged with, it is worth asking whether these children learn differently, or if they all learn the same (see chapter *“Reading Music. The Use of Scores in Music Learning and Teaching”* where the levels of musical score processing are explained). To do so

**Table 1** Summary of the differences in verbal explanations of students on selection and rejection of each teaching model (traditional and constructive). Extracted from López-Íñiguez and Pozo (2014a)

	Traditional	Constructive
Teacher role	<ul style="list-style-type: none"> <li>- Upper hierarchical level of “teacher”</li> <li>- Orders</li> <li>- Explains</li> <li>- Corrects errors</li> </ul>	<ul style="list-style-type: none"> <li>- Guide</li> <li>- Helps</li> <li>- Asks what and how to do it</li> <li>- Errors as learning tool</li> </ul>
Student role	<ul style="list-style-type: none"> <li>- Not autonomous</li> <li>- Asks what to do</li> <li>- Obeys orders</li> </ul>	<ul style="list-style-type: none"> <li>- Autonomous</li> <li>- Reflects on how to do things</li> <li>- Thinks</li> </ul>
Processes	<ul style="list-style-type: none"> <li>- Assessment by the teacher</li> <li>- Repetitive practice</li> <li>- Extrinsic motivation</li> <li>- Imitation</li> </ul>	<ul style="list-style-type: none"> <li>- Joint assessment</li> <li>- Reflective practice</li> <li>- Intrinsic motivation</li> <li>- Internal listening</li> <li>- Management of attention/concentration</li> <li>- Recovery with transference</li> </ul>
Results	<ul style="list-style-type: none"> <li>- Practice quantity</li> <li>- Psychomotor (placing of fingers and hands) to tune up</li> <li>- Perfect exam</li> <li>- Precise production of symbolic material</li> </ul>	<ul style="list-style-type: none"> <li>- Practice quality</li> <li>- Internal listening to tune up</li> <li>- Learns to study</li> <li>- Understands the reasons for doing things</li> </ul>

López-Íñiguez and Pozo (2014b) undertook another study with the same children to see how they processed musical scores. These children were presented with a simple composition adapted to their elementary levels (see Fig. 1) and which included 9 different questions to learn according to the musical score processing levels presented in chapter “Reading Music. The Use of Scores in Music Learning and Teaching” (see Table 2). The children were asked to select as many cards as they considered important to learn the musical score, and that they should be ranked from most to least important, and also to justify their selection (each card contained a type of processing).

The results of this other study showed not just that the students who studied with more traditional teachers selected fewer elements to learn than those who studied with constructive teachers (1–5 compared with 8–9), but that the elements were ranged completely differently (López-Íñiguez & Pozo, 2014a). The latter selected more cards at referential and analytical levels, with referential being the most important in rank, because

imagine I’m an adult and I am going to visit Bach in his house and play for him, and suddenly I play his Concerto and I change a lot of things, I don’t think Bach would be very happy with me, I think you have to respect the composer and I really like Bach, so you have to respect him [...] this piece, for example, it is about joy and it is like being in the pool, spring, summer and things like that, if the composer wanted it to sound happy then you have to play it as happy, and the notes will be played little by little but the main thing is to give it a good style.





**Fig. 1** Example of the melody of the piece where the 9 cards were represented (“Rain drops on a sunny day”). Taken with permission from López-Íñiguez and Pozo (2014b), ©2013 The British Psychological Society

**Table 2** Processing levels presented to the children. Taken with permission from López-Íñiguez and Pozo (2014b), ©2013 The British Psychological Society

Symbolic level (SL)	SL.1: Learn to play notes from the score
	SL.2: Play the rhythms that appear in the piece
	SL.3: Focus on the bows given by the score
Analytical level (AL)	AL.1: Know when to play the melody or the accompaniment
	AL.2: Notice where the phrasing begins and ends
	AL.3: Know how many parts this piece has
Referential level (RL)	RL.1: Play the piece as I think the composer would have wanted
	RL.2: Choose the sound which best fits in with the style of the piece
	RL.3: Let the audience know what to feel when I play this piece

However, the students from the traditional group mostly chose all the symbolic level cards, and a few from the other levels, but always ranking the symbolic as the most important, since

why would it matter if you were expressing emotions to the audience if the notes and rhythms are not right and you are changing all the score bowings? [...] these things are not so important, but if I play it wrong, everyone realises, even my grandmother, you have to avoid errors.

To sum up, the students from the constructive group considered it was more important to express their emotions, communicate with the audience or be inspired by the composer's idea of the composition, whilst the notes or rhythms were simply vehicles for this. In contrast, the students from the traditional group considered that the symbolic material was essential and that it was not possible (and even unnecessary!) to work on some of the other aspects without first learning the notes, the bowings, the correct rhythms.

We therefore see that the type of learning received by the students impacts not just their conceptions but also the way in which they learn music. The students differ in their conceptions on musical learning and teaching, and on their processing or comprehension of musical scores. Those who are engaged with a constructive teaching method achieve better learning, according to that defined in chapter “[The Psychology of Music Learning](#)”, and these children recognize both the teaching model with which they can learn and also appear to understand the supposed underlying theories to these models (López-Íñiguez & Pozo, 2014a). Given the importance of these results it is therefore pertinent to delve further into what characterises constructive teaching at these ages.

#### **4 Characteristics of Constructive Practice in Teaching Instruments at Elementary Levels**

Many studies have analysed the conceptions of teachers and students on how one teaches an instrument but as indicated in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, the analysis of practices derived from these conceptions has been scarcer. Although many studies exist describing specific practices or forwarding new intervention proposals, they usually lack solid research to back them up in terms of conditions, processes and results involved. Our reference is a case study of the authors on analysis of dialogic practices in a musical instrument class. In keeping with the macro and micro visions of the SAPEA presented in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)” video recordings of the practices of a Finnish teacher with a constructive learning and teaching conception with one of her 7 year old students (López-Íñiguez & Pozo, 2016; submitted) were analysed. Below is an illustration of the type of help the teacher gave and the general traits of these classes, again based on real witness examples.

Firstly, the teacher uses several preliminary strategies to help the girl construct her own meaning about what she is learning and to acquire progressive control over her learning during the classes. For example, this teacher always lets the student play until the end of the piece (or until she herself stops) without interrupting her as soon as she makes mistakes (or plays something that is not written down, or in a different way to how it has been written down, or when her body pose is not right). “*If I stop her all the time it will stress her out and she will not come to class*”. The intention is that

she understands the structure of the piece holistically and less compartmentalized, and always with the intention of activities being adapted to the student's level.

I like it that the students feel happy about their skills, I don't want them to be stressed with activities that are too advanced: if I am only concerned about the position of her left hand she will not freely try out different sounds in other parts of the octave and she will fuss about placing her fingers correctly which will block her body and stop her from listening and feeling the music she is playing.

The motor development aspects are highly important in these class, as they are in the more traditional class, but there is always a combination with other less mechanical activities *“the motor development with beginners takes a lot of time, so one has to offer a great variety of parallel activities to ensure that the student clearly feels they are quickly and easily progressing”*.

Also, the teacher asks much more than she orders or explains, almost always giving clues *“do you see this secret mark here? This little bird? I told you at the beginning of the year that this little bird is a harmony you can find here [pointing to the fingerboard of the instrument]”*, so that the girl finds out how to face up to the different challenges of the instrument or score and they both talk much more than they play. The fact the teacher constantly asks helps the girl to participate actively and explicitly, which enormously impacts her motivation (along Vygotskian line of Mercer, 2008; Mercer et al., 2009) *“I make them talk the whole time, partly so that they feel motivated and appreciated, this makes them become committed to the activity of learning”*.

This type of action always occurs in a relaxed, friendly atmosphere where materials are selected in accordance with the interests of the student (this teacher has a wide range of materials and instrument methods, and adaptations of others, which she is familiar with and has studied in depth)

the students usually choose the order of the pieces and the repertoire we are working on in the class, we always do new activities, something that they like. I remember that this particular student showed me a photo of her cat at the beginning of the class and it reminded me of the song 'The G-E of the little cat', which was perfect for this situation.

As has been studied previously, (Hallam, 1998, 2011), giving autonomy to the students helps them to become committed to their studies long term and to enjoy their practice, and to establish positive relationships with their teachers, as explained by the student participating in this study

My teacher is one of the best teachers, she understands what I am thinking and she helps me if there is something I don't yet know how to do, and during classes I always play better and better because I understand things.

Also, regarding the student's learning assessment, it is she herself who starts processes of self-criticism, since she is used to reflecting on her own errors autonomously and through self-regulation *“I don't know this one yet, I have to play it more slowly, and concentrate on the other song I already know which has some of the same things”*. The teacher manages these processes with several resources such as the constant change in activities so that the child is attentive and motivated *“if I*

*made her play open strings all the time she would get bored and I would probably get bored too, I have to motivate them all the time with new and fun things”.*

This all clearly contrasts with what has been reported from other traditional style class studies where the teacher constantly stops the students and makes them repeat because of errors (they don't ask what has happened, they don't make them reflect on why it has happened or how to resolve anything) (Goolsby, 1996, 1997; Henninger, 2002; Karlsson & Juslin, 2008; Siebenaler, 1997). The classes are not usually fun or relaxed as other studies have shown (McPherson & Davidson, 2002; Renwick & Reeve, 2012; Schenck, 1989), and the management of errors is not achieved through reconstruction of practice, but from immediate correction. These studies refer to the necessary demand for change in conservatory teaching practices, as described in chapters “[Learning and Teaching Music in the Twenty-First Century](#) and [Teaching Music: Old Traditions and New Approaches](#)”.

To conclude, it is important to mention that this teacher, in the interviews and other records, clearly demonstrated a constructive conception about music learning and teaching. There is therefore a clear relationship between this teacher's conception and her instructional practices which appear, in turn, to be influencing her student's conceptions and practices (along the lines of the studies such as those of Rodríguez & Fitzpatrick, 2014; or in music those of Gaunt, 2008; Mills & Smith, 2003; Pratt, 1992; Rife et al., 2001). This, as we have seen, demonstrated both autonomy in learning and constructive conceptions in several activities. In consideration of these constructive practice traits and their impact on students, the last chapter of this book offers several recommendations as a conclusion for teachers and students of musical instruments, aimed at the development of a constructivist practice in music classrooms.

## 5 Summary and conclusion

In this chapter we have described the clear influence that teachers' conceptions and teaching practices may have on the actual conceptions and initial learning of musical instruments. To do so we have analysed the different teaching profiles—from the most traditional to the most constructive—demonstrated by conservatory string instrument teachers at elementary levels, in accordance with their beliefs or conceptions on how music has to be taught, learned and assessed. Following this, we have seen whether these teaching conceptions impact how students represent their own learning and what they think about instrumental teaching. Finally, we have described in depth the practices of a constructive teacher of cello. The chapters were divided into 4 main sections.

In the first section we saw that the most recent curricular approaches and research propose more student-centred learning than the learning of contents themselves, but that this teaching does not appear to really hold true in most conservatory instrumental classes. Our aim has been to show that the change in musical education cultures in music classrooms has to start with a change in how teachers approach the learning and teaching of their students.

We then described in detail the conceptions which teachers of musical instruments profess to have at elementary levels in the context of Spanish conservatories. We saw how the conceptions of these teachers are antagonistic in three different pedagogic dimensions: teaching, learning and assessment. Furthermore, we were able to observe that novel teachers tend to be more constructive in their conceptions, but that both teachers with less experience and those who are more expert have no “pure” profile in how they conceive of learning and teaching musical instruments.

In part three we wished to study where these conceptions affected children and in what way. Through our research studies, we presented highly significant and disturbing results depending on what children aged between 7 and 12 said. Students who were exposed to more traditional teachers had a simple, dependent, reproductive learning viewpoint, which clearly contrasted with the view of the children who were engaged with constructive teaching models, who were highly motivated and learned musical scores in much more complex and holistic manners. We therefore suggested the need to focus teaching on the students and learning processes and not so much on contents.

Since the differences found in these two different groups of children were so extensive, in part four we suggested inspired teachers who read this book to reflect on their practices, on where they stand between this instructional dualism. We therefore demonstrated an example of “good practices”, analysing in depth the type of underlying practices a teacher with constructivist conceptions has on musical education at elementary levels. We also described the results of a research study carried out in Finland and in which we used the SAPEA (see chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”) as a system of analysis on instructional practices of this teacher and her young student. This enabled us to see that talking in a friendly atmosphere, intrinsic motivation from students and their self assessment, and the management of focus and use of teaching materials of interest to the students, in addition to constant questions and collaboration form part of what is considered in international discourse to be “student-centred learning”.

To conclude, the chapter therefore suggests that student-centred learning based on the psychological processes described in this chapter (see also chapters “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#) and 18”) should be considered as the essential starting point of the reforms established in recent educational policies and the good quality instructional practices which are derived from them (in line with Klemenčič, 2017; López-Íñiguez, 2017) and in continuous professional development (see chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the 21st Century](#)”). We hope that this starting point will once and for all lead to a comprehensive education in line with the pursuits set out by, for instance, Bologna (ESU, 2015), and by the European Association of Conservatories (AEC, 2010), which resonate more or less harmoniously throughout the pages of this book.

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# Instrument Mastery Through Expression: Learning Instrumental Technique



José Antonio Torrado, Juan Ignacio Pozo ,  
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## 1 Introduction

This whole book is showing that learning is connected to the process of re-thinking what our body already knows, albeit unconsciously or implicitly, and what it uses in action-driven contexts. If we work on this response to the world, as a way of using our knowledge in the classroom, taking it to a more conscious level, we would re-describe that implicit, primitive knowledge and transform it into something more abstract and easier to transfer to contexts that are different to those that are learnt in (Karmiloff-Smith, 1992).

Our intuitive knowledge on the use of sounds for communicating emotion comes to us exceedingly early on in life and affects many of our social interactions. In chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)” it was stated that thanks to this natural disposition for sound management with communicative aims—called intuitive musicality—some small children unconsciously managed certain sound parameters for calming down, cheering up, or putting a doll to sleep. Similarly, in our everyday life, we manage the sound of our words to convey emotional content and in doing so, we show calm, or rage, for example. This sound management, aimed at the communication of an emotional content, lies within the actual nature of music. Despite any cultural evolution music may have had, as we saw in chapter “[Teaching Music: Old Traditions and New Approaches](#)” (or if we think of the specific example of the musical scores in chapter “[Reading Music: The Use of](#)

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Scores in Music Learning and Teaching”), changes come about from its very nature, without it being lost (Levitin et al., 2018). From here, whether it be one form of music or another, one musical style or another, in a concert hall or from a Smartphone application, because of its communicative nature, music provokes a bodily response in us all.

Total and complete learning, as we saw in chapter “[The Psychology of Learning Music](#)”, requires reconstructing knowledge through becoming aware of what we are doing. This is why to make students aware of how to regularly manage sounds, and help them with resources that increase their metacognition, to take the step from intuitive sound management to deliberate and conscious use of instrumental techniques, contexts must be designed where the students have the need to use sound to communicate and manage emotions. The role of the teacher is to ask questions and offer the necessary information to guide the student in this process. Ultimately, and as we read in chapter “[The Psychology of Learning Music](#)”, this means starting with embodied knowledge on the use of sounds to communicate emotional content, designing a context which activates it and waiting for the response from the student, to reflect with them and guide them towards new knowledge. From here, they must be left to stew in their own juices (embodied knowledge) in the heat of reflection (metacognition) and observe how that original knowledge is converted into a more conscious and strategic one. Furthermore, the students as the drivers of their own learning, using metacognition to convey intuitive learning into conscious learning, will feel more competent, more self-assured (motivated, with a positive self-image), more creative (without fear of taking their own decisions or taboos about innovating). To sum up, they will become musician apprentices, more competent as apprentices, as musicians and as instrumentalists.

In chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” we read that the teachers’ conceptions on learning and teaching modulate their actions in the classroom, and we also saw that this idea of collaborating with the students to promote the construction of knowledge is not as common as we would like. The focus on outcome, learning the code and transmitting knowledge removes us from embodied knowledge, from metacognition and from self-regulation for learning music and instruments. In fact, the instrument as the producer of sounds and the sounds in themselves (vehicles of emotional content), are the traditional goal of learning in instrument classes (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”). It is possible, as Laukka (2004) says, that teachers believe the aim of music is its expression and communication, but it is improbable that it is the pivotal focus of their classes. Learning about how to produce sounds becomes an almost exclusive content of many music classes.

It is undoubtedly necessary to learn the musical and instrumental code and also the actions that lead to the desired sounds, but we believe it is also necessary to understand that these codes and actions are a means to an end, not the end in itself, or the ultimate goal of music learning and interpretation. Learning must be directed, as we saw in chapter “[Teaching Music: Old Traditions and New Approaches](#)”, towards the truly musical objectives (the communication of emotions) and using these means as a way forward towards these objectives. For this reason, learning to express and construct

or reconstruct the expressive material of the scores in our minds, has to be the main content to work on in music and instrument classes, as we stated in chapter “[Teaching Music: Old Traditions and New Approaches](#)”. And this emotional significance leads to another context that is usually absent in the classroom: the evaluation of which sound parameters are best at leading whatever it is we wish to communicate. Only thus will we be in a condition to decide and manage the choreography of our body for the instrument to convert it into sounds. Let us see, through examples, how different ideas are displayed in the classroom, how the educational objective revolves around the music medium, the production of sounds and the actions required to make them. Or how, from the construction of an expressive idea which is the goal of musical interpretation, the learning of means (technique) is both possible and the trigger for students to increase their control over learning and to self-regulate.

## 2 How Do We Usually Learn to Play an Instrument? The Obedient Body

Traditionally, instrument learning has adhered to what we could call “the resources route”, which consists of a two-directional movement between sound and instrument, both directed by a conductor, the body, which obeys the teacher, hoping to reach its destination: expressiveness. One of the problems of this educational circuit is that the body responds to the world as it “knows” how, or is used to doing, not as we demand it to or want it to. Let us look at some examples where we can observe that producing sounds and using the technical elements necessary to achieve this are the explicit goals normally guiding learning in the educational tradition of music and instrument.

### 2.1 *Technical Learning: Contemplating the Means Before the Ends*

Clara, a sweet student aged 8, begins her weekly cello class by playing a scale. During the scale, Julia, her teacher, observes that she has an unorthodox position of her hand on the bow. To help Clara correct this position she suggests that Clara puts some pencils between her fingers and recommends she study often with them in place.

*Teacher:* What do the pencils make us do, what are they for? Apart from maintaining a perfect position.

*Clara:* Yes, so that my index finger does not open so much.

*Teacher:* Of course, so what will happen? If you open your finger the pencil will drop out. So, every time the pencil drops out it is telling us that we have changed our position.

[The girl begins to play with the pencils and when she finishes the exercise the teacher says]:

*Teacher: [...] none of the pencils have fallen out.*

In the case of string instrument players like Clara, the fingers of the right hand should perform a function in the bow. Some, as active sensors, feel the traction of the bow and regulate it, others perceive the weight we put on the stick and regulate this. The goal proposed, however, is to hold some pencils, taking away Clara's focus on perception, regulation and control of the sensors, in her hand, her body, and its relationship with the sound. This type of goal using an external prop will end up generating tension that will accompany her completion of the exercise. In the end, a good strategy for success to the demands of the teacher is gripping the pencils strongly. When Clara finishes the activity, the teacher says:

*Teacher: Gosh! You were really gripping well; doesn't it feel like they are still there?*

After this experience Clara has successfully not let the pencils fall and we can expect that the student focuses her attention on how to maintain that position, which she must then regulate, as she is told that "she was really gripping well". And that tension will in turn affect the sound quality, which must also be regulated. The student devotes all her attention to holding the pencils in place and, as a result, preventing the regulation of her body and of the sound she wishes to obtain. In addition, the only possible anchor the student must regulate her learning with is in the teacher's instructions and in the pencils. We are not questioning the need to have an efficient posture to play the instrument with, nor the use of those pencils or any other possible external prop, but the management of this prop. It has become the real goal, rather than an "aid" and because of this Clara is removed from her true goal: the position of her hand and the interpretation she must give. In fact, we understand that what is important with the instrument is building up bodily control when playing, and the external props, such as pencils may be necessary when they are used to help the student to concentrate on position. However, in the case we are presenting, the external prop is used as a genuine goal for the student, aimed at subduing her body. The body was described as an obstacle to learning and not as the controller of the technique and therefore the object of that learning. Its intuitive knowledge was not allowed to be exhibited nor was any thought allowed to be used to redescribe it. The goal is to undertake the action demanded of it and the body is strictly limited to obeying.

Let us look at other examples. Carlos, a violin student of a similar age to Clara, has just finished playing a short piece. The teacher asks him to use the whole bow, not just a part of it.

*Teacher: What I am asking you to do is very easy, I just want you to exaggerate it and get to the end [shows the place to reach] this is what I am asking. Every time you follow me there, to the end [The teacher points whilst playing, to get to the heel of the bow]. This is what you must concentrate on [...] this is the main thing, that you play with the whole bow.*

Let us imagine that the bow will move from end to end because of the movement we make with our arm, our body. Why is there a need to move the bow more or less? Is it just for the sake of moving the bow from one place to another? Is there any other reason other than simply being capable of doing that? The bow, like any vehicle, has to make a journey. The vehicle responds to the driver's actions. Similarly, the difficulty resides in regulating the body to achieve that the instrument responds, not in moving the bow more for no other reason than that the teacher demands it. In fact, moving the bow from one point to another is not a problem. The question is what the body does and how to achieve it and that is Carlos's problem: if he is not drawing the bow it is because his body is not demanding that action, he has no need to do so other than his teacher demanding that he do.

Teachers' demands are not limited to how to use the instrument. Almudena, a 9-year-old cello student must also obey the musical score before thinking of what it means (see chapter "[Reading Music: The Use of Scores in Music Learning and Teaching](#)"). In fact, her only obligation is to recite it word for word, or in this case, note for note. No specific strategy is aimed at Almudena to reconstruct the emotional content underlying these written symbols on the staff. Nor, therefore, is any plan made for these sounds so that the communicative content can be extended to the potential listener. When she has finished playing the teacher tells her what she must correct.

*Teacher: Almudena, this song is very poorly measured, you often play the two black notes... the two quavers... first of all you have to do solfeggio [...] The normal black notes one per beat [exclaims whilst beating on the table], the quavers are a bit faster, two per beat, etc.. Like our heartbeat. Music lives. Long live music! Music is life! [...]*

Measuring correctly is not enough to convey a message. Just as reading correctly does not make anyone an actor (or a performer of music in the case of musical scores). In the previous example, there is nothing that makes us understand that work is being done on the management of rhythmic parameters to assess how to most effectively drive the content that is to be communicated. The aim, in this case, is the sound production matched with what is written down. This idea of only complying with what has literally been written down is out of touch with the teacher's final sentence "*music is life*". Why? It is true that one of the parameters that has a great impact on the listeners' bodily response is pulse control (Levitin, 2006). Specifically, the rhythmic distribution of strong and weak sounds for the one part achieves expectations in the listeners for the other, promoting their movement. However, the teacher understands that only by positioning sounds in the temporary space that corresponds to them (measuring), will they develop their function of conveying emotions and succeed in making music really "life". In other words, beneath the teacher's words is the fact that the music as communicative content (heartbeats, life) comes from the literalism of the reading, not from the intentionality with which it is read (for which a previous study would have to have been made). We will come back to this idea a little further on. We now suggest an activity by which we can confirm that the communicative intention and the sound parameter control will allow the listener to

perceive the desired message. Our last example is a summary on the contents dealt with in traditional classrooms. A teacher is talking to a student after they have played a piece:

*Teacher: I cannot believe there was nothing you liked. Tell me something, come on, things we normally see, tuning, sound, how you draw the bow, what we normally see.*

As the teacher himself says, everyday work in the classroom is about tuning, the sound and how the bow is drawn. What the teacher does not say is equally informative. He does not say a single word about communication or the body as leading the action and learning. If we could show each of these examples in an illustration and paint arrows where the students' attention was drawn, none of them would point towards the body as the agent or centre of knowledge, action or technique regulation. Neither would it be the agent of emotional communication with intentional use and control of sounds to express something. All that our body must do is prevent pencils from falling, draw the bow over a certain space and reproduce literally what is written down. Music, as we may infer from these examples, is reduced to being the signs read on a score, or to producing the examples the teacher plays, like an actor who simply converts the letters from their script into sounds, without getting into the role and with no intention to convey anger, or joy, for example. Obviously, we all agree that we must measure, tune, move the bow and work it, or in the case of the actor, know how to accurately read and pronounce words. We also believe that excluding expressiveness and excluding the body, that already has intuitive musical knowledge, from driving our actions, makes it difficult for students to find any meaning behind them and therefore to self-regulate, thereby depending exclusively on their teacher's instructions.

## **2.2 What Does One Learn When the Means Obscure the Ends?**

From these examples, we share the opinion of Minassian et al. (2003), who stated that the prototypical student—a product of this traditional educational model—has certain handicaps in carrying out a genuine interpretation (rather than reproduction), and they are specifically as follows:

- Preferential attention paid to notational aspects of the music, above other expressive elements, and communicative intent. Please recall the example where the only objective was to play the notes that were written on the score, on the understanding that this was how the music would take form (*life, movement*) (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”).
- The obsession over reproduction exactitude of the before-mentioned notational aspects (if the literalism is music, then the greater the literalism, the better the music).

- Having limited awareness of one’s own body and of the audience, which produces a limited communicative intent. (in fact, there never was a clear and intentional communicative intent, just a reproduction of the musical score).

Torrado et al. (2016) conducted a research study with students who had been trained under this educational tradition and which serves to illustrate the effects of this description. They requested that the participants, who were all final year students of instrumental specialities and orchestra conduction, interpret three activities. Although the sound to be produced in the three activities was the same, the instructions varied. The first activity merely contained the framework, the beat and the symbols (see Fig. 1a); the second, in addition to the previous one, consisted of several regulators (see Fig. 1b); the third (see Fig. 1c), in addition to the first, included verbal instructions on using the sounds to express profound and desolate sadness.

Results clearly showed that activities 1 and 2 (1a and 1b) were a routine and mechanical exercise for the performers which required no type of planning and naturally no metacognitive activation. They applied overlearned techniques and blind repetition of the activity, as is shown in chapter “The Psychology of Learning Music” on technical training analysis.

The reactions observed regarding activity 3 (1c) (“I have never done this”, “this is very difficult”) suggested a change in the performer’s goal. A planning of prototypical action sequences of a strategic approach was observed in the activity solution (Pozo & Postigo, 2000; Pozo et al., 2001). Results confirmed that the expressive goal itself



*You have a couple of minutes to prepare this fragment and interpret it.*



*You have a couple of minutes to prepare this fragment and interpret it.*



*The activity you should now do consists of achieving that when you play this score any listener will perceive the immense and desolate sadness beneath the melody. It will be understood that the activity has been well executed if the listener perceives this sadness.*

**Fig. 1** Activities proposed by Torrado et al. (2016), with permissions from Enlace Creativa

activated a metacognitive use of technical and strategic resources. In other words, they planned, supervised, and assessed the music they produced with communicative goals, regulating whether they sounded sad enough or not, and taking decisions about how to improve that sadness.

From these results, we should question ourselves if the described route of the prevailing models in conservatories, as we are already seeing in different chapters of this book (e.g., 2 and 9), promote a complex learning of music that enables students to design strategies to respond to the expressive intentions inherent in the musical event.

### 3 Another Way of Teaching to Play: The Expressivist Model

The need to get hold of a code which is removed from intuitive embodied musicality—such as musical language—or to learn to produce sounds with an instrument—the instrumental technique—takes time. This heavy working investment in hours to produce sounds may perhaps result in us losing the perspective that the sound also needs to be given communicational content (the essence and nature of music). Also, we forget that, prior to that sound production, we should have constructed a communicative idea, because our control of the different sound parameters will affect our decisions for action on the instrument and on the body. In other words, we will not use the same resources to play a sound with a more or less explosive beginning, or a shorter or longer, more, or less *forte*, or more or less intense one. What we observed in the previous examples is the absence of any work on taking decisions about which technical resources to employ. Teachers tell or explain to their students how to draw the bow up, how to draw it back, etc. but not how to make decisions regarding what they wish to express. This mostly happens because there has never been any work relating to thinking and constructing a communicative idea, other than complying with the code of playing note for note. Since there is no other aim than to accurately apply the technical resources, they do not have to plan or make decisions about what they wish to do. They simply have to obey instructions received.

Therefore, contrary to what many teachers think (Bonastre & Timmers, 2019), it is not enough to teach technique or to use vague metaphors to teach expressivity. The latter must be included as the starting point. To do this, we must start from embodied knowledge, in our case, from the emotional communication through sounds. This means to say, given that music is emotional communication, we have to design activities where the goal would be the use of sounds to produce emotions in the listener so that the body may display its knowledge and therefore have the option to be redescribed (Torrado et al., 2016).

However, this also requires learning to “dress up” sounds, i.e., to answer the question about which parameters of sound most effectively result in what we wish to communicate. Both learning contents—what to express and which parameters will



convey this expressive content—lead us to explore how the instrument works, how it can produce the sounds we have designed and therefore to think about how to control our own body to achieve these sounds with emotional content. Both learning contents, which were already presented in chapter “[Teaching Music: Old Traditions and New Approaches](#)”, and which are evident or taken for granted in the educational actions demonstrated by the traditional model, not normally explicitly worked upon, are prior to any action due to their impact on them.

Let us delve into this idea by experiencing it ourselves, in the fun experience we are going to suggest. Let us suppose you receive a telephone call, and once you ascertain who it is you must show the interlocutor you were displeased with their call. To do so you can only use the word “hello”. Think how you should say it to achieve the goal: that the interlocutor understands its message and reacts to it. If you have already done this and are sure that the listener understood your message, take the following step. Let us suppose a new call comes in and this time knowing who is calling gives you joy. Again, use the word “hello” and ensure that just by saying it the friend who is calling feels joy from the call. Ensure this goal is reached. Having done this, your interlocutors will have perceived the emotional content conveyed and will have taken different decisions. They know that this has occurred because from the content to be communicated, they have listened to different tones. What has varied from one “hello” to another “hello”? Let us look at some of the possible differences and for this use the same parameters we saw with the children in chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”.

- Which of the messages had a beginning with greater attack and which with less?
- Which of the messages was more melodious and which less?
- Which of the messages lasted longer and which less time?

There are more differences, but these are sufficient for us to suggest the following: if we picked up a violin for the first time, about which we knew nothing, and we decided to convey joy or sadness, for which emotion would we draw the bow more quickly and for which more slowly? Also, even if you have never played a violin, move your arms as if you had one between your hands and want to play *Sonata to Hello, op. 1 n° 1*. Is it true you can *see* the sound? Can you assess whether it is sounding as you thought it was going to? Do you think your bodily attitude is reflected in the sound? If we came into your sitting room with the violin, we are sure we could begin to play your *op 1*. I am sure you would tell us that you do not know, that you lack previous information. But it would be obvious that you already had a lot of previous information and instructions:

1. They have touched their listener so that s/he feels their anger or joy (like the children in chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, they have great knowledge of sound control for modulating the response of a listener).
2. One of them begins with attack, it is solid in its amount of sound and takes extraordinarily little time to make it. The other is not explosive at all, contains

little sonorous material and is longer (they are already becoming aware of certain patterns they use without thinking).

3. They have related these sounds with faster or slower drawing of bows and with wider or not so wide bodily movements, more aggressive or less aggressive (they are taking decisions on which technical resource to apply to produce the sounds they wish to make. Goodness! It appears they also know something about the violin).

They then dance the choreography they have designed, and the violin will convert it into sounds. Their teacher will design and choose the questions to improve their own instructions about the choreography, so that they can create their own goals, construct their own way of using a *Hello* to inform someone of how much they like or dislike receiving the call. Obviously, they will make them think about how the instrument works and their relationship with the movements they have to control. If necessary, they will also even provide specific information to previously ask questions.

Let us now go from the sitting room to the classroom of the instrument and change the *Hello Sonata* into other titles, exercises, and scales. Cristina is a 9-year-old girl who has been learning the violin for three years. She has now got a new teacher in her third year. A few months into the year, the use of emotional content for sound and body control has become constant in the class sessions.

*Teacher:* *How did we work on the scale the other day?*

*Cristina:* *Sad, angry, happy feelings [...].*

The reason why we need communication as a goal is that each of the emotions—as you have seen in your sonata—involves a special sound control, thereby using the instrument for different options and as a result demanding different actions and control from the body. In other words, we are working on different articulations at the same time which are assessed by the student from emotional content assessment, from their intuitive knowledge. Once the teacher has generated a context of emotional communications/he only has to manage their questions so that the student is aware of what they are doing. This will come about progressively, first by moving, as if they were really playing the violin, imagining the sound, almost *seeing it*:

*Teacher:* *Choreograph the sound to me* (in previous classes they have talked about sound parameters and about basic movement control so that the bow responds). [Cristina begins to play focusing on movement. The sound she makes is powerful..]

*Teacher:* [He congratulates her with a gesture, whilst saying:] *Stop*  
[Cristina looks at her arm.]

*Teacher:* *Do not look, feel, what is happening?*

*Cristina:* *I am doing forward traction.*

Obviously, any teacher would have seen the error in the bow movement or in its direction. Faced with this, the teacher could use pencils, say what she had done wrong, or guide her towards reflecting on what she feels. The body is the only thing that should finally manage change and control and for this, the students must be

helped to realise the error. For this reason, the activities which are demanded of them from this route are precisely dedicated to the students becoming aware of what they are doing whilst they play. The use of *Smartphone* recording is an excellent resource for this (further examples are given in chapter “[Re-thinking How to Assess Students of Musical Instruments](#)”) and the possibilities offered using ICT in this type of teaching are analysed):

*Teacher:* I want a WhatsApp video tomorrow of you playing the scale without the violin.

*Cristina:* Singing?

*Teacher:* Yes, singing and playing everything and explaining to me what you are doing. But on the video, so I can see it. [...] I don't care if it is good, or bad. The only thing I'm concerned about is that you are aware of what you are doing.

The teacher, like other teachers, obviously knows what is wrong or needs correcting. The point is what is the best way of making the student aware of this and therefore regulating their own learning (see chapter “[The Psychology of Learning Music](#)”). One possible route is that given in the examples of traditional teaching: (concentrating on the outcome (the lack of tuning, drawing of the bow, etc.), saying what is wrong and what they should do to correct it. Another option is understanding that the outcome is only the mirror of the student's own processing and therefore guiding the student to becoming aware of what they are doing, and thus increase their potential for self-regulation. This example therefore shows how to help the student to become aware, centring their attention on their own body and its actions.

Once we know we have a communicative content, and we have several ideas on how to control our body, we need to help the students to become aware of what they are really doing: if they are moving the bow so that the instrument makes a sound or if they genuinely have a content to communicate. Let us look at the following example: Ana has only been learning the violin for a couple of months. She started her violin studies under the educational model of making expressiveness the starting point of instrument learning. She knows what to express and how to express it—her relationship with sound and sound production. In a passage during the class, the teacher notices that Ana is making mechanical movements with which she is pretending to play the violin (without really having it in her hand) and decides to ask her about the emotional content.

*Teacher:* is that sad or happy?

[Ana makes a gesture with her hand saying that it is neither one nor the other]

Several questions later, guiding Ana towards reflecting on the content, the teacher asked her to play and sing again, as if she were playing the instrument. It seems that the sound she *sees* through the movement is not the same as the one she is singing. The student smiles, showing that she appears to have realized and takes decisions, drawing the imaginary bow with greater impulse, making it go faster and singing the notes with slightly more attack.

This example neatly shows how Ana, by assessing emotional content that is clearly within her control, takes decisions on her arm movement and regulates it. She regulates and controls her technical resources from the existing relationship between the communicative idea and her body movement, maybe because both form part of the same unit, the body. When we give the body the opportunity to work in a coordinated fashion with itself, the goals are easier to achieve. You will think that because she is not holding the violin it is simple to concentrate on the relationship between expressive content and body, and it is. The added hardship of holding the violin as well has been avoided. Using this strategy to try to help raise consciousness of what the body is doing and the relationship between this movement and emotional content, will mean that picking up the violin will be a simpler activity and allow Ana to focus her attention on her body and on her actions and therefore control and regulate it. Empathise with that student from the traditional approach who has to draw the bow more because the teacher demands it. Now do the same with Ana, who has to express another emotional content and for this has to become aware that the bow must be drawn more. Ana has a more fun way of learning, expressing, regulating and especially, clarifying what she can do in her home to play better: making happier, sadder, or more solemn sounds, for example. One could think that by putting the violin directly into the hands of Carlos and asking him to draw the bow more, this would be a shortcut, but in actual fact the student is being subjected to extra effort. Attention is saturated and disconnected. Carlos' body did not respond to the naturalness of moving around to what he had to express and the naturalness of the instrument producing the sound and his regulation depended on the teacher's written instructions. All of this simply occurs because different methods activate different resources, as we have already seen in chapter "[The Psychology of Learning Music](#)". The best shortcut to teaching how to play an instrument is the one which more directly trains the body (body and mind) to keep emotion, movement, and awareness as its endpoints.

#### **4 Reflections and Final Comparison between Both Models**

None of the actions our body needs to make for the instrument to produce the sounds we wish to communicate is really difficult to understand. What is complicated is deciding which actions should be performed and how to regulate them, and also when to apply them to ensure that the instruments are used as means of communication. The instruments, as artefacts of sound production, are not advanced technology that require incredibly complicated explanations on how they work or how to first produce sounds from them. As sound production tools we must only think and design how to activate them or guide the students towards that reflection. We have to assess what articulations will bring us closer to what we have decided to express: for a string instrument, for example, what fingering is required, or something else for other instruments, driving us towards this goal better, etc. Maybe what is really complicated

about learning music and instruments is realizing—or guiding the student to realise—what to express, and how, learning to intentionally analyse which decisions are effective, or not, and controlling and regulating the body's actions to achieve the goal. Nevertheless, we have been following the mechanical repetition pathway for years, hoping that something will happen which has not actually been organised by the teachers, nor planned or designed by the students nor even consciously thought about. We have concentrated on “spending hours” at the instrument and only so that what is written down is produced in sound, abandoning learning relating to what could be expressed, which sound parameters to intentionally and strategically manage, to using bows and fingering in strings for example (and whatever is in keeping with each instrumental specialty).

As we have seen throughout the chapter, the use of one route or another in a classroom or study room is a response to our conceptions on learning and our beliefs on the nature of music (see chapters “[The Psychology of Learning Music](#)” and [How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)). Undoubtedly these conceptions and beliefs impact how teachers manage teaching activity (as we saw from the examples in this chapter), and of course, the potential performance of our students (review chapters “[The Psychology of Learning Music](#)” where we explain how our students learn). All teachers pursue learning for their students but not all the pathways are equally productive.

Table 1 is a final conclusion summary of the contents worked upon from each of these approaches or pathways—traditional and expressivist—the teaching strategies applied in each of these contents, and what is finally learned in each of these dimensions.

To sum up, Table 1 compares the students regulated by their teachers who learn to play a specified repertoire, compared with self-regulated students who learn how to interpret, i.e., to use their body to generate music through the instrument or repertoire which conveys emotions to whomever is listening, and indeed, to whomever is producing it. This music communicates its emotional content and those listening are embraced by it. We can limit ourselves to telling students what we think they do not know, even telling them what they should feel and express and how. Or we can help them to redescribe what they feel and to build up strategies that allow them to express it for themselves. Both actions seem to be regarded as teaching. Are they though? This chapter was written with the intention of seeking the possible answers to this question or perhaps, formulating other questions such as: do we think about how they learn?

**Table 1** The two pathways for learning music

	Traditional approach	Expressivist approach
<i>Music learning dimensions</i>		
Expressiveness	End point. Does not appear to be a learning content, but something derived from the learning of the code and technique	Starting point in learning. Drive for self-regulation and learning
Sound	Teaching goal. Object of aesthetic regulation. Musical score: musical content and literal reproduction aim <i>f. p. crescendo</i> , and all types of indications written onto the score: signs to follow	Medium for expressiveness. Object of strategic regulation. Medium of re-representation. Guides for reinterpretation
Instrument	Focus of attention. Object which marks the guideline. Technique is concentrated here	Mediating tool in the production of sounds desired by the body.
Body	System obeys the instrument and the external guide of the teacher	Active and regulating system. Self-serving.
<i>How is it taught? Teaching strategies</i>		
Contents	End point	Starting point
Expressiveness	No specific teaching strategies	Specific teaching strategies.
Sounds	Explanations on technical resources for improving sound quality and precise reproduction of the written material.	Strategies aimed at metacognitive activation on planning, design and management of sound parameter and reinterpretation of written material
Instrument	Articulations, fingering, etc., technical dominance of skills, regulated by the teacher, or imitated by them	Self-regulated strategies of construction of fingering, articulations regarding expressive ideas, sound patterns and functioning of the instrument.
Body	Avoid it, relax it, eliminate it, it is absent or if it appears, it is only something that should be subjected to the technical demands of the instrument	Excitation and control of bodily sensations as the drive for actions mediated by the instrument to construct and regulate the sound, leading to the desired expressive content

(continued)

**Table 1** (continued)

	Traditional approach	Expressivist approach
<i>What is learned</i>		
Expressiveness	Reproduce the musical score symbols and follow the pathway fixed by the teacher without interlinking any of one's own expressive goals	Make intuitive musicality more explicit and redescribe it through reflection and metacognitive management
Sound	Reproduce the sound parameters indicated in the score canonically and singularly	For the conscious and strategic use of the indications and of the score in this respect for its reinterpretation
Instrument	Play the technical patterns as skilfully as possible, along with articulations, fingering etc., demanded by the teacher	To strategically plan and design articulations, fingering, etc., in relation to sound parameters and expressive goals
Body	Obeys and submits to technical restrictions. If it appears, it is a nuisance ( <i>tenses, gets nervous, does not respond</i> ) and specific techniques must be used to get away from it (relaxation, mindfulness, Alexander technique, etc.)	Planning, design, regulation, and control of the body's activity as a drive for expressive content, sound parameters and design over articulations, fingering, etc.

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# Learning Music by Composing: Redescribing Expressive Goals While Writing Them



Elisa Méndez and Juan Ignacio Pozo 

## 1 Introduction

*It is the supreme art of the teacher to awaken joy in creative expression and knowledge.*  
(Albert Einstein)

As demonstrated in chapter “[Teaching Music: Old Traditions and New Approaches](#)”, the starting point of the dominant music tradition in conservatories and therefore in most centres and contexts of institutionalized learning of instrumental music is the mastery of musical codes and languages. This is the result of the practically literal decoding of musical scores, and the “training” in musical techniques to reproduce the “notational” sounds from the musical scores as faithfully as possible (Musumeci, 2002; Pozo et al., 2019).

Up against this tradition is another “route” or another form of understanding music teaching. A detailed account of this is given in chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, where the reading of scores and the technical mastery of the instrument is at the service of what is considered to be true musical content: the communication or expression of emotions (Levitin, 2006; Levitin et al., 2018, also see chapters “[Teaching Music: Old Traditions and New Approaches](#)” and “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” of this book). We have already seen that since birth children have an intuitive musicality which, through implicit recognition of the musical organization of sounds, allows them to feel and incite emotion in others through music, without any explicit acknowledgement of codes or techniques (chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”). We also saw (chapters “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”

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and “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”) that learning music requires the building up of new components (expressing emotions using sounds produced by an instrument controlled by bodily actions and sensations).

This new route is student-centred, not just regarding the unfolding mental activity but also in the knowledge and mastery of bodily restrictions. However, this does not entail relinquishing the major role of the dominance of musical codes and instrumental technique development in musical learning. In contrast, possibly the only way for students to autonomously and productively appropriate this musical knowledge would be from reconstructing intuitive musicality. Decoding the cultural systems where music is represented is still essential, but constructing understandings is required to process or read the most complex scores, moving beyond mere “word for word” or “note for note” learning that has trapped many students (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”), with the many shattering consequences on their motivation and interest in music this can entail.

A good resource for linking intuitive musicality experienced through the body, with its formal musical knowledge that allows it to be reconstructed or redescribed (Pozo, 2014) is musical composition. Students are placed into a context where they express or communicate something through music, facing up to conceptual and technical goals, which will no doubt replace what they believe in and help them acquire new musical knowledge.

## 2 Composition as a Didactic Resource

The psychology of composition is the least studied and understood process (Impett, 2016). Although several authors probe into musical composition in the classroom, they generally do so by considering it as a group practice and within the statutory School Education framework, studying its relationship with cooperative attitudes and socialisation processes of the students (see, for example, studies by Barrett, 2006; López, 2009; Rusinek, 2005, relating to the education of expert musicians).

However, despite the lack of available literature regarding composition as a process, Webster (2016, p. 421) does not doubt that “the study of creative thinking in music involves a complex combination of cognitive and affective variables, often executed with the highest levels of human thinking and feeling”: musical creation involves the innate comprehension of the individual and their cultural experience of musical psychology, which is characterised by the consonance between the subject and the object (composer and composition present a common identity). This structures the sounds in a temporary scale that transcends the limits of short-term memory and requires cognitive and contextual elements to achieve expressive and communicative goals (Impett, 2016).

## 2.1 Composing Music: Beyond Musical Dictation

It could appear that the mere act of composing as productive labour will always be a constructive activity. However, it should be realised that there are many different ways of dealing with composition in the classroom and that these would have highly different implications (see Table 1).

The first instructions from Table 1 match a traditional teaching model and we could find it in many books and music theory classes in conservatories and music schools. The student has no say in the activity, everything she has to do and how to do it has been explained to her and she is expected to carry out the exercise correctly. The important thing is the number of beats, the type of chords and tone, and this is all given in the instruction. We therefore find ourselves with a conception which is close to the direct theory (see chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”), focused, as we have seen, on the instrument, the musical text and the technique, with the teacher playing the main role. She is the one taking the decisions (Pozo et al., 2008; Torrado & Pozo, 2006).

The second instructions are radically different and suggest a different focus which is student-centred, closer to the constructive focus developed throughout this book (see mostly chapter “[The Psychology of Learning Music](#)” and “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”). The starting point is a real situation which has led the student to a feeling they wish to convey and they are asked to take decisions on how to express it. There is no single correct answer that the student should know and reproduce. In this case, what is essential is the expressive component of the music, from which theoretical concepts and technical problems will arise. For example, the episode could lead towards the difference of character between major (happy) and minor (sad) chords, what they look and sound like, how to properly interpret them separately, etc.

Although it is true that the first instructions are more concise and convey an apparently more systematic and organised method, the main advantage of adopting “*more holistic focal points [that they take] as a starting point for the expressive nature of the music [is that they promote] greater proactivity, involvement and reflection—to sum up, greater metacognitive capacity and self-regulation—in the students*” (Torrado

**Table 1** Examples of instructions for a composition activity in the classroom

Instructions A
<i>Teacher: You have to compose a melody of eight bars in E minor. The first four will be the question and the next four the answer. Question and answer begin in the same way, but end differently, because the question finishes in the dominant chord and the answer in the tonic chord</i>
Instructions B
<i>Teacher: We are now going to invent a song, what do you think? What type of song could we make up?</i>
<i>Student: Mmm... A sad song, because I lost my new watch this morning.</i>
<i>Teacher: A sad song about your watch! And how do we make it sad</i>

et al., 2016, p. 16). To conclude, this other form of conceiving musical composition, guided by expressive goals, is a privileged way of supporting students in the reconstruction of their own intuitive musical awareness, which should be the starting but not the end point.

## 2.2 *Composing to Redescribe Intuitive Musicality*

Karmiloff-Smith (1992) defined representational redescription as “*a process by which implicit information in the mind subsequently becomes explicit knowledge to the mind*”. In music, representational redescription refers to how embodied representations (dependent on the body and context) receive different meanings thanks to the scores. These external codes help these representations to be made more explicit, reaching a more symbolic, flexible and generalizable nature (Pozo et al., 2019; also see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”).

In Musumeci’s terms (2005), figurative knowledge of music exists, that which one “*already knows*” implicitly, listened to and understood by members of a culture (that cultural experience of musical psychology mentioned previously) and there is formal knowledge, which refers to technical terms required to study music explicitly. Thus, “learning music” would consist in carrying out a figurative-formal (implicit-explicit) transaction and teaching would be to “*help both dimensions integrate with one another into [the] mental representation*” of the student (Musumeci, 2005, p. 49).

Let us look at the following example to illustrate the nature and functions of the representational redescription (Pozo, 2014). A music student has played the notes C-E-G—simultaneously in several different compositions, and therefore has an embodied representation of the C major chord (formed by the notes C-E-G-): s/he knows how to produce it with their hands within certain contexts.

Let us suppose that in later lessons, the same student has to play the notes G-B-D simultaneously, which form the G major chord. Looking at the notes on the score and remembering the pieces s/he has studied previously s/he realizes the similarity between both groups of notes. Now, their representation acquires a new significance: apart from knowing how to produce both chords, C-E-G in the eyes of the learner becomes an identical triad to G-B-D, just five notes higher up.

Lastly, let us imagine that, with the teacher’s help, the student learns to name sets of notes, learns that major and minor chords exist, learns to identify them by their sounds (the majors sound “happy” and the minors “sad”), and learns that this sound depends on the distance between the notes making up each chord. Again, the student’s representations have been transformed, acquiring a much more general character: they are able to explain what a major chord is and what a minor chord is, and how to identify and produce not just the chord that appeared in the scores, but also any other major or minor chord.

Finally, it is of note that when representational redescription occurs, increasingly more complex use is made of the score, with the acquisition of new functions. In the example given, in the beginning, it was only possible for the student to decode explicit

elements in the score: the notes C-E-G and their duration (explicit processing). Later on, the student was able to establish relationships between these three notes and induce patterns (implicit processing). Finally, these patterns would acquire an emotional significance which would have consequences in the musical interpretation of the learner and in their composition decisions (conceptual processing). But perhaps the best way of analysing how the composition can help to construct new musical knowledge through representational redescription of previous musical experience is to analyse a case in depth, taken from a real context (Méndez, 2019).

### **3 Carmen's Case: How to Learn Through Composing Music**

Carmen is nine years old and began to receive music classes approximately 18 months ago. She meets with her teacher twice a week and because she is not motivated or rested to the same extent every day, her parents and her teacher agreed that each class would last between 30 and 60 min, depending on how Carmen was. They all believe it is essential for her to learn music as a fun and agreeable activity, a source of enjoyment, not of frustration and inertia.

Carmen's creativity is outstanding. She wants to be a writer when she is older (like her grandmother, she says). She loves inventing stories about all types of subjects and her favourite activity during music class is to compose. During classes, student and teacher work together on composition and writing musical pieces, starting with the stories Carmen invents and which we could call story-songs. Carmen takes creative decisions based on her expressive needs and the teacher helps her to give shape to her ideas and to write them down correctly. The dialogue-based, constructive nature of this activity is remarkable and facilitates self-regulated learning, where the teacher becomes a guide instead of the exclusive model to be imitated.

We will now analyse Carmen's case, taking as our guide the "system for analysing the practice of instrumental lessons (SAPEA) explained in detail in chapter "[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)". We will base our example on the analysis of the three components suggested there (also see chapter "[The Psychology of Learning Music](#)"): outcomes, processes and conditions of music learning (for greater detail see Méndez, 2019).

#### ***3.1 Learning Outcomes Achieved by the Student***

According to the classification established (see chapters "[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)" and "[Reading Music. The Use of Scores in Music Learning and Teaching](#)"), most of the learning outcomes acquired by the student during the composition of each story-song

**Table 2** Episode illustrating the symbolic/verbal, referential-conceptual and analytical-structural learning acquired by Carmen

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Episode 1

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*Teacher: OK, let's see, how can we do something like this? That sounds like flying to you...*

*Carmen: [Improvises at the piano, playing the notes from two chords which she already knows and which she has just used in the introduction to her composition: C minor and C diminished.] No, they are only the same chords [smiles].*

*T: of course! [...] What have you just realised? The chords you use for "mystery" are you also going to use them for flying? Or do you need different chords?*

[...]

*T: Let's imagine you are going to play this at a concert, OK? And you have played the whole part of the "mystery", in which you are using minor and major chords and diminished chords. Good. What happens if you want to achieve the effect of flying and you are still playing the same chords? The person listening, will they notice that something has changed or will it still sound maybe like mystery?*

*C: Yes, it will still sound like it is [the witch] making the potion [...] So, for the person who is listening it could sound like [...] Changing chords, but that they were going to fly, so [Hums whilst simulating playing the piano quickly.]*

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are symbolic/notational, analytical/syntactical and referential/conceptual pieces of learning, connecting the composition with its context and with the girl's previous knowledge. Holistic musical comprehension ensues and involves an analysis of the structure and organizational guidelines of the musical score, respectively, in accordance with the levels of processing scores, described in chapter "[Reading Music. The Use of Scores in Music Learning and Teaching](#)".

Table 2 is an example which combines both types of learning: the girl links the word "mystery" to the harmony being used (minor and diminished chords) and when she imagines how the listener will perceive of her composition, she understands that she needs to change the harmony if she wants to generate a different feeling in her audience. In this way, in addition to considering the communicative function of the music, Carmen uses harmony as the structural element of her composition.

Although referential-conceptual and analytical-structural learning outcomes predominate here, we can also find examples of symbolic/verbal notational and syntactical learning, the first referring to explicit frameworks in the score (see Episode 2 from Table 3), and the second to implicit information in the same (see Episode 3 from Table 3).

So, regarding the processing level reached by the student, it is of note that Carmen carries out a conceptual processing of the scores that require a previous explicit and implicit processing, and provides a significant framework of reference that promotes productive learning and expressive interpretation.

Furthermore, as illustrated in 4, the outcomes of procedural learning concerning production and musical expression also appear, to a lesser extent.

Regarding uses or functions when writing her compositions, Carmen talks explicitly on several occasions about the musical score as an object that helps her to remember (Episode 5, Table 5). It is curious to see how her actions and speech are

**Table 3** Episodes illustrating the symbolic/notational and analytical/syntactical learning acquired by Carmen

Episode 2
<i>Teacher: And now?</i> [Singing up to where the student has written in her musical score.]
<i>Carmen: Another "E".</i>
<i>T: [Nods.] Very good.</i>
<i>C: So now I don't need to use the flat.</i>
<i>T: Perfect. You really know it well don't you?</i>
Episode 3
<i>Teacher: And the other you used you said was ...</i>
<i>Carmen: C... er... C minor:</i>
<i>T: C minor that ... ¿What notes does it have?</i>
<i>C: C... E flat... and... G</i>

**Table 4** Episode which shows procedural learning of production and musical expression acquired by Carmen

Episode 4
<i>Carmen: For it not to be so ...</i> [hums it again and simulates playing fast], <i>I do not know how to do it, of course, because I cannot move my hands like that...like this</i> [improvises on the piano]
<i>So... like... a bit "crazy! Like...</i>
<i>Teacher: OK...</i>
<i>C.: You know... [Improvises again.] Something like this</i> [continues improvising with her two hands.] <i>I can't do it! Wait</i> [she removes her left hand off the keys and looks for the sound she wants with her right hand; she finds an option she likes and repeats it several times slowly.] <i>But fast!</i>

**Table 5** Episode illustrating how Carmen regards the musical score as useful or a reminder

Episode 5
<i>Teacher: What would happen if we had not written the score about what we did the other day?</i>
<i>Carmen: We would improvise.... Or would change it each time. We would have to have a very good memory.</i>
<i>Teacher: too good, don't you think?</i>
<i>C.: [Nods.]</i>
<i>T: The score helps you to do what, then?</i>
<i>C: To remember</i>

sometimes incongruent (despite not remembering, not using the score) and other times they coincide (the score helps her recover forgotten information).

At other times, guided by the questions of the teacher, the student attributes communicative functions to the score (Episode 6, Table 6). Similarly, driven by the teacher's questions, the child reaches the conclusion that by writing her musical scores she is prone to greater reflection (Episode 7, Table 6).

Finally, it is worth noting that Carmen is undertaking a representational redescription process (Karmiloff-Smith, 1992; Pozo, 2014) when writing her own musical

**Table 6** Episodes which illustrate the communicative and reflexive uses or functions conceded by Carmen to the score

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Episode 6

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*Teacher: For example, imagine that Daniela [a friend of Carmen who lives in a different country], has to play it and she is not here. [...] How would you do that?*

*Carmen: By WhatsApp!*

*T: WhatsApp... good, what would you do? Would you send her...?*

*C: I would send her a letter... with a score. If she knew how to read or...*

*T: Great! So you would need a score. I mean, the score... would help you remember but it would also serve as something else, wouldn't it?*

*C: Yes.*

*T: What?*

*C: To show it to other people. To spread the word.*

*T: To spread the word! That's it! So people would get to know about it. So that other people could play it...without having to show you it directly*

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Episode 7

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*Teacher: [On a song Carmen invented with a friend from school:] And when you invented that song, did you also think whether it was going to be fast or slow, if you were going to sing it shouting almost or very softly ...?*

*Carmen: Er... No, frankly I didn't think about that.*

*P: And composing it with the musical score, do you think about it?*

*C: Yes.*

*P: So, I mean you think about.... I don't know ...*

*C: The... what is it called... it is as if you think more about the... the position and all that and... what the sound is like ... and I don't know. All of that.*

*P: Do you think more when composing with a musical score?*

*C: Yes. Or with a piece of paper.*

---

score, This involves the recoding and exploitation of information and aids flexibility and generalization of knowledge. This happens, for example, with the diminished chord: whilst in the first session the student is unable to play it, in the last session she can identify it, name it, produce it by beginning in different notes and attribute a specific communicative value to it which has consequences in its musical interpretation. In other words, the figurative-formal transaction of representational redescription has taken place and enabled complex uses of the score.

### 3.2 Learning Processes Taken on by the Student

During the class sessions, Carmen carries out several learning processes which essentially occur during discursive episodes. The frequent displays of intrinsic motivation shown by the student are striking: verbalisations (Table 7), non-verbal language that reveals enthusiasm (exclamation, laughs, facial and bodily gestures), and the initiative to compose and reflect on the composition without the teacher suggesting it (Table 8).



**Table 7** Episodes of Carmen's intrinsic motivation verbalisations

Episode 8
<i>Carmen: Hey, is it really the case that ... er... that music is pure mathematics?</i> [her expression is one of incredulity.]
<i>Teacher: Well.... There is a lot of maths about it ...</i>
<i>C: I hate mathematics, but I love Piano!</i>
Episode 9
<i>T: Well, er... now, what do you fancy doing today?</i>
<i>C: [Improvises on the piano.] Well,... I don't know ...</i>
<i>T: Do you.... Feel like studying a new score?</i>
<i>C: Mm... [she leans back on the stool smiling.]</i>
<i>T: It seems more like a no, by your gesture, is that right?</i>
<i>C: [shaking her head.]</i>
<i>T: Would you like to... go over songs that you already know?</i>
<i>C: I feel like composing...</i>
<i>T: Very Good! Well, let's compose!</i>

**Table 8** Episode illustrating Carmen's initiative to compose and reflect

Episode 10
<i>Carmen: the other day... er. I ... invented a song which is in English and in Spanish.</i>
<i>Teacher: OK! Let's see it ...</i>
<i>C: Shall I sing it?</i>
<i>T: Singing or playing or how did you invent it?</i>
<i>C: Er... I also tried to play it but it did not come outright.</i>
Episode 11
<i>Carmen: I was thinking that... every time I played it [her own composition], it seemed like...different scenes. For example, I was also imagining a policeman... a thief robbing something from a museum, where it is like this [She plays the beginning of her composition.]</i>
<i>Teacher: Ah...! Because it sounds silent...</i>
<i>C: and when it does this[plays the descending glissando and the two clusters] , it is like, he falls and the police catch him! And he falls into the arms of the policeman... da da! And then the thief does.... [...]</i>
<i>T: [Laughs.] So, for the same music... you can imagine different stories, is that right? For the same song ...</i>
<i>C: Yes</i>

There is also clear predominance of constructive learning compared with repetitive (see chapter “[The Psychology of Learning Music](#)”). So, Carmen establishes constant relationships between the class content and other musical content and learning. She carries out a process of recovery with transference, in keeping with the categories established in SAPEA (see chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”). For example, in Episode 12 (Table 9), Carmen sings the theme tune to “*Psycho*” to exemplify what “*suspense music*” typically sounds like.

**Table 9** Episode illustrating one of Carmen's processes of recovery with transference

## Episode 12

*Teacher:* How does this help, what you are doing up there [points to the high notes on the keyboard].

*Carmen:* [plays a single note several times and increasingly faster and louder]. *It's like the typical* [imitates the theme tune of "Psycho" with her voice] *thing from the film* [she laughs]. *It is just that ...*

*T:* [Singing "Psycho"] *Da dadadaaaa...*

*C:* *the clown goes there...*

*T:* *so, it is a bit .... Give me a word, which word??*

*C:* *Er... fear...*

*T:* *Yes...?*

*C:* *Intrigue!*

*T:* *Intrigue! it gives it intrigue!*

**Table 10** Episode illustrating Carmen's reflection and recovery with transference

## Episode 13

*Carmen:* [begins to play the introduction, which was the material from the "witch's cavern"]. *Now lower.* [She begins again softer]. *Oh, with the pedal! That sounds right.* [She plays the introduction as coda, softly and with the pedal. She links this to her previous composition, the "Sad Song", written for the piano as a duet].

*Teacher:* [Laughs]. *And this is where I come in!* [Teacher and student play together. The girl uses the right pedal]. *Change of pedal.* [They continue playing]. *Change... Every time it changes* [the left hand] *places, we change pedals. Why?*

*C:* *Because otherwise my foot would get tired?*

*T:* [Laughs]. *Yes, that is good.* [Laughs]. *No. Well, OK, that you don't tire, but apart from that... look, just use one pedal. Press it down all the time. What happens if I do this several times?*

[Plays the same chord several times]. *Is it good or bad?*

*C:* *Good.*

*T:* *Good. Now, use the same pedal and leave it pressed down all the time. What happens if I do this?* She plays several different chords.

*C:* *It's weird.*

*T:* *Why?*

*C:* *Because I have stopped using the pedal and then.... As it links in here* [sic] *and... just imagine that, in the laboratory of my school, for example, there is a bowl with a lot of colours in water... they put one colour here, one colour here and one colour here* [points to different bits of the imaginary bowl]. *Then suddenly they join together and when they do that, it comes out as a brown-grey colour and then it is wrong.*

*T:* *So, the colours are no longer what they were, is that right?*

*C:* *No.*

*T:* *OK, so this colour* [touches an arpeggio chord of the "Sad Song"] *and this colour* [touches another arpeggio chord of the girl's composition] *and this colour* [touches a third arpeggio chord from the piece] *are different...*

*C:* *Yes.*

*T:* *And when you mix them all together ... it comes out brown and you don't understand what the colours were before!*

*C:* [laughs].

**Table 11** Episode illustrating Carmen's attentional and metacognitive control

## Episode 14

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*Carmen*: [Begins to play]. *Wait, no. Too high-pitched.* [Begins again in another register of the piano]. *Too low.* [She repositions and starts again. Gets a note wrong]. *Oh!* [Corrects it and continues playing. Reaches a certain point, it seems that she cannot remember how to continue, looks at the score and returns to her interpretation. Goes wrong]. *Oh, no!* [Corrects herself and continues to play]. *Er... after...* [Looks at the score again and continues. Gets confused in one section]. *Oh, no! Sorry.* [Corrects herself. Looks at the score again]. *Oh!* [Continues playing with just one hand]. *Oh!* [Plays again with both hands]. *And after...*

---

Another lovely example of recovery with transference is found in Episode 13 (Table 10), where, between laughs, Carmen and her teacher reflect on the use of the pedal, alluding to the girl's scientific knowledge.

It is rare to find samples of repetitive learning and when they are found, that they come from the student and not from the teacher's command (again see Episode 4 from Table 4).

Thus, from constructive learning and the relationship between contents, come the before-mentioned processes of recovery and transference, which encompass the previous knowledge of the student and are encouraged by the teacher's actions. These shall be explored in detail later.

It is significant how the girl's attentional control evolves towards increasingly greater autonomy. Although at the beginning the teacher guided as necessary, indicating "*now let's think about...*" or showed her the score on several occasions, in the last few sessions the student is the one focusing, maintaining and distributing her own attention without any external aid (see Table 11).

So, this last example (Table 11) illustrates the perfection of the metacognitive control made by the learner of the previously described processes. Carmen plans and establishes goals (for example: "*now lower*"), supervises her own practice (for example: when she cannot remember how to continue, she looks at the score and continues with her interpretation), and she self-assesses (for example: "*too high-pitched [...] too low*").

It is also striking how she controls her errors during classes. Since the activity consists in the girl composing a piece based on a story she herself has invented, the only possible error is that her composition does not fit in with the idea or emotion she wishes to express. In general, teacher and student greet errors with humour, changing their perspective. They make them positive and convert the errors into success stories. This may also be observed, for example, in the episode described in Table 12.

We could also point out that making a mistake never entails verbal or non-verbal reprimand by the teacher and Carmen is not frustrated when she gets something wrong: she calmly goes back and tries to solve the problem (for example, on another occasion she says: "*It's not right, wait*" and removes her left hand from the keys, seeking the sound she wants with her right hand, and when she finds an option that is right, she repeats it several times slowly).

**Table 12** Episode illustrating error management by Carmen and her teacher

## Episode 15

*Carmen:* [Plays the two chords and by mistake, the arpeggio both ascending and descending; tries to correct it].

*Teacher:* *There was something interesting in what you were doing, playing the “E” as well when you were descending ...* [Plays with the “error”].

*C:* *I like that* [Plays imitating the teacher].

Lastly, we would point out that the guiding thread of all these learning processes for Carmen are her own expressive needs. This expressive need, absolutely linked to intrinsic motivation, determines the goals made by the student, generally aimed at conveying emotions. Let’s look, for example, at Episode 1 from Table 2, where the goal was to find “*the sound of flying*”; or Episode 16 from Table 13 shown below and the goal of which was to define the feeling which would determine the composition decisions.

Thus, this need, through motivation and the establishment of goals, guides the management of previous knowledge, attentional control, metacognitive control and promotes constructive learning, reflection and self-regulation in the learner. For example, in Episode 13 from Table 10, Carmen begins to play the introduction of her composition and says: “*now lower*”; she goes back to the beginning, reduces intensity and adds: “*Or with the pedal! It sounds good*”. In other words, the student pays attention to the sound she creates, assessing it and modifying it, showing her ability for self-observation, reflection, critical thinking and decision-making. She shows signs of self-regulation which enable her to have control over the previously mentioned musical production.

**Table 13** Episode illustrating Carmen’s expressive need

## Episode 16

*Teacher:* *Let’s see, we are thinking about the beginning of the song, aren’t we?*

*Carmen:* [Plays a major arpeggio chord]. *No.*

*T:* *and you want it to sound like...*

*C:* [Plays a minor arpeggio chord].

*T:* *What is a word we can use for it to be... like a spell? A feeling.*

*C:* *Terror?*

*T:* *Is it real deep-down fear?*

*C:* *No.*

*T:* *No. Is it ... happiness?*

*C:* *Er... No. let’s see, it is like ... like fear, but like... mystery*

**Table 14** Episode which contains an explanation given by the teacher

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*Teacher: Just as this is called major [she plays the major chord] and this is called minor [she plays the minor chord], this that you have just finished describing is called ... Diminished [...] it is even smaller than the minor.*

*Carmen: [Make a gesture with her hands of something small]*

---

### 3.3 Learning Conditions Preferred by the Teacher

As we were able to see in the episodes above, the teaching practices the teacher constantly applies are to ask and suggest, inviting the child to express her opinions and to reflect on music and sound as conveyors of emotions, composition, musical form, score, the use of the pedal, etc.

Allusions to the student's previous knowledge are also very frequent (for example, on one occasion the teacher asks: "*do you remember the word "dynamic" and what it means?"*"), generally used by the teacher as the starting point to new knowledge acquisition.

The teacher also makes many positive appraisals, with the most regular being global feedback (for example: "*Very good! I love it! Really great!*") rather than specific feedback (for example: "*Mystery! That is the word!*"). There are also several examples of explanations given by the teacher (see Table 14), and only very rarely does the teacher give the student an order (for example: "*Play it once all the way through!*").

It also should be highlighted that during classes genuine dialogue between teacher and student takes place: on the one hand the teacher does not usually give closed responses to the child, but instead helps and guides her so she finds her own answers. On the other, Carmen participates on numerous occasions and extensively, arguing, doubting, taking decisions, assessing herself and correcting her actions like those detailed in the previous paragraph. Participation structures are therefore open: communication can be initiated and concluded by the learner and the questions formulated either by the teacher or the learner, and those formed by the teacher do not have to provide a correct solution that the child has to know nor do they have to be used for evaluative purposes.

## 4 Conclusion: When Learning and Teaching Music Is a Pleasure

Taking everything into account, the activity of composing a story-song, as was developed by the teacher and student during classes, falls within a teaching method that fosters constructive learning (see chapter "[The Psychology of Learning Music](#)"). This way of learning and teaching is closely linked to the teacher's conceptions, as expressed in chapter "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)". Learning music by composing places the student

and their expressive needs at the centre of the whole learning process. This is the reverse of the idea of concentrating learning on codes and technical mastery of repertoire, which is the norm (see chapter “[Teaching Music: Old Traditions and New Approaches](#)”). Here, expressive need leads to the need to master the code and overcome certain technical goals. In contrast to the idea that expressivity is acquired through technical training or modelling/imitating (Bonastre & Timmers, 2019), students here are taught to express emotions explicitly.

Understanding music teaching in this way also leads to extremely rich and complex learning outcomes, encompassing contents which involve all musical parameters (height, rhythm, tempo, texture, register, intensity, articulation, timbre, etc.), which are also interconnected. Along these same lines, the predominance of symbolic/verbal analytic-structural and conceptual-referential type learning reveals great reflection and a profound processing of the scores by the student (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”). The said profound processing facilitates the establishment of relationships between knowledge, providing a framework of significant reference to encourage an expressive interpretation (Casas & Pozo, 2008).

What is therefore striking is the use the teacher and student make of the scores during their composition sessions. Compared with traditional reproductive/repetitive uses, Carmen and her teacher create their own representations, which require high cognitive efforts and foster the process of representational redescription. They make productive and epistemic use of the scores, from their most complex levels of processing (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”).

It is also important to again underline the major role played by the communicative function of music during classes, which guides the learning processes of the student through motivation and establishment of goals designed to convey emotions, boosting autonomy and the ability for self-regulation in the learner. In fact, the focus here is supported by another essential pillar: the fantastic teacher-student relationship, thanks to all the previously mentioned practices (asking, suggesting, positively assessing, encouraging dialogue, etc.), in addition to other actions carried out by the teacher: showing respect and interest in the girl’s tastes and preferences; asking for her opinion (for example: “*does this word work as an idea for starting?*”) and allowing her to choose between several options (for example: “*Do you want to try [playing the piano] or can you imagine it?*”); recognising her goals and merits (for example: “*Perfect. You know it really well!*”); connecting with her world (for example, the teacher remembers the names of Carmen’s friends, knows her favourite cartoons, books and films, etc.); and using humour as a tool for controlling errors.

Thus, the said teacher-student relationship is obvious in their motivation (see Episode 18 from Table 15, in which both exteriorise that “*the class seems really short*”), their displays of confidence and affection (for example at one time, Carmen claps her teacher on the shoulder and says: “*That’s the word! Just what I was thinking! High five!*”), and non-verbal fun behaviour (facial expressions, body movements, laughs, etc.).

**Table 15** Episode illustrating the student's and the teacher's motivation

Episode 18
<i>Teacher: Now, let's write this down... we have nearly finished...</i>
<i>Carmen: the class?</i>
<i>T: (Nods and caresses the girl's face) The class has seemed really short, hasn't it?</i>
<i>C: (Nods).</i>
<i>T: For me too</i>

This fantastic teacher-student relationship undoubtedly promotes the teaching-learning process because the motivation and positive emotions emanate from the people involved. Through musical composition, and all that this entails, the teacher and student discover the pleasure of learning and teaching, showing that the best way of promoting motivation in music is to enjoy doing it and transforming it, with the goals to be achieved proposed and sought by both teacher and student alike. Learning and teaching music becomes a genuine pleasure as a result.

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# Learning Music Through ICT



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## 1 ICT: A New Frontier for Music Learning

As discussed in detail in several chapters of this book, music as a cultural activity is closely linked to how it is produced (chapter “[From Individual Learning to Cooperative Learning](#)”). This is, in turn, mediated by the dominant technologies of each culture: from these technologies external representation systems are generated in which the actual music is coded, and from which it is produced (chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”). The influence and mediation of this varies, depending on the different contexts (formal, non-formal or informal) of participation and music learning (chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)”). As a result, the use of different technologies or cultural artefacts have an impact on the actual instrument music education centre (chapter “[Teaching Music: Old Traditions and New Approaches](#)”). If the ways of making music, like any other social activity, cannot be separated from the technologies that produce them, then neither can these technologies be separated from the ways in which music is learned and taught.

Traditionally, music education, particularly in formal spaces, has very much centred on the use of the techniques of each instrument as music production technology, and also on the mastery of the code as the external representation system in which the music is recorded for its production (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”). However, during the twentieth

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century, and even more so in the twenty-first century, the technological changes that have taken place in our society have profoundly altered the ways in which we make and listen to music. The technologies of recording and reproduction, the appearance of new instruments, electric, then electronic resources and above all, the most recent impact of Information and Communications Technologies, ICT, have totally changed the landscape of music production (Baño, 2018) and consequently, also should have changed the ways music is taught and learned.

Rather than return to past eras, we could ask ourselves what impact ICT are having on music education and particularly the centres where instrumental music is purposefully taught, such as conservatories, music schools, and also in statutory secondary education. We know that in recent years there has been a surge of new technologies which supposedly make learning music more agreeable, easier and more fun (apps, video tutorials uploaded on YouTube, blogs, etc.). But are these technologies getting into the classrooms? And if they are, what are the consequences? Are they improving or hindering learning?

## 2 ICT in Music Classrooms: Promise, Threat or Reality?

Many authors and studies highlight the enormous educational opportunities of ICT. In addition to their musical contributions, they lead to more personalized, more student-centred teaching so that the student can manage their own learning and become more motivated. They encourage participation, cooperation and dialogue (Coll & Monroe, 2008; Collins & Halverson, 2009). However, against this promising, optimistic vision there are many more authors and studies which see ICT as a threat, to the extent that they promote more superficial processing, in which the technologies take over from our cognitive functions, and we delegate a good part of our cognitive and metacognitive ability to them (Carr, 2010; Greenfield, 2014). In this sense, someone as important as Andreas Schleicher, the coordinator of the famous OECD PISA Project has been known to say that “the reality is that technology is doing more harm than good in our schools today”.<sup>1</sup>

We do not wish to enter a debate about these two extreme viewpoints, and their possible nuances (e.g., de Aldama, 2020; Pozo, 2016), in the specific case of music education. There appears to be an increasingly positive evaluation by music teachers regarding the use of ICT in classrooms, because they believe they may improve student participation, creativity and in general make music more appealing and its learning more motivating (Gouzouasis & Bakan, 2011; Guerrero, 2014), as well as producing better learning outcomes (Crawford, 2014; Lorenzo-Quiles et al., 2015). Notwithstanding, following this apparent enthusiasm analysing the uses teachers make of ICT in the classrooms, several studies have confirmed, both nationally and internationally, that scant use is actually made of ICT in music classes. Also

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<sup>1</sup> <https://www.smh.com.au/education/the-reality-is-that-technology-is-doing-more-harm-than-good-in-our-schools-says-education-chief-20160330-gnu370>.

that, when they are used, teaching methods are not usually altered, but they just support traditional teaching strategies that do not encourage cooperation, dialogue or the take-over of control by the student (Savage, 2010; Serrano, 2017). If, as we have seen, the support advantages of ICT consist of placing the student at the centre of the teaching/learning process (personalising teaching, providing greater autonomy and capacity for individualized learning alone, boosting personal interests and diverse tastes) it would appear that the teachers feel more comfortable using ICT for underpinning their more traditional strategies. After analysing how the teachers use ICT in music classes (through their blogs, video tutorials used and produced, etc.) Serrano (2017, p. 168) concludes that “ICT are used more as a support for traditional strategies than as transforming elements”. Once more, as in other areas of education, there appears to be quite a large gap between teachers’ beliefs and the reality of the classrooms (de Aldama & Pozo, 2016). We already referred to this in chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices”, but in this case a more detailed analysis is required to help us find and promote new ICT uses for these constructive or transforming pieces of learning now demanded by modern music education.

### **3 Training in New Uses of ICT in the Music Class: From Pragmatic to Epistemic Use**

Why do teachers prefer these traditional ICT uses compared to those which would help their students to gain better cognitive and metacognitive control over the sounds they produce? Studies suggest there are several reasons: technological barriers (lack of resources in their classroom); digital barriers of not being truly digital natives like their students who are used to experiencing music through these technologies outside the classroom (mp3, YouTube, apps, video games, etc.), and their lack of skills in the educational use of ICT (Cebrián & Vercher, 2016). We believe all these factors stem from a common cause, which the reader well versed in these matters may have already anticipated and which is largely the driving force of the argument sustained in this book: the teachers’ conceptions on learning and teaching, their more or less implicit beliefs on what learning and teaching means.

Teachers mostly choose to use ICT, when they use them as a support for their teaching which is, as we have already seen, centred on the technical mastery of the code and the necessary skills to extract sound from the instrument. These technologies are thus amplifiers of the traditional function of the other previous technologies. No change is made to the model therefore, but the ICT are assimilated to the more traditional teaching models. For example, they use video tutorials as a way of facilitating technical learning modelling to their students, just as many music learners go to these tutorials or certain apps (Simply Piano, step by step guide to learning music, Solfeggio: learning notes, perfect hearing, Violin: Magical Bow, etc.) which are also based on these traditional forms of learning and promote technical learning with

little metacognitive student activity. Superficial use of the ICT is therefore incited, guided by *pragmatic* goals (Kirsh & Maglio, 1994; Pozo, 2014), gaining success and reducing the number of errors by faithfully reproducing the model or goals set out by the teacher. This superficial use, similar to that usually used with musical scores in the same classrooms, is reduced to the poorest levels of processing (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”). This contrasts with other more sophisticated uses of technologies, not necessarily incompatible with the before-mentioned ones but which are more guided towards *epistemic* goals. Their aim is therefore to generate or obtain new knowledge, fix new expressive goals, plan individual actions better, and improve understanding of what one is doing to have the ability to self-regulate during performances. As a result, not only can improved assessment of the sound generated be made, but the entire pathway to the generation of that sound can, in accordance with its expressive, previously fixed goals.

To sum up, this more epistemic use of ICT, like that of other external representations, either in the context of a museum exhibit (Alderoqui & Pozo, 2013) or in the educational use of a video game such as *Angry Birds* (de Aldama & Pozo, 2020), promotes better learning which would be more difficult to achieve without these technologies. The latter become an essential mediating tool to transform relationships in the classroom between teachers and students but also mainly between students and their musical sound management. Ultimately, this is not just about using ICT as information support to gain accessibility but to try to promote the use of these tools for recruitment, analysis and consciousness-raising.

Given that we do not have the space here to review the many proposals being made to transform the music classroom through ICT, thereby promoting new forms of learning and teaching (e.g., Crawford, 2013, 2017; Ruthman & Mantie, 2017; Savage, 2007), we will limit ourselves to presenting a specific and real experience of how an epistemic use of the mobile phone inside and outside the classroom can help to transform the way in which students learn and experience music.

### ***3.1 An Example of the Use of ICT in the Classroom: The Mobile Phone as a Learning Tool***

Instrument students invest many hours in individual practise and learning, far removed from their teacher’s attention. Class sessions with their instrument teacher are usually limited to one weekly contact. This contact, which depends on the study level and education centre, may range from one collective hour to two individual hours. In general, and as we are observing throughout the book, the focus of these classes is usually on outcomes and on technical code, which means that the activities the student undertakes outside class in their home are essentially centered on mechanical and repetitive practice. An important aspect of the educational culture defended by this book is related to the learning strategies students put into practice in the absence of their teacher. It is not enough for teachers to change the way they

teach and their educational goals. Actions are required for the students to also accept the same learning goals in-between classes and to convert mechanical practices into conscious work-planning actions. They need to supervise the work themselves, with genuine assessment to help them evaluate decisions and actions taken and to reconfigure the goals for the next study session. Can you imagine the level of motivation of a student who feels the learning goals are their own, who has designed their own pathway to achieving them and who observes and feels how they are approaching their goal?

Technologies provide us with a way of making this use possible. A *Smartphone*, for example, may become a tool which, when used for epistemic purposes, lets the teacher and student analyse practice, and develop shared goals. It may help the teacher to gradually pass the control over learning to the students. The *Smartphone* is a regularly used device, with different multimedia tools, where images and sounds can be recorded, stored and exchanged quickly and also be accompanied by text messages (*WhatsApp*). As such, *WhatsApp* is the support of a set of external representations (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”) which may encourage the explicitation processes and becoming aware of knowledge in the classrooms and in the work outside them (homework) (Pozo et al., 2019). As we saw in chapter “[The Psychology of Learning Music](#)” and “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, this awareness helps to bring about the self-regulation and metacognitive control of musical interpretation. As we shall see in the following examples, it is not only a question of recording, observing and writing about what has been written down, although these activities in themselves will surely lead to learning and help to explain aspects of the practice related to the processes used which would otherwise remain hidden. It is also necessary, as we have seen in other chapters to use these recordings, observations and texts with epistemic goals that will help both teachers and students to reflect together.

*T: [...] I'm going to record you with my mobile now.*

The student plays the piece again and on finishing.

*T: Let's see. I'm going to remove the sound and you tell me if the sound you are imagining is the one you are seeing.*

This example, where the teacher's instructions direct the student's attention towards their body and not the sound, may with repetitive use, become a routine that, in turn, will build up a culture of analysis in the students. This shared culture allows the teacher to request that their students send them *WhatsApp* video recordings of their everyday study and include a written analysis of that recording.

### ***3.2 Smartphone Use for Self-assessment and Goal Changing***

Carla is an 18-year-old student who sends her teacher a weekly *WhatsApp* with part of her study and her reflections on it. Prior to this, they had worked in class with recordings the teacher had made at various times. Watching these recordings was

always accompanied by a set of questions which guided Carla's attention towards different aspects of her body, the instrument, etc. (examples of this type of activities may be found in Pozo et al., 2019). She has had a class with her teacher and in the afternoon sends him a video with her accompanying analysis, where she relates the video with classwork and explicit goals. This is what Carla writes in the WhatsApp referring to the video:

I am sending you the first phrases of the first movement which is what we worked on most this morning. Objectives: that it should sound stable, measured and with exact intonation, height of the string (especially the G chord in changes), a more secure starting chord and for the chords, get the fingers ready first and not hammer it home.

Arm height is good at times, with the arm going down well on chord changes, but it could be improved in the sense that it could be more flowing and well measured, the duration of the first chord is better but is still kind of separate.

What makes this activity productive and interesting? Firstly, Carla should select what she is going to record, also knowing that she should assess her recording, which helps to make it explicit and propose goals. Undoubtedly, as Carla recalls, the goals are determined initially by classwork. However, when she analyses her actions, apart from the initial explicitised goals (intonation, etc.) the recording allows her to direct her attention towards her own movements (new goal), and therefore, to a reflection and assessment of the procedures and processes she has followed. The video recording allows Carla to watch the height of her arm, how she moves, and to link this movement with consequent results. However, these reflexive processes would not have been possible without the classwork aimed at her becoming aware of her own body, as we saw in the previous example and as presented in chapter "[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)". It is this process of reflection that has helped her to not just concentrate on the "*height of the chord (especially G in the changes)*" focused on the instrument, but to emphasize how she has regulated her body ("*Arm height is good at times, with the arm going down well on chord changes,*"). This analysis where she differentiates between the more positive aspects and those which could be improved ("*it could be improved in the sense that it could be more flowing*"), let the student determine new goals, which are absolutely more personal because they have arisen from her self-assessment. Using ICT has meant that control of the activity has progressively been passed onto the student. However, this taking over of control would not have been possible had it not been for the previous work in the classroom aimed at body awareness (see chapter "[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)"). We can also expect that this acceptance of individual goals helps Carla's motivation. Her analysis lets her see which goals she has achieved, which she wishes to achieve, and therefore, which directions she should move in.

Just before the following class, Carla sends a new video and its corresponding analysis:

I think this week my objectives have been pretty much fulfilled: there is greater self-assurance, more exact intonation in many passages (and double chords), the height of the right arm and the feeling of greater stability looks better; on the other hand, there are still things to

improve, in some parts the intonation fails and at times it loses the rhythm and at times different fragments appear that have no continuity.

The analysis and, possibly, the criteria or goals from which it arises, have become more complex and now include sensations (“*the feeling of greater stability*”). It is not just a question of only intonation, measuring or putting one’s arm up, the objective does not centre on actions being taken, but on feeling. As we saw in chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, the sensations could be related to the sentimental/emotional goals of the music but here Carla refers more to her feelings as a learner. After a week’s work, Carla has her class. Thanks to the videos and WhatsApp the teacher has a deeper knowledge of Carla’s knowledge and feelings which will help to design both the next work session and other long-term objectives (also see chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”).

### ***3.3 Smartphone Use for Helping the Student Develop Their Own Learning Strategies***

In the texts Carla sends which we have just shown, two aspects clearly related to motivation stand out. Firstly, the student always refers to what has been improved (performance feedback). The learning sensation is undoubtedly one of the most significant factors related to motivation. But, also, as we saw before, Carla highlights what might be improved. We can expect that Carla continues working, since it seems that every day, she strengthens her feelings of self-efficacy and consciously determines the route she is to take to gain it. Travelling along this route daily will take the students even further to creating not just their own individual objectives but also to selecting activities which may be more productive and to achieving the set goals. Thus, the students become more strategic, to the point where they select contexts that enhance their learning. Again the texts Carla sends by WhatsApp and the classwork that her classmate Mencia does, can help us to study certain ICT uses which may further the development of strategic procedures.

I’ve chosen this bit of the flight because I think it will be very good for the impulses at the beginnings of the phrase which I still find difficult to understand [...]

Usually, music teachers observe in classes that the students select passages either because they are accessible to their technical resources or because their continuous repetition helps the students overcome difficulties. They rarely find students selecting examples that may help them understand, as occurs here with Carla. The intentional, strategic selection of a passage has great potential as a context which may help her to understand and generate learning. Clara does not want just to sound in tune or put her arm at the right height, she has changed her goals and her strategies to obtain them, which impacts her feelings as a learner:

There is no video today, but I am really happy because I have managed to play the first part of the andante by thinking only about my body and the choreography. I think this is the first time I have felt my back so much and the impulses, so it came out much better.

Focusing on the way forward “*thinking only about my body and the choreography*” is what allows her to feel her body and regulate it “*I have felt my back so much*” and it is this way forward that lets her achieve good results “*it was much better*” “*I am really happy*”. Indeed there is no greater motivation than realising you have achieved what you set out to do. However, as we have stated on several occasions, these achievements are impossible unless they are accompanied by classroom work in which ICT also play an incredibly important role. Mencía, one of Carla’s classmates, and her teacher are working on a *Minuet* in class. The teacher suggests a basic choreography and assessing which beats are strong or earth beats and which are weak or air beats, with the idea of finding rhythmic parameters (strong and weak) to encourage the potential listener to want to move around to the music.

- Teacher:* Next passage, how will you work with it?
- Mencía:* in the same way. (Begins to hum it monotonously and boringly)
- T:* Great fun! (ironically)
- M:* Wait, I’m thinking, first I have to look at it. (She stops to think)
- T:* Can I help you think?
- M:* (Nods) The dance (She starts to dance in front of the music stand and sing without the violin, searching for where the strong and weak beats go and the teacher records her with her mobile phone. Suddenly, she moves the music stand to have more dancing space).
- T:* Can you see what a good idea you have had? Bravo!  
(They both watch the video together and at a certain passage it seems that Mencía thinks something is not quite right)
- M:* Is that supported?
- T:* I don’t know, what do you think?
- M:* OK, try it again. Record me  
(The teacher records her again and when they analyse the video Mencía makes the following observation).
- M:* That looks forced to me. I think I will tune it in D.
- T:* Bravo, see how you arrange the articulations and everything with the bow so that what you want to do comes out right  
[...] Mencía practises several times
- M:* If I begin here (touches the beginning of a passage) with the up- bow, then tune down with the down-bow it is very easy to me, very danceable.  
[...] After working like this on several passages, the teacher says to Mencía
- T:* Good. Try several more options at home and send me a video of what you finally think is the most comfortable result that works.

As stated in chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”, one of the major problems in music learning is that



the teachers do not usually work explicitly on the expressive content of the music in the classroom. They take it for granted that this will occur almost by magic or spontaneously from the technically accurate sound. In fact, once the notes are in place, several teachers, at best demand that their students get more involved in their performance. They ask them to show more courage, more impetus, and even more intensity in certain resources such as vibrato, or including metaphors like: imagine that it is a dawn, or some such thing. Consequently, in the absence of precise, specific activities for constructing communicative content in an improvisation or a musical score, it is unlikely that any strategic work is made on the parameters interlinking this emotional content. It is assumed that the emotional content and every way it is expressed through the instrument are merely the result of intuition and, in the case of sound parameters, will come about by following the symbols from the score (dots or stripes over the notes, or markers, etc. or by simply following the teacher's instructions).

As shown by the example with Mencía, using the mobile and WhatsApp, inside and outside the class, are useful tools for achieving epistemic goals in learning music, for constructing a musical idea, and for furthering the understanding and regulating of emotional content, helping to make these feelings/intuitions explicit. In doing so, the latter become the keystone of music learning and an assessment tool. However, they can fulfil this role only to the extent that they are used in the classroom to design the actual learning strategies. In chapter "[The Psychology of Learning Music](#)" we saw the differences between techniques and strategies based on the degree of control and the decisions taken by the student who was putting the procedures into practice. Use of recordings of class activities helps the teacher to pass over control assuredly and gradually to the student. When a recording is jointly analysed, both content and procedure is being learned as a way of acting initially guided by the teacher's questions. These questions are not always merely rhetorical or aimed at pointing out faults. They help the student to discover what they should pay attention to and then to do this on their own, thereby taking decisions on what they do.

The examples we saw previously, both in the case of Carla and that of Mencía, have shown how teacher-student dyads may function, which is normal in conservatory classes. However, digital tools may help us to design new spaces for group work and especially for cooperative work between teacher and students or between just students (see chapter "[From Individual Learning to Cooperative Learning](#)"). Chamber music classes are a natural context where the need for cooperation is clear, but there is no doubt that this group work may be extended to other formal and informal musical and instrumental learning settings. Some chamber music students who were classmates of Carla, and approximately her age (between 18 and 20 years of age) are beginning to work on a new piece. They create a joint WhatsApp group and the teacher asks them to do an activity which will go towards their final mark. This involves listening to a couple of versions, chosen by them, of the composition they are going to perform. Prior to this they had to explain what they felt or what each passage suggested to them. In the examples that follow we may observe how they communicate amongst themselves and how they communicate with the teacher.

First, the chamber music group listens to a version of the piece. The different members comment on the sensations it has given rise to, on the group WhatsApp:

*Canzone Student A: ...for me it evokes a thoughtful walk where someone is reflecting on something they see or think, this will happen in all of the variations, here it simply expresses this idea or main feeling in an innocent manner ...*

*Canzone Student B: ...This first passage is very relaxed, very slow, highly accurate and without enough force to cause many sensations. It is not very motivating.*

*Variation 1 Student C: ...this time in a much more solemn, and sad way. Maybe something has been seen or remembered that makes us melancholic. However, with entry of the baritone, we feel much more comfortable and somewhat relaxed*

...

*Variation Student D: ...The main melody is the alto's and there begins to be a motivation because we see hope, we want to make the public have a feeling of positive hope and of tension.*

In class, with the teacher as guide, they join individual ideas together until they construct the bases of a common interpretation which must be reviewed in rehearsals, writing and sending a final version to the teacher via WhatsApp. After the next rehearsal one of the group members sends the final version, a product of working in the team to the teacher:

*Variation II: it is a deeply passionate piece, a melancholic sadness, there is a lot of negative tension which gives way to increasingly more nostalgia. It is for making the public grieve.*

*Variation 3: ...its baritone melody is somewhat more playful, but due to its accompaniment is rather more dramatic or tragic*

...

*Variation 4 (like Chopin): ...This is a more euphoric variation than the main song and it reflects enthusiasm and happiness, with a touch of nostalgia. The end becomes something much more contrasting and dramatic.*

*Variation 5 (Scherzo): The most euphoric and exalted of variations. A mixture of feelings of doubt with feelings and anger of decision.*

Apart from sending this common vision of the piece, they also send by WhatsApp the decision they have taken on how they will manage different parameters of sounds to convey these ideas that have just been exposed:

*To execute the musical ideas we have for the second movement we have decided to use the following tools:*

*canzone: legato, very melodious, long notes, no attack, little stress but a bit of stress to separate the note, exaggerate the dynamics*

*first variation: more legato than the previous one and even more extreme and intense dynamic, playing with the melodic dialogues between alto, soprano and tenor, with attention paid to each moment in the main voice, reducing the other two, little attack, less than the previous one, more extrovert*

*Segunda variation:*

*Up to number 47: very marked attacks, exaggerated dynamics, very melodious, somewhat more animated, we want to express the feeling a drunkard has trying to forget about something, but he is animated whilst he drinks*

*After 47: here we want to express the feeling of that drunkard who is not sad because he is remembering why he drank, and that is why everything is longer and more dramatic and plays a lot more with the scales and they move between the voices like this, dramatically*

This example shows how we can use new technologies for group work and for taking strategic group decisions. These students, when taking decisions, have built up an opportunity to learn to self-regulate, assessing whether the decision and actions taken were opportune or not, modifying them when necessary.

## 4 Conclusions

The functions we have described are not just the result of the recordings or WhatsApp. Although we are not going to probe further here into these other methods, a huge variety of music apps exist for the Smartphone (YouTube, Spotify, Amazon Music, etc.). At our fingertips and ears is a world of different, free interpretations we can use in the classrooms to design spaces to help our students focus their attention, explain their feelings and reflect on the musical elements which arouse these feelings or other aspects of music. Furthermore, we could think that all the activities and actions in these examples do not require the use of digital technologies to be set in motion. For example, it would be enough just to look in the mirror, listen to vinyls or record ourselves with a camera or with a cassette tape. That is a given. Tools, whether digital or not, do not change the way we teach and learn, just as an activity is not altered whether we do it with paper or pencil or on the computer. However, it is also true that digital tools like those we have mentioned, especially in the case of smartphones, make it easier to perform certain actions inside and outside the classroom making them faster and much less expensive. This lower cost, the ability to save ourselves work and effort, together with its cultural internalisation and easy availability is one of the main advantages offered by ICT as a teaching-learning tool. In particular, Smartphones not only record images and sounds, they are also able to store and exchange them quickly and accompany them with messages based on texts and other codes. This multimedia trait—i.e., the simultaneous and combined use of multiple and varied external representations—linked to its familiarity for the students, means that Smartphones have become a privileged tool for extending explicitation processes of knowledge in the classroom. They quickly and easily provide to both teacher and student different types of external representations, which mediate in explicitation

processes and help to foster self-regulation and metacognitive control of musical interpretation (Pozo et al., 2019).

Throughout the different chapters of this book (see, e.g., chapters “The Psychology of Learning Music”, “Reading Music: The Use of Scores in Music Learning and Teaching” and Instrument Mastery Through Expression: The Learning of Instrumental Technique) we have been able to see that learning musical interpretation does not require directly interpreting the coded music in the score but that it is also necessary to explicitise the desired expressive goals. These, in turn, need to establish relationships between the different representational components (emotion, sound, instrument, body), and the means to achieve them must also be made explicit (regulating bodily actions and feelings to unfold in the production of the desired sounds). To produce this model, external representations of a diverse nature (chapter “Reading Music: The Use of Scores in Music Learning and Teaching”) need to be used, with support from the teachers’ actions (Pozo et al., 2019). Smartphones used in a deliberate, planned, and strategic manner may record sounds and actions, reproducing them to be listened to and seen. Unlike real action, the reproductions are removed from our body, this means they may be made objective and become an object of observation and analysis. This objectification will then help to separate and relate the different components and therefore the exploitation and the possibility of using them as a learning tool. Due to the storage facility of these recordings they can be easily compared and changes analysed, which doubtlessly makes them a tool the teacher can use to find out what their students already know (and therefore follow the maxim of Ausubel, 1968, of teaching from what one already knows) and how to progressively alter that knowledge. But, it also allows the students to become more aware of their own changes and more the leaders of their own learning.

To conclude, we wish to repeat something which has been present throughout the whole chapter (and the whole book): that digital technologies are external representations which become learning tools. What differentiates one type of learning and teaching from another is not the use of these systems of representation or technologies, but the way in which they are used to help construct knowledge.

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# From Individual to Cooperative Learning



Lucas Baño and Juan Ignacio Pozo 

## 1 Introduction

During the rehearsal of the Rite of Spring with the Holstein Orchestra Festival (after a tuning up scale) Leonard Bernstein.

Marvellous, wonderful, great!!this orchestra sounds wonderful!!! ... The Rite of Spring is all about sex, and reproduction and the smells out there... are very stimulating because they are really about that cycle of growth...

We rarely interpret music alone. It is much more common to form part of groups such as wind instruments, classical orchestras, music groups: chamber, rock, folk, funky, etc. This chapter therefore begins with a transcription from an orchestral rehearsal, illustrating one of the ways classical music is learnt in a group. Here, the charismatic conductor of the orchestra, Leonard Bernstein, begins the rehearsal talking about the emotional meaning of the piece: “The Rite of Spring is all about sex, and reproduction ...”. In chapter “[The Choir Conductor: Interpreter or Maestro?](#)” we will see there are different ways of managing a choir or an orchestra, and as a good teacher, in keeping with his style, he fulfils his mission and communicates the emotional significance of the piece they are rehearsing to his orchestra.

But what happens in chamber music groups? Who and how do they decide on the emotional significance of the piece when there is nobody with a baton? Well, there are several ways of approaching rehearsals without a director, and it is precisely in this chapter that we will look at some groups of learning of between 3 and 6 people without a director (teacher), which is what a chamber music group may be.

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In other words, during this chapter it is our intention to illustrate different forms of rehearsal practice in chamber music groups, and to justify why, among them, the most effective is cooperation. This is in keeping with psychological and educational research (see Gillies, 2016). Furthermore, criteria will be established to distinguish and foster authentic cooperation of group work use, on the understanding that whilst for group learning it is only necessary to work together with colleagues, cooperative understanding entails genuine joint construction of the emotional significance of the musical piece (Baño, 2018).

For this, we will refer to different transcriptions of real interactions that demonstrate different ways of managing chamber music group rehearsals. As the reader will confirm, in these transcriptions the teacher's voice is absent, only the students interact with one another. Does this mean to say that the teacher is not important during this type of learning? Of course not, but cooperation is a learning methodology where the teacher acts out a different role. They are not there to communicate information to the minds of the students but rather to manage social interactions as genuine contents and objectives of learning and teaching. Thus, the teacher has to kindle the fire of the social interactions so that the students expose and share their own points of view, but also that they take on and accept other points of view, so as to transform their own previous knowledge, constructing jointly the emotional significance of the musical piece during learning.

However, cooperation will not just happen by working in a group. For this, we will end this chapter by proposing several guidelines and activities to the reader, aimed at helping and motivating cooperation dynamics within the classroom.

## 2 Beyond Individual Learning: The Importance of Learning to Cooperate with Others

Returning to the transcription presented above, and after reading in chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)” how musical scores are used both in learning and teaching, we see that Bernstein begins to work on the emotional significance of the score from the referential representation level. This contrasts quite substantially with the fragment presented below in Table 1, which

**Table 1** Cycle of non-interaction. Brass quartet

Order	Voice	Transcription
1	Tuba	<i>in 70 you come in below and did you not come in before?</i>
2	Trumpet 1	<i>No, I made a mistake</i>
3	Tuba	<i>OK, OK...</i>
4	Trumpet 1	<i>I came in with him</i>
5	Tuba	<i>No problem</i>



is a prototypical cycle of interaction during rehearsal practice of a chamber music group, specifically a brass quartet composed of two trumpets, a trombone and a tuba (for further details see Baño, 2018).

Obviously, there are very major differences between the social structure of an orchestra and that of a chamber music group. For example, in an orchestra there may be around 60 musicians whilst the chamber groups commonly range between 3 and 6 musicians. On the other hand, in the orchestra the conductor shares the score with each and every instrument and in the chamber group each musician only has their *part*. This presupposes that different forms of managing the interaction will appear, because whilst with 60 musicians a conductor is necessary, in the chamber group this role would not exist... or would it?

Let's look at Table 1, we can see how in the first intervention, the tuba assesses the action of trumpet 1, "in 70 you come in below and did you come in before?" to which trumpet 1 answers and argues "No, I made a mistake". Then the tuba accepts this "OK, OK" and trumpet 1 again adds information to this assessment "I came in with him", and without questioning that option the tuba closes by saying "no problem". Although a priori chamber groups do not have a director, different participant roles can be observed through analysis of this cycle of interaction. So, the tuba is driving and directing the rehearsals, interrogating, and exhorting their companion trumpet 1, focusing attention on the error committed in bar 70.

The cycle presented in Table 1 shows that both orchestras and chamber music groups are similarly organised, despite their different social structures. Whilst Bernstein would manage the rehearsal practices of the orchestra, in this chamber group it would be the tuba that carries the baton, the *invisible baton*. We would encourage the readers to familiarise themselves with the term invisible baton, which graphically describes the leadership assumed by one of the students (or a teacher) during chamber music practices. In the previously presented transcription, it would be the tuba who was in possession of the invisible baton, since, in keeping with the categories of the music practice established in the SAPEA developed in chapter "[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)", this was who led the interaction, opening and closing the interaction cycle. But then, is that learning in a group? Is that cooperating?

Yes, it is learning in a group, but not cooperating. It is precisely with this example that we are trying to illustrate that although they work in a group this is not cooperative learning. One of the factors that defines cooperation is homogeneous participation in both the quantity of interventions, and also the roles assumed. However, in the previous transcription, only two of the four members of the group take part, the tuba (with the invisible baton) who has assessed the situation and has asked trumpet 1 for an explanation, who is basically limited to excusing bad practice. However, cooperation requires forms of group interaction which are much richer and more complex (Monereo & Durán, 2002). Let us remember that cooperative learning is the joint construction of the emotional significance underlying the musical score (Baño, 2018). In the Table 1 cycle there was no build-up of emotional significance, but neither nor was there any joint action. However, let us proceed step by step, we

will try to compare the two transactions presented up until now: Bernstein and the brass quartet.

To distinguish the different forms of interactions during learning, Mercer (1995) suggests we observe how learners share information. In our case the musicians. According to his proposal, there is a conversation of discussion when two or more people wish to possess the invisible baton, expressing truths or closed judgments to be accepted by the rest of the colleagues, without any opportunity for contradicting or questioning. Moreover, when one of the musicians holds the invisible baton and the others are limited to saying “Yes, boss”—without giving their critical opinion—, it is considered to be a summative conversation, i.e., the voices concur with the leading opinion but do not question anything or share their actual opinion. However, when the invisible baton passes from hand to hand—sharing opinions, renegotiating meanings, collecting voices of colleagues, and transforming them with one’s own—, is considered an exploratory conversation.

The benefits of cooperation compared with other learning structures have been confirmed on numerous occasions, in highly diverse areas and over decades (Gillies, 2016; Springer et al., 1999). These benefits are not only shown in terms of better social relationships but also in better learning outcomes. However, as we said shortly before, cooperation does not arise just from working in a group. In fact, cooperation could be considered a *rare bird* in learning, at least in the area of music. Although the subjects are collective it is much more common for social interaction to be dyadic, between the teacher and each of their students individually.

### 3 From Group Work to Cooperative Learning

Although it is possible to think that, ideally, whoever knows more, teaches to whoever knows less, but not even during learning between equals does the invisible baton go to the musician with the most musical knowledge. Other factors, such as social status, economic level, age, sex, or personal characteristics, determine who is empowered: in our case who holds the invisible baton (Fernández Berrocal & Melero, 1995). The following transcription (Table 2) shows another episode of non-cooperative practices. We invite the reader to try to determine which of the participants holds the invisible baton and directs the rehearsal, but also to try to detect the type of dialogue existing in each one of the five cycles composing it (remember: discussion, summative or explorative information).

Let us see how this interaction can be interpreted from the SAPEA system of analysis, presented in chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices”, to which, as we saw before, the different types of discussion, summative and explorative conversation have been added.

The first of the cycles begins with the trombone making an assessment “Yes, alright, alright, just like kinds” and immediately after, with none of his colleagues giving their view, the trombone continues planning “but shall we continue after the

**Table 2** Non-cooperative episode. Brass wind quintet

Cycle	Order	Voice	Transcription
1	1	Trombone	<i>OK, yes alright, alright, just like kids... but shall we continue after the first one?</i>
	2	Trumpet 1	<i>One, two three...</i>
	3	Horn	<i>Yes</i>
2	1	Trombone	<i>Can you hear it properly?</i>
	2	Trumpet 1	<i>I can</i>
	3	Trumpet 2	<i>I like it</i>
	4	Trumpet 1	<i>So do I</i>
	5	Trombone	<i>Well it sounds awful to me</i>
	6	Trumpet 2	<i>I like it</i>
3	1	Trumpet 1	<i>The horn has a great tune</i>
	2	Trombone	<i>You must play louder because I cannot hear you (to the horn)</i>
	3	Horn	<i>That is because you sound too loud</i>
4	1	Trumpet 2	<i>What is the andantino like, for when we get to it?</i>
	2	Horn	<i>The andantino will be a bit faster, won't it?</i>
	3	Trumpet 2	<i>Pam pam</i> (hums and demonstrates the beat)
5	1	Trombone	<i>Who is going to start?</i>

first one” to which the trumpet and the horn agree without offering any criticism (summative conversation). It is as if Bernstein himself or any other revered maestro had said it (total assent).

The second cycle also begins with the trombone making another assessment, but this time with a simple question “can you hear it properly” to which he is responded by trumpet 1 and trumpet 2 with a simple “I can”, “I like it” (again, summative conversation, with no opinion being put forward). However, in intervention 5 of this second cycle the trombone again assesses “well, it sounds awful to me” (discussion conversation since no opinion is put forward either).

The third cycle begins with an attempt by trumpet 1 to hold the invisible baton to make an evaluation “the horn has a great melody” but the trombone, who refuses to relinquish the baton, gives the horn an order “you must play louder because I cannot hear you”. Since there are now two invisible batons, what usually arises is discussion and this occurs at the hand of the horn who feels offended, reproached and puts the blame on the trombone “That’s because you sound too loud” (discussion conversation).

The fourth cycle begins a bit more calmly, with trumpet 2 asking a question that involves planning “What is the andantino like, for when we get to it?”. This question is answered by trombone with an order “The andantino will be a bit faster, won’t it?” and finalised with trumpet 2 humming to demonstrate the beat of the andantino.

The fifth cycle only has one intervention by the trombone who asks the question “who is going to start?” which triggers the musical action and resumes the rehearsal.

After reading these fragments we again ask ourselves, who is the participant who has held the invisible baton the longest? On this occasion it is the trombone who holds it and although at the beginning the chamber group has no director, the trombonist acts like one. Unlike Bernstein, who spoke of the significance and emotion of the piece, the trombone focuses efforts during rehearsal on deciphering symbols from the score, at a purely notational level (see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”).

Cooperation is a rarity in learning, but not just in music. Basically, there are two variables which bring us closer to or further from it. On the one hand, the social dynamics (hierarchical interaction versus homogeneous interaction) and on the other the level of representation of the musical score (limited to deciphering codes or attributing emotional significance to it). These two variables entail different types of interaction which are distinguishable by the type of conversation they have: discursive, summative or explorative.

The appearance of cooperation requires certain characteristics in both the structure of the activity and in the social skills of the participants. Firstly, the activity must be open to different solutions and secondly, the participants must have enough social skills to be able to share the invisible baton. To do this, the teacher must include these aspects as the content and aim of learning.

#### **4 What Is Learnt by Cooperating: Co-constructing the Emotional Significance of the Piece**

For learning to be cooperative, in a now standard model, Johnson and Johnson (1999) exposed the need for the activity to have interdependent aims: like in football, when all team members win or lose. However, continuing with the football metaphor, there are moves which are individual, in which more or fewer players participate. As a result, Kagan (1989) says that for cooperation in moves and passes they have to be stipulated beforehand, to prevent one player trying to do everything himself (an invisible baton “jerk”), but that others cop out: the free-rider or hitch-hiking effect Monereo & Durán, (2002). However, measuring the activities and times of participation is no guarantee of cooperation. Team activities are also stipulated and measured in a production line, for example, and of course that is not cooperation, because the activity has a single purpose: a single car model with different trims (Coll, 1984). Therefore, if the final product/result reached through cooperation is open, as the fruit of the participants’ personal characteristics, does the product change if the participants change? We will answer this question through the transcription of a cycle of interaction from a Beatles rehearsal where John Lennon and George Harrison jointly (constructively) compose the piece “Think for yourself” (York, 2011) (Table 3).<sup>1</sup>

**Table 3** Transcription of the Beatles' rehearsal of "Think for yourself"

Order	Voice	Transcription
1	George Harrison	<i>No, play major</i>
2	John Lennon	(John plays it again, paying particular attention to the phrase "close our eyes"). <i>He plays it again trying to bring out the harmony</i> "
3	George Harrison	<i>But that chord, play that one.... Play that one...</i> (referring to C major)
4	John Lennon	(Does it again by playing, and is convinced that it should be played in C major)

From this cooperative cycle we can deduce that possibly it would not have been the same song if, instead of Lennon and Harrison composing it together, John Lennon and Yoko Ono, for example, had. But, would the interpretation of the brass quartet really have changed if trumpet 2 had? So, now is the time to distinguish between a cooperative production, which could be that of the Beatles, and cooperative learning practices. In other words, in a cooperative production, which appears to be characteristics of Indie music (see the Vetusta Morla interview in *El País*, 2011)<sup>2</sup> joint construction of musical production takes place (for an example of this activity in conservatories see Vidal et al., 2010). Cooperative learning of scores alters the knowledge which the players have of the piece and therefore influences the musical sound they produce. This means that there is joint construction of the emotional significance of the music, for which the contribution of one of the musicians (invisible baton) or even that of the teacher can be regarded as authentic.

To understand why it is that cooperation for chamber music spaces is so difficult and why in other more informal contexts it is more normal (Green, 2008; see also chapter "Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures"), we should underline that the structure of activity in Indies groups and the activity developed by chamber music students in conservatories is different. Indie musicians and classical musicians relate to music from different musical production modes (see chapter "Teaching Music: Old Traditions and New Approaches"), which are the internal structure of all group learning situations and which organize social interaction during practice (Kagan, 1989). Musical production is the process which transforms a hypothetical silence into a complete cultural product (Baño, 2018). Thus, whilst the Beatles (or Indies) as a group deal with the multiple decisions to be taken: harmonies, melodies, lyrics, rift, single notes... (open activity), in classical music the person taking these decisions is the composer. In accordance with the most traditional conceptions which were analysed in chapters "Teaching Music: Old Traditions and New Approaches" and "How Teachers and Students Envisage Music Education: Towards Changing Mentalities", like in the car production line, the musicians only have to decide on the trims (closed

<sup>1</sup> <https://www.youtube.com/watch?v=1zIEDDJ3Y8U>.

<sup>2</sup> VetustaMorla is a Spanish Indie group. [https://elpais.com/diario/2011/12/09/madrid/1323433454\\_850215.html](https://elpais.com/diario/2011/12/09/madrid/1323433454_850215.html).

activity). However, although initially classical production could be perceived as a closed activity, it can also be perceived as an open one. This depends on the level of representation worked upon, which is one of the objectives the teacher has to teach. So, if, as we saw in chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, when faced with a musical score, the aim is the reproduction of notes (notational representation level) the activity is closed. However, if the idea is to endow the piece with emotional significance, linking this with the prior knowledge of each musician to aid comprehension and movement, this would become an open activity with as many solutions as prior emotional experiences. The activity would undoubtedly, as we shall now see, be better resolved through cooperation where the invisible baton would be easily passed from one hand to another.

#### ***4.1 A Case of Cooperative Learning***

Let us now look at an example of interaction, whereby after applying SAPEA, we can identify the traits of cooperative learning.

At first sight it is possible to appreciate that this cycle is much greater and richer in interactions than those presented previously. It corresponds to a single cycle of thirteen interventions, whilst the previously presented cycles were composed of at most five interactions. In other words, more complex decisions are taken whereby all participants in the rehearsal intervene more. But let us analyse this. What type of dialogues take place between the musicians? Is it a summative or explorative discussion?

In this great cycle the participants discuss “what the piece sounds like”, i.e., during this episode they are managing the action from a semantic representation level. The difference here is that an invisible baton no longer exists (or not so invisible) to determine the emotional significance of the piece, but that the participants are creating a mental representation through the different types of actions. Thus, to these closed questions of before to which the response was limited to “Yes, boss”, “No, boss”, in this episode questions appear that require more elaborate responses. The response to the question “what does this sound like to you” cannot just be “yes” or “no”, there have to be exploratory possible responses such as “It sounds like New York to me”.

After this episode, the group observed played the piece again and then interacted verbally. The new episode, presented in Table 5, is the continuation of the previous episode (Table 4) and the continuation of the debate for the construction of the meaning of the musical piece worked on.

Thus, in the cycle from Table 5, which is even more extensive than the previous one, we can observe how the group is dealing with the practice from the referential representation level (like Bernstein offering referential meaning-significance), with explorative type information appearing (i.e., no absolute truths, but possibilities) while a mental representation is generated through which significance to the piece is attributed jointly (this is cooperation for chamber practice). Also, there is distance between the first voice of the cycle, of Trumpet 1, “the truth is that it didn’t

**Table 4** Cooperative cycle. Brass wind quintet

Order	Voice	Transcription
1	Trumpet 2	<i>OK, what does this sound like?</i>
2	Trombone	<i>To me it sounds like New York</i>
3	Tuba	<i>Yes, to me too</i>
4	Trombone	<i>Like the beginning of a television series...</i>
5	Trumpet 2	<i>It is the introduction to a series, like</i>
6	Tuba	<i>Like an intro...</i>
7	Trumpet1	<i>It doesn't sound like anything to me at the moment</i>
8	Tuba	<i>It sounds like New York to me, those notes that go pam pam pam</i>
9	Horn	<i>It is detectives and ...</i>
10	Horn	<i>Typical American comedy like Friends...</i>
11	Tuba	<i>Just like Friends...</i>
12	Trumpet 2	<i>It sounds like Friends. I don't know, well, well... and if we start it higher up?...</i>
13	Trombone	<i>Let's see what the whole thing is like</i>

really remind me so much of the introduction of the series... err..." with the conclusion reached at the end of the interaction. In other words the participants have gone from saying yes—or “yes, boss”—to the holder of the invisible baton, to discuss, exchange, and weigh up opinions of colleagues, to construct a significance jointly. Also, unlike the previous episode, in this episode an analysis is made to attribute a specific significance to each of the parties “exactly like the big city in the accompaniment” or “the beginning is like the dawn and at the end it is the bustling...”. Another aspect to mention in this episode is how some voices complete others. Thus, for example, in intervention 14 the trombone says “you are going to work ...”, then trumpet 1 responds “you get the metro” and the trombone takes up the thread with “you go to the conservatory to study music”. As a result, this episode is considered as cooperative. Warm feelings also appear such as “Magic” or “We are so good!”.

We can, with all of this, describe the previous episode as a cooperative practice. Possibly the reader will be asking how much it cost us to find such a cool chamber music group, who manage their rehearsals as a cooperative group. In our dominant musical culture, especially in classical culture, as reflected in chapter “[Teaching Music: Old Traditions and New Approaches](#)”, it is really difficult to find a cooperative chamber music group. Cooperative interaction activities should therefore be built up from teaching practice. How? We will now present several specific activities from learning from scores, through cooperation dynamics. Before we do this however, we will give a very brief general summary of what has already been established to help build up interaction dynamics of what is learned and how one learns by cooperating.

**Table 5** Cooperative episode II. Brass wind quintet

Order	Voice	Transcription
1	Trumpet 1	<i>The truth is that it didn't really remind me so much of the introduction of the series.... errr...</i>
2	Tuba	<i>I see...</i>
3	Trombone	<i>It wasn't the introduction to a series for me, no</i>
4	Tuba	<i>For me it is the bustle of New York, and all that ...</i>
5	Trombone	<i>Exactly the big city in the accompaniment</i>
6	Trumpet 2	<i>The beginning is the dawn and at the end it is the bustling ...</i>
7	Trombone	<i>Like life in New York</i>
8	Trumpet 2	<i>Exactly...</i>
9	Trombone	<i>Magic...</i>
10	Trombone	<i>We are so good"!</i>
11	Trumpet 2	<i>Maybe, the beginning is calm...</i>
12	Trombone	<i>And in the end it gets strong again because it is going to sleep</i>
13	Trumpet 1	<i>Yes, you get up calmly and then the other...</i>
14	Trombone	<i>You are going to work...</i>
15	Trumpet 1	<i>You get the metro</i>
16	Trombone	<i>You go to the conservatory to study music</i>
17	Tuba	<i>You are all stressed up and then you get back home in a state of calm... you get home and you are really tired out</i>
18	Trumpet 2	<i>You get to your home and ...</i>
19	Trumpet 1	<i>You hurry to the metro but you don't get there on time, then you get a taxi, you have lunch there, as far as you can...</i>
20	Trumpet 2	<i>Of course, yes of course...</i>
21	Trumpet 1	<i>You get home at twelve and ...</i>
22	Trombone	<i>A plan!!!! (onomatopoeia) I can see it, I can see it, let's make a film!</i>

## 5 How Cooperation Is Learned/Taught

Apart from the structural characteristics of the activity, the other variable to which allusion is made by most theorists on cooperation refers to the participants' personal characteristics. Basically, this is what the main theorists say (Johnson & Johnson, 1999; Kagan, 1989). For group work, individual responsibility is required, together with personal skills leading to the expression and reception of opinions and to a genuine group processing of information. For educational psychology, the participants must have moderately divergent points of view, offering mutual support and regulation (Coll et al., 2008). In other words, students have to be able to express their opinion without offending or trying to impress something on their colleagues, but also to accept criticisms and suggestions without feeling offended by them. For our part, alluding to the theoretical framework in which this book has been structured (the



implicit theories described in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”) cooperation requires interaction from an epistemological stance leading to contemplation of knowledge as social construction, from the constructive theory (see Baño, 2018). Unfortunately, these personal requisites in terms of social skills, and in terms of epistemological beliefs, and on learning are not very common, if we consider, as we have shown, that educational culture prevails in instrumental education.

As we already saw in chapter “[Teaching Music: Old Traditions and New Approaches](#)”, the educational tradition of conservatories has its origins at the beginning of the nineteenth century, when the industrial revolution with its steam engines resulted in the emerging models of production. Thus, the Taylorist mode of production organised the conservatories, as it did many other educational centres (Pozo, 2014), on the understanding that the classical music productive model was an assembly line which required two differentiated education profiles. On the one hand, the designers (composer) and supervisors (directors) of the assembly line. On the other, the technical specialized labour (instrumentalists) focused on decoding the musical scores, leading to individual learning and when working in a group to a summative learning, i.e., based on the social division of the group work.

This cultural tradition which centred on individual learning and was often externally regulated, necessitated a teaching intervention with a well-defined plan for instructing students in the dynamics of cooperation. Therefore, the social dynamics of cooperative interaction had to form part of the learning contents and objectives. For this, we will now present two activities through which cooperation is promoted in a chamber music group, reflected in the episodes described in the previous Tables 4 and 5 (for complete knowledge of the instruction programme see Baño, 2018). The activities were carried out during learning the piece “Variations for brass quintet” by Ginés Abellán<sup>3</sup>. This piece was suitable for learning in cooperation as it is structured into several variations which work individually as musical units, on which several cooperative type activities may be undertaken.

The initial idea is that roleplay can easily represent a real or hypothetical situation (Quinquer, 2004). Through these games, the students can learn musical concepts at the same time as modifying behaviour, letting them develop essential skills such as oral communication and teamwork (de Urbina et al., 2010). In this case, roleplay is created from characters in the famous Clint Eastwood Western “The Good, the Bad and the Ugly”. Depending on the role they play, the students will participate differently and hold different attitudes during their interactions, and this will allow them to reflect on the different forms of interacting.

The roles are distributed among the group through cards chosen randomly. Once the cards defining the role of each participant are distributed, they practice a fragment of the piece of music. When the group interrupts the interpretation to make pertinent comments on it (assessing, planning) they have to interact as the character they were allotted by the cards. The student who becomes the Sheriff has to be able to discover

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<sup>3</sup> The piece played by the students who made “Lord Kbrass” may be heard on the following link: [https://youtu.be/E0\\_-DycG\\_Ew](https://youtu.be/E0_-DycG_Ew)

which character each of his or her companions are, backing up assumptions with arguments. The characters are described in the following way:

- *The good*: asks rather than states. Proposes rather than orders.
- *The ugly*: prefers to receive orders to suggestions. Does not participate in the interaction.
- *The bad*: affirms rather than asks. Orders rather than proposes.
- *The sheriff*: is the person who must discover what (hidden) role each of his companions plays and must explain why.

The teacher should ensure their students become aware of the type of agreements being reached during rehearsal practices, driving the group to metacognitively manage their learning, not just in musical dimensions but also in terms of the social interactions taking place. We will now list the types of agreement possible during learning, according to Berkley et al. (2005). The students have to be familiar with this type of agreement so as to describe their social interactions through them.

- *Authority*: The group may generate ideas and have open dialogues, but when decisions are made, the leader of the group is the one who decides.
- *Majority after a period of dialogue*: the group votes on the relevant issue and the majority wins. It is a democratic process.
- *Negative minority*: The group votes for the most unpopular idea, eliminates it and votes again until only one idea remains. This method is also democratic and may be used when there are many ideas and few voters.
- *Consensus*: The group discusses and negotiates until all the interested parties understand and support the decision. In this decision strategy all the participants must have the feeling that they have taken part in the decisions.
- *Use of criteria*: The participants examine, identify, and agree to the criteria to reach a satisfactory decision. After this they assess the alternatives in keeping with these criteria.
- *Commitment*: Instead of taking a simple decision to exclude other decisions, the group takes a committed decision, possibly combining many solutions into just one.

Through this activity the group has learned to take decisions together, in a consensual manner. However, during this chapter particular interest has been paid to the construction of the emotional representation during the study of the musical score. Previously above we stated that one of the requisites for cooperation was for the activity to be open and for this it was necessary to rehearse and learn the musical score from the referential representation. We will now present an activity to instruct the student in combined construction of the emotional representation of the score.

This activity is divided into three phases. In phase one paintings are presented, related to the style of the musical piece, through which the teacher will trigger the debate on what painting most satisfactorily represents the piece. In phase two the group is asked, what film could this piece be the theme tune of? In phase three the group is continued to be asked to build their own cinematographic script to emotionally describe the composition they are learning. The social interactions continue to

be controlled so that true cooperative learning appears, i.e., a genuinely combined construction of the piece.

Regarding the features of the composition, it is important to remember that during learning in cooperation dynamics, the musical contents and aims coexist with the aims and contents of the social interaction dynamics. For this, the teacher involved is versed in the practice of methodologies of a cooperative nature so that they choose compositions which pose problems for group interpretation rather than those involving individual technical problems. The paintings selected for the piece by Ginés Abellán for which these activities were put into practice (in the footnote on page 11 the reader will find the link to enjoy listening to this piece interpreted by the students who participated in the programme on cooperative strategy learning) were “Cadaqués” by Martí Ceballos and “Procession” by Eduardo Pisano. These paintings serve as an example for the reader, who will have to look for their own for the group and composition they practise these activities with.

## **6 Conclusion: Social Interaction as a Driver for Learning. Some Tips for Teachers**

According to Ortiz et al. (2010), the cooperative approach is not spontaneously acquired in social interactions, but, as has been mentioned on several occasions, it requires considering cooperative learning as a separate entity in music education. As a result, to prevent action revolving solely around purely musical objectives, special attention has been paid to raise the teacher’s awareness of the importance of social interaction as a content of learning. Barkley et al. (2005) recommended a series of steps which help in understanding the activity, and particularly socially instead of just from the sphere of music:

1. Explain the activity. A basic general view helps students to see the “complete picture”.
2. Clarify the objectives. Telling students the purpose of the activity will give them the opportunity to link the activity with more general classroom aims and with previous knowledge, or will indicate new concepts to be addressed, helping them to appreciate the benefits of the activity.
3. Highlight the procedures. Describe precisely, step by step, what the students are going to do to minimize or eliminate any confusion during the activity.
4. Give examples. Use a specific example to illustrate the process, show a mock-up of the final product to help the students to get a clearer idea of what they should do.
5. Remind the groups of the rules for group interaction. Review or establish basic rules to help prevent future problems. It is a good idea to recall aspects such as mutual respect and help, as well as active listening.

6. Establish time limits. The establishment of a time limit helps students to mark a rhythm for themselves. If timing is brief, the participants can work quickly and effectively and if necessary, this limit can always be extended.
7. Simplify initial instructions. The most common initial instructions for activities are presented in the form of questions or problems, and it is also interesting to carry out an initial instruction based on procedures.
8. Consult the students to test their comprehension and let them ask questions. Request that the students voice any doubts they have prior to beginning the activity so that aspects which remain confusing may be clarified.

To conclude, musicians rarely play music alone. It is much more common to form a part of different groups. Therefore, when music is being learned in a group, social interaction should be considered as part of the learning process. If necessary, as we have argued here, putting this interaction across from the dynamics of cooperation requires learning to jointly create the emotional representation of the piece of music through dialogue and consensus.

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# Re-Thinking How to Assess Students of Musical Instruments



Aránzazu González  and Alfredo Bautista 

## 1 Introduction

Student learning assessment is an essential element in their development as musicians. The way in which we assess interpretations—both ours and those of other people—determines our profile as instrumentalists. In this chapter we discuss certain ideas about how instrument teachers in conservatories, and sometimes also music school teachers, frequently assess. We will concentrate on the ideas about how to assess student learning, both during classes and in final assessment settings. We will put forward several situations in which it becomes clear that there is a need to establish systematised procedures in assessment, with explicit criteria defined by the teachers and shared with the students. We will analyse its implications for student learning, from profound understanding of what is being sought with learning assessment and from the current curricular approaches in our centres. Our aim is that by reading this chapter teachers can rethink and eventually improve their forms of assessment.

## 2 Do we Coherently Assess What We Want Our Students to Learn?

It is the beginning of the year and when classes start, the teacher Rafa meticulously assesses the repertoire he will be giving to his students, so that each student can play it satisfactorily

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during the academic year. The musical content and difficulties posed by each piece are weighed up, so that his students can remedy their shortcomings and evolve, in keeping with the repertoire levels established by the department.

During his classes, Rafa is particularly appreciative of accurate musical score reading, technical development and the level of successful repertoire playing. He analyses how his students will achieve the objectives he proposes class by class. Also, he makes an effort to try to analyse how they study at home, so that they can make good of their time and get the most out of it. Rafa observes how each student progresses with the repertoire according to their level, watching whether the student is capable of playing it all the way through, without stopping, integrating the difficult passages, keeping time, having the technical capacity and resistance with the instrument to be able to play it satisfactorily, etc. He thinks that it is highly important that each student is able to play the pieces assigned in a specific time period (this may be a term or a whole year).

In auditions and exams, he wants to see his students play like musicians, to “bring out the art they have inside them”. In these situations, Rafa mostly attaches importance to scenic issues: whether the student is serene and in control of the situation, or whether nerves have prevented them from playing calmly, whether they have communicated his concept of the piece, whether they have moved the spectators emotionally, etc. Rafa bears in mind the technical and interpretative aspects of the repertoire, but within these contexts he mostly wants to see a musical result, ready-made interpretations to the level of each particular player.

Throughout this process, Rafa mentally takes notes about how each student is developing. He jots down the issues they should work on in the scores and trusts his memory about how they have been able to play in one setting or another. He recalls the things they have studied during the learning process, and the way in which the student has responded in the audition or in the exam (e.g., if they have resolved specific aspects that they are working on at each given moment, what passages have hampered them and why, etc.)”.

This example is an approximate description of how some conservatory teachers assess their students. Specifically, the example shows the type of aspects which teachers take into consideration through the course of instrument classes and those they later assess in auditions and exams. We will analyse the case of Rafa further on, in the light of what the curriculum dictates regarding learning assessment. Next, in line with what was expressed in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, we will discuss what type of ideas and conceptions on assessment underlie Rafa’s actions and procedures.

## ***2.1 What Does the Curriculum Say with Regards to Assessment?***

The conception on assessment in current curricula (the Organic Act on the improvement of educational quality [LOMCE for its initials in Spanish], 2013) is very different from the curricular plans which a good part of teachers are trained in to use in their instrumental classes given today. The point of inflection was the Organic Act on the General Organisation of the Education System (LOGSE, 1990; for its initials in Spanish). The traditional assessment models did not take into account the student, since assessment was considered as something to be externally regulated and

controlled. In contrast, in keeping with research on musical education (see chapters “[Learning and Teaching Music in the Twenty-First Century](#)” and “[Teaching Music: Old Traditions and New Approaches](#)”) and the learning models described in chapter “[The Psychology of Learning Music](#)”, the student is currently the axis around which learning and teaching revolves, including also assessment processes.

In the conservatory curriculum, particular emphasis is placed on the instructive and formative purposes of assessment. Instructive assessment implies giving feedback to the student on their learning process, whilst formative assessment includes fostering their self-regulation (Jorba & Sanmartí, 1993). These aims require the teacher to incite the student to be more autonomous, for the student to be reflexive and analyse their own learning process and the development of their abilities with instrument practice. In other words, this means not just being concerned about the level in which the student has reached the expected learning outcomes (summative finality), as occurred traditionally (González & Bautista, 2018a, 2018b). It is also considered essential that the student is aware of and internalises the criteria and procedures which they will be assessed and graded on, in order to develop their own self-regulation and metacognition. (see chapters “[The Psychology of Learning Music](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music through ICT](#)”). However, at the moment, in many conservatories there is no record of the criteria used by the teachers to assess and no record on how the students understand the criteria and procedures with which they are assessed.

Returning to the example of Rafa, firstly it is obvious that his system of implicit criteria—i.e., the parameters he uses unconsciously when assessing (Pozo et al., 2008)—is different in classes to exams. In class he is working on several aspects (reading matters, the most technical and reproductive aspects) and in the exam he is asking the student for something very different (aspects of stage presence and interpretation). During the learning process he does not mention interpretative aspects—or how the student can go about conceiving and constructing their own version of the piece—nor the criteria with which to assess it. In final assessment scenarios, Rafa wishes to see his students play as interpreters, but he does not mention how this interpretation has been able to be controlled and constructed. Possibly, this situation occurs because the teacher understands that the reproductive aspects of teaching are disconnected from the interpretative or expressive aspects (Bautista et al., 2012). In other words, he conceives of the reading and technical work of the instrument to be disconnected from its interpretative and expressive content, which implies superficial learning of the scores, as suggested in chapter “[Reading Music. The Use of Scores in Music Learning and Teaching](#)”. This has direct implications on the learning of the students in the different phases of musical score learning.

One way of developing the referential aspects (at the service of the interpretation which the student wishes to make) would be that the teacher works epistemically on the musical score during the class (Casas & Pozo, 2008; Marín et al., 2012). From musical analysis, the student may construct their vision or conception of the piece, and later search for its expression with the instrument in keeping with the mental image or melodious and artistic representation that had been outlined (Lehmann, 1997). Thus,



the teacher could integrate and assess the expressive and stage presence aspects right from the beginning when the student first came into contact with a new piece of music, since it is ill-advised to wait until the week before the audition to work on (and assess) these aspects. As argued in chapter “[The Psychology of Learning Music](#)”, working on reproductive elements separately from interpretative, syntactic and expressive aspects of the score slows down and largely limits musical learning because it does not encourage the student to learn the musical significance of what is being studied (Bautista & Pérez Echeverría, 2008; also see chapter “[Reading Music. The Use of Scores in Music Learning and Teaching](#)”). Fostering their comprehension from starting to work on the score, however, leads to faster and better learning (Ginsborg, 2004). This is how profound learning of repertoire interpretation is built up in all of the learning process phases, without losing sight of the expressive and interpretative elements as the drivers of the technical work (Chaffin et al., 2003. Also see chapters “[Teaching Music: Old Traditions and New Approaches](#)” and “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)”). This way of leading the learning process means there is consistency between the forms of teaching and all the phases of the assessment process—i.e., during classes and in the final assessment contexts, as part of the same process.

## ***2.2 The Importance of Assessment Procedure Systematisation***

An additional problem of Rafa’s assessment practices is that neither the teacher nor the student retains a systematised record of what is happening in class or final assessment scenarios. According to researchers such as Gil (2015), Gil, Valero, Mingot and de Dios (2015) and González (2017), it is essential to systematise the qualitative information of the development of student skills to discover how they have arrived at playing in final assessment scenarios, in order for this assessment to be both instructive and formative. In contrast, Rafa only retains the notes from each term or from the year end, without any more information. There is no record of the student in qualitative terms over time (longitudinal), and important data may therefore be lost regarding the development of their process. Neither is there any record that he saves repertoire recordings from the pieces that the student has played and the way in which their playing has evolved, as is suggested in chapter “[Learning Music through ICT](#)”, which discusses the use of ICTs in the classroom. This type of register and recordings would let the student analyse what aspects need improving and how they could develop their interpretative skills with the instrument (Asmus, 1999).

We believe this example is to a large extent representative of what is happening in many music centres. In keeping with our previous studies (González, 2017; González & Bautista, 2018a, 2018b), the teachers conceptualise assessment idiosyncratically (personal, not shared and not systematised). So, each teacher tends to assess

based on their own subjective conception of teaching, learning and interpretation of their instrument.

At present, assessment procedures in many conservatories are not systematised. The criteria are not sufficiently explicit, defined and structured into specific assessment and grading procedures (Jornet et al., 2015; Vilar, 2001). This lack of specification prevents the students being able to understand the criteria and internalise them in their instrument practice in any conscious way. It also has heavy repercussions on learning, because the level in which the students of instruments are able to internalize assessment criteria will directly affect the development of their actual personality as musicians (Shuler, 2011). The depth with which they have acquired the criteria will allow them to assess if their studies and their performances are well managed, giving them the ability to better self-control their musical and interpretative skills (Hallam & Creech, 2010). In other words, if the student has a better awareness of the systems used to assess them, they can better manage their own learning. Furthermore, the teacher will be increasingly able to pass the control over to the student for their own learning and build up their self-regulation, as suggested in chapters “The Psychology of Learning Music”, “Instrument Mastery Through Expression: The Learning of Instrumental Technique” and “Learning Music through ICT”.

Another consequence of non-systematisation is that there is no common assessment and grading procedure between the different assessors, with all the possible implications this may entail for how departments function. This happens when teachers do not specify their own assessment criteria and also do not communicate those criteria to the students or other teachers in their department (González, 2017). This is not conducive to a department having common strategies for assessment material and may affect the levels the students have to attain in each different year. This will be analysed further later on.

Based on Rafa’s case, we would ask some questions for the readers to reflect on their own conceptions and assessment practices:

- Are we certain that we are assessing what we wish our students to learn?
- With the traditional forms of assessment, are we truly encouraging profound and meaningful learning?
- If there is no record of how students understand the assessment criteria and procedures, how can we confirm the degree to which they have assimilated them? How can we see whether the students are participating in their own assessment?

### **3 Towards genuine Continuous and Comprehensive Assessment in the Learning and Teaching Processes**

Ada does not understand her mark. She made every effort possible to follow the indications of her teacher class after class. She has studied every day to play all the pieces that were set for this term, and she was happy with the result. She plays all the pieces well, with ease, doing what the score tells her. All the corrections her teacher made have been resolved.

To her disagreeable surprise, her teacher has given her a 7, even though she believes she deserves at least a 9.

What happened? Ada has not internalised the criteria with which she was going to be assessed. She is unclear what is required in her playing to get a 9. She has not been able to really determine what they would be grading her on, even though she considers that she made every effort in getting maximum marks. Fortunately Ada has her own implicit criteria system. Rafa is Ada's teacher. Rafa is sure that he explained to Ada everything she had to do. He is happy with the way the class went, with Ada's development and her mark. He does not understand her discontent or her expectations which for him are incorrect.

### ***3.1 The Rubric: an Explicit and Shared Assessment Procedure***

The question revolves around the fact that Rafa has certainly given Ada all the information on how to play the pieces well, learning the instrument, etc. Rafa has been meticulous in his actions: he has supervised the obtaining of learning outcomes and has adapted teaching actions in keeping with Ada's learning progress. He has been highly conscious of the learning process of his student. He also changed his teaching practice according to the way in which Ada evolved, acquiring strategies he considered the most appropriate for her development.

However, during this process, his learning regulation and Ada's external assessment have been more salient than her own assessment of herself. The only feedback she received on her learning process involved the indications in class and the final exam mark, as a numerical grade. Also, as we saw in chapter "[The Psychology of Learning Music](#)", it has always been the teacher who regulates the learning and assessment. In addition to this, Rafa does not realize that the version that Ada plays will be her own version and that his role is to help her control her mental conception and image of that interpretation.

During classes he never asked Ada whether what she was playing was really what she wanted to hear, how she built up her own interpretation, how she thought she played, how she felt when playing, how she perceived of her own learning process, what things she felt she should improve, etc. Rafa does not understand that the final exams also present him with an opportunity to offer the students, and in this case, Ada, with a general and qualitative balance of how they play in public. Nor that, over time, this information is extremely valuable so that Ada can achieve an image with her own criterion about how she plays, which would be highly relevant for her development as a musician. One of the possible solutions in this case would be for Rafa to be more aware of his own criteria when constructing and assessing musical interpretations. It would also help if he were more systematic regarding feedback to Ada during her learning process and in her final performances.

An ideal solution would be for Rafa and Ada to discuss and agree on assessment criteria during a procedure in which they both participated. In order to make the whole process easy and explicit, Rafa could design the use of a simple portfolio which contained a rubric with the general criteria with which they would assess

her learning and her interpretations. It could also include Ada's recordings of the auditions and exams. The rubric would contain criteria definition and the different levels of their attainment.

During the course of the classes, Rafa would have the rubric criteria in mind when giving feedback to Ada and would also teach her how to construct and assess her own interpretations with this system, which had already been explained. Both of them would fluently discuss the criteria when they were working on the repertoire of pieces. In the audition or final exam, Ada would know that the criteria she was to be assessed with were the same as those she had been assimilating during her classes. At last Ada would have a clearer image, with all the criteria defined by levels of obtainment, and could reflect on them when she was thinking about and managing her interpretations. The extent to which she was able to internalize these criteria could make her more autonomous when studying, more capable of predicting Rafa's assessments and above all, freer as a musician.

Rafa could also share his rubrics or his system of criteria with colleagues from the department, thus establishing a common system with which to homogenize the centre's criteria and levels. He could tell all his students about the system he was using with Ada. As a result, Ada could assess and be assessed by her colleagues with the same criteria system used by the department teachers. Rafa could look for common gaps of reflection for all his students so that they assessed their interpretations and their learning process. The students would be increasingly able to reflect on their own learning process and that of their colleagues. By adopting a defined system the students are able to mature and explore the way in which these criteria could be practically applied in assessment.

As we can see from the example, Rafa tends towards external regulation of assessment processes, rather than promoting the student's self-assessment and self-regulation. Both the assessment criteria and procedures are managed by the teacher, which refers us to the previously described implicit *interpretative* theory (in chapter "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)"; also see Bautista et al., 2011). This is not in keeping with current curricula design (LOMCE, 2013), where assessment is treated as an inherent element in the teaching-learning process which should lead to the students learning more and better, and who will eventually be able to regulate and assess their own learning. In this case it may be that the teacher merely assesses as they have always assessed, in the traditional way, focusing on the external learning and assessment processes, instead of concentrating on the learning and self-regulation of their students.

### ***3.2 Integrating Subjectivity into the Assessment Procedures: Portfolios and Rubrics***

In artistic disciplines, assessment presents with certain particularities. Subjectivity is an inherent element throughout the artistic and communicative process since,

among other things, this process implies the communication of emotions (Juslin & Västfjäll, 2008; Torrado, 2010; also see chapters “Teaching Music: Old Traditions and New Approaches” and “Instrument Mastery Through Expression: The Learning of Instrumental Technique”). However, assessment has traditionally been linked to measuring and quantifying learning outcomes, i.e., grading to what point the final expected result has been achieved (Jorba & Sanmartí, 1993). Qualitative descriptions and assessments are used to approach the artistic area by the artists themselves, and by teachers, students and spectators. For example, we rarely listen to a spectator after a concert saying “the pianist’s playing got a 7”. More often, we listen to phrases like “I got goose pimples” or “I didn’t feel many emotions”. Using expressions of this type help us to get closer to the artistic event, but never allow us to communicate it 100% because, as the saying goes, “an image is worth a thousand words”.

Although we do not measure and quantify outcomes like in exact sciences, we cannot base our excuse for non-systematisation on this factor. We believe this is one of the factors why greater exploration is not generally made of assessment in artistic subjects. In these subjects, subjective judgment of the assessors is always necessarily present, since it is an inherent part of the communicative process (Wrigley & Emmerson, 2013). Since subjectivity is an inherent element in artistic development, assessment procedures should reflect qualitative data which not only quantify the outcome, but describe the musical event with words (Gil et al., 2015). To do so, efforts have first to be made by teachers to define, specify and articulate the criteria with which they assess for educational purposes.

As was obvious from the example with Ada, in artistic teaching, we have to assess the performances of the students qualitatively. Words allow us to approach the musical and interpretative event with greater precision. In compulsory education assessment with descriptive and qualitative parameters is already very much in use. In the General Education System curriculum, competences have been developed, as have assessment criteria and learning standards. In the same curriculum (Ministry of Education, Culture Sport, 2015) the use of portfolios and rubrics was proposed. The portfolios are files containing any necessary observation materials and records for a project that has been defined and agreed to with the student. At present, in conservatory music teaching this use of portfolios and rubrics has not yet been extended. One exception is the case of the Community of Valencia (Gil, 2015), where a project was undertaken to develop the assessment rubrics by the instrument departments and for the subjects of Musical Language and Analysis. Over time, and once developed, it will be possible for both assessment forms to co-exist: quantitative data (numerical grading, or marks) and qualitative data (open-ended descriptions of the artistic event).

### 3.3 *Probing into Assessment Criteria*

In academic environments, assessment criteria are closely linked to learning objectives and their level of obtainment. Once these criteria have been specified, the planning of the different learning phases can ensue. Assessment criteria may be encompassed in an integrated system which is used to enhance the musical abilities of the students, serving also as indicators in metacognitive strategies guiding their interpretation. This is one of the essential reasons why the systematisation of the assessment procedures will be increasingly necessary in our educational centres.

We will now explore further into the definition and use of these qualitative parameters which may serve as references to the musical event: the assessment criteria. To assess qualitatively, we need to define the parameters or qualities of the object we will be assessing, which in this case, are the musical interpretations. We may also ask ourselves how we are going to use these assessment criteria. The following questions arise: what are the assessment criteria and how can we understand them within the artistic event? What are they for? How can we use them? The criteria are the parameters with which we can assess the different aspects of the musical interpretation, the rules of the game, that allow us to know what is OK, good, or beautiful, or even what makes us feel emotion (or not) (Torrado, 2010; Wrigley & Emmerson, 2013). When we assess performances, we can apply assessment criteria to different levels of profundity. It is possible that we assess if something has been good, bad, accurate or inaccurate. If we limit ourselves to this, no further opportunities to progress are present. A more in-depth application would be to estimate the different qualities of the performance and be familiar with our interpretative and technical resources that can be used to improve them.

Assessment occurs whenever the student presents and moulds their interpretation. The student assesses the level to which they are able to create a mental image and the way in which they can carry this out with their instrument (Ginsborg, 2004). The application of interpretative criteria requires a dynamic process of creation of the mental image and control of resources (concentration, skills, techniques, knowledge of the instrument itself, etc.), so as to be able to interpret this mental image of the music created by the musician. The criteria help the musician to confirm the level and quality with which they have been able to create and execute that mental image, and thus reflect on their conception and subsequent execution (Hallam & Creech, 2010).

To create their own mental image, the student has to make the musical score meaningful, to experience it, understand the composer's expressive intentions and discover what they wished to communicate, from their own understanding of the written music. From here, the student may manage the resources required to materialize that conception of the composition with their instrument. This involves a dynamic process of submerging themselves in their mental image and the actual instrumental execution. It also involves the technical and expressive skills of the musician, which develop throughout the process of their dialogue with the instrument (Ginsborg, 2004). The creative process begins with interaction between the student and their instrument,

since the student is modelling their mental image also through the feedback of the sound they are able to make. As they are able to understand or look for different interpretations of the same piece, their material reproduction and technical approach to this same piece will change (Chaffin et al., 2003). Each performance is unique, the product of the conception of the musician at that moment in time of their learning process.

We will continue by looking into the different types of learning derived from assessment, from strategic management of interpretative criteria, and into the teacher's role during that process. When assessing student learning, perspectives change if we ask: how much and how has the student learned regarding criteria management used to assess the mental image of the interpretation they have created? The teacher may help the student to strategically manage their learning process, so that they can use, understand and apply these criteria or rules of the game satisfactorily. As teachers, we can decide if we are assessing how much the student has learned, and also how much they have learned to learn in the game of musical interpretation. As we saw in chapter "[Teaching Music: Old Traditions and New Approaches](#)", the learning of strategies implies both being aware of technique and the most appropriate way of applying it to whichever context. It also means managing one's own resources to create and assess if their realization is in keeping with our mental image or artistic representation of the piece, bearing in mind the sensations of our own body when interacting with the instrument. The learning and assessment of performance thus falls entirely into the hands of the student, who, as the performer, is able to control their performances and bring them to life, linking their own melodious imagination to their abilities to recreate it (Hallam & Creech, 2010).

Speaking of the relationship between technique and expressivity, the mental image of what the student wishes to reproduce is linked to their technical capacity or knowledge about sounds that can be made with their instrument (Ginsborg, 2004). In other words, it is highly unlikely that a student plays better than how he or she conceives of and experiences the music (Hallam & Creech, 2010). As we saw in chapters "[Teaching Music: Old Traditions and New Approaches](#)" and "[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)", many instrument teachers may be focused on technique, but technique will always be party to the image of sound, the mental image the student creates before playing or whilst playing. If that mental image or sound image evolves and becomes deeper, presumably the student will try to make their technique adapt to this superior, deeper level of sound creation. It is therefore essential that the teachers do not only focus on technical aspects but that they also link these technical aspects with the creation of these sound images. The student's capacities for creating their own conceptions of the piece and their instrumental skills may evolve simultaneously.

## 4 Seeking Intersubjective Consensus from Teachers

Irene wants to finish her studies at the conservatory and obtain the professional qualification. She has been in the conservatory for over ten years and has repeated the 6th year of pre-professional education. Irene wants to pass and this is her last possible chance. When she began her pre-professional education, neither she, nor her teacher were clear about whether she would manage to finish these studies, since she has physiological limitations in playing her instrument (her hands are small). She has a very good attitude towards studying and regularly attends class. However, as she has passed from one year to the next in the pre-professional education years, her performance has been increasingly less satisfactory with each passing year.

Now it is the moment of truth: the final exam of her sixth year. She has successfully played the whole programme but with innumerable technical problems which hinder her communication of the musical discourse. After playing, she was sure that her level did not correspond with the level expected for that year. When the exams were finished, behind closed doors, the five members of the panel discussed her mark. Her teacher, Manuel, defended his student's exam. In fact he gave her a final mark of 9. The other teachers found themselves in a highly compromised situation, since they felt it was extremely violent to have to argue what for them was obvious: Irene's level was not even a pass. In fact, her teacher, Manuel, also knows she should not pass, and acknowledges it, but sticks to his 9. His closeness to his student for over ten years prevents him from failing her. Irene has always been aware of her level but she held out a faint hope that she would get her qualification.

In this example, there is a situation whereby the members of the panel have to comply with the criteria agreed to with their department colleagues. Here, it is not just a question of agreement or non agreement with the assessment criteria, with the level to which they have been achieved, or with their communication to the student. This is a case of teaching deontology and the teacher's own responsibility. In instrumental teaching, work with the student is individual for very prolonged periods of time. Logically and hopefully, a special situation of affectionate proximity develops between the teacher and the student. Such a situation, if badly understood, may occasionally lead to a teacher feigning a deliberate loss of objectivity in favour of protectionism that does not do the student any good. Another factor which may play its part is that that teacher's "ego" will not allow them to accept that their student has failed (Shuler, 2012).

If a student passes without having achieved the level expected for that year, they may set a precedent for other students and possibly modify the criteria level of the teachers. This type of action could involve great risks, including that of each teacher giving marks according to their own individual criteria; making the level less defined, and creating huge differences between levels of students who are in the same academic year. It could also mean the students' level drops and this would lead to discontent in performances. Personal relationships could possibly be affected and the atmosphere of the centre would change, leading to discontent amongst the teachers and students from the way in which assessment took place. The students would not understand how their marks were arrived at and this could even lead to teachers developing an atmosphere of competitiveness between them (Vilar, 2001).



The curriculum—for example, that of the Community of Madrid (2008) in Spain—refers to the guarantees of assessment quality governing the conservatories, aimed at guaranteeing appropriate levels of objectivity and transparency which allow them to maintain their level of “professionalization”. Among these guarantees is the creation of pre-established assessment criteria and teaching programme contents. The members of each department can develop these systems of criteria within assessment and grading procedures which they consider the most ideal to assess their students. Thus, the system of criteria is contextualized and specific to each centre. It also suggests that the teachers make their own students take part in their assessment, sharing with them the procedures with which they will be assessed.

At present, teachers have different viewpoints about the assessment criteria and the way in which they assess (González, 2017; González & Bautista, 2018a, 2018b). The way in which disagreement is frequently managed is through the avoidance of debate and even through fighting for positions where no meeting is possible. Firstly, it is essential for each teacher to accept individual responsibility for every action taken regarding assessment, especially in the final marks of each educational cycle. Assessment has a major feedback effect in learning (Monereo, 2003). Once certain decisions have been taken, they affect both the level of the students and the centre environment. Secondly, as professionals in educational centres, we must cultivate respect for colleagues and for the plurality of opinions, which are always enriching and particularly in a space of coexistence where each teacher has very solid personal education and artistic baggage.

In order for departments to function properly, it is important to share teaching strategies that unify teachers’ criteria and procedures, without the teachers losing their individual identity. This leads to greater transparency and accessibility for the students. The solution in cases such as the one described in the previous example would be to establish a system of criteria and the commitment to follow it, without exceptions. It is necessary for teachers to find common, targeted and shared lines of dialogue, to be able to scrutinise and explain the way they assess.

To conclude, we can use a system of assessment criteria to evaluate the students’ performances within each department. These same criteria and established procedures may also serve for the student to be able to assess their own interpretations with parameters which, at least in part, are shared by the teachers of the centre.

## **5 Conclusions. Minor Efforts, Major Rewards: the Advantages of Using Systematised Assessment and Grading Procedures**

In this chapter we have seen that the conservatory instrument teachers tend to conceive assessment as individual and not shared in depth with their departmental colleagues (González, 2017). This creates a panorama of singular and diverse realities which differ from one another, where each teacher in their class proceeds to assess in

accordance with how s/he believes is the best way of doing so. We have illustrated these representative cases and analysed their implications for learning.

Based on these arguments, we suggest there is a need to design and use systematised assessment and grading procedures, which contain criteria and their levels of achievement (or standards). This form of assessment could coexist with the tradition numerical one, or marks. Assessment procedures with descriptive and qualitative indicators have already been proposed in the curricula of the General Education System (Ministry of Education, Culture and Sport, 2015), establishing learning standards which allow skills developed by the students to be assessed. The teachers are already used to grading quantitatively, which offers acceptable levels of reliability (Mills, 1991), provided that they act with teaching responsibility and deontology. Educational literature and curricular trends are making headway to complement quantitative information with qualitative feedback in a systematised manner adapted to each educational context (Gil, 2015; Jornet et al., 2015), due to the advantages these assessment procedures hold for the student and the good functioning of the centres. Their use fosters the feedback effect of assessment, providing consistency to the different phases of the assessment process in continuous assessment (during class and at final assessment). These assessment criteria would also benefit the teacher's communication with both colleagues and students. In music teaching, we understand that the intended "objectivity" proposed in the curriculum is only possible to obtain when there is intersubjective consensus between the members of each department on defining the assessment criteria and standards (Wrigley & Emmerson, 2013). For this reason, the specification and contextualization of the assessment criteria are necessary, with goals, objectives and prefixed competences always present, as was observed in chapter "[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)". The members of each department are responsible for defining the criteria with which they will assess their students, so that the procedures designed are adapted to each particular centre. From this specification of assessment criteria the teacher can share their views with colleagues and gain a clearer image of the conception of each teacher on the way in which they assess. Allowing for the presence of intersubjectivity between the departmental members and the individual subjectivity of each teacher, may lead to a shared system by the teachers where all members feel comfortable assessing and grading.

The main beneficiaries in systematising assessment and grading procedures would be the students. The extent to which instrumental students are able to internalise assessment criteria directly affects their capacity for managing their own learning, their autonomy in instrument study and the development of their character as musicians. Having an explicit procedure, the student would find it easier to internalise the criteria because s/he can conceptualise them, verbalise them and reflect on them with the teacher. They would also be able to construct and assess their performances jointly with the teacher, from an assessment procedure with explicit criteria. Thanks to systematised data recording from assessment, the student is able to become more aware of their own learning process (Shuler, 2011). Systematisation also allows the students to be able to carry out assessment with their peers, with already defined and established criteria, thereby determining their criteria with one another. In addition

to promoting learning among students it would also give them a higher ability to predict what marks they would get (Monereo, 2003).

Within the framework of continuous assessment, specifying assessment criteria would help enormously to unite the assessment purposes (summative, instructive and formative) with teaching aims and learning outcomes. If qualitative parameters are established in learning assessment, we can build up common knowledge from which the student can self-regulate and appreciate their own learning in continuous interaction with the teacher, who acts as a guide in the realisation and assimilation of these criteria. These interactions and feedback may be much richer and more enhancing of learning than mere numerical assessment, or a constant adjustment between what is “well” or “badly” done from the teacher as external regulatory. In continuous assessment itself, learning activities are increasingly closer to those of assessment, self-assessment, co-assessment and self-regulation of the student. In the build-up to student autonomy, the qualitative description of musical events may be a powerful base for building up artistic personality.

Another advantage would be that when the teachers meet up in an assessment panel, they would be able to shift their criterion regarding the student’s performances so that they complemented the assessments made by the actual instrument teacher. An ideal situation for continuous assessment is when the teachers get together two or three times a year and present each student’s rubric with the assessment of their academic performance in each period (term, half-year, year, etc.). Commenting on students’ exams, or how they played in auditions should not be a *war of egos* between the teachers nor judgement on how correctly or incorrectly the teacher acted (Shuler, 2012). Different viewpoints are enriching both for the teacher and the student. There are teachers who may be afraid to be assessed by their colleagues, on how their students play. This fear could be reduced by systematising assessment, since they would all then be evaluated with the same procedure. The teacher could back up assessment results with parameters defined by their colleagues, if a student was not happy with their mark.

It is our belief that it is the responsibility of the teachers themselves, and their centres, to commit to designing instructional plans which truly respond to teachers’ requirements. For the moment not many departments have created their own assessment procedures. This way forward is currently open to the arts, with every creative opportunity to develop and contextualise them at all educational levels containing these subjects. To do this, there is a need for teachers to share and reflect together on the most suitable assessment procedures for their centres. For their part, the centres can provide the time and space for teachers to work together. We also believe it is the responsibility of the departments to involve the students in their own assessment, by establishing co-assessment and hetero-assessment procedures amongst the students themselves as part of their learning process.

The goal we are proposing implies shared efforts among teachers so that they dare to innovate and experiment with new forms of assessment, that adapt better to the conservatories and schools of the twenty-first century. Past moulds of assessment

need to be broken to make way for ones more in keeping with the new curricular, educational proposals and the instructive needs of our future instrument students and musicians.

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# The Choir Conductor: Interpreter or Maestro?



Maravillas Corbalán Abellán 

## 1 Why Sing in a Choir? Types of Choir Rehearsal

Nowadays choir singing is divided into a wide typology of different groups, distinguished by being professional or amateur in nature, the type of voices depending on age and pitch (high, deep and mixed) or the type of associations or entities to which they belong. Some of these variables may have an impact on the aims and methodology of the rehearsal. Roberto, the choir conductor in a specialized music centre always begins his rehearsals with exercises on posture, breathing and voice warm-up, as illustrated by the following sequence in which the singers, whilst standing up, simultaneously imitate his movements, which serve to relax the neck:

conductor (D): *Come on! You can now protest, softly but protest: “No, no, no, no, no”*  
[widely shaking his head from side to side].

[Changes to a nodding gesture] *Yes, yes, yes...*

[He then observes the posture of a boy and points at the boy’s shoes with his finger]: *Separate your feet a little, the feet must be a bit separate.*

This way of beginning a rehearsal could relate to the type of choir and age of the singer Roberto is directing and also to the implicit theories (see chapters “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” and “[How to Know and Analyse Conceptions on Learning and Teaching](#)”) on choir learning and teaching this conductor has, to which we will later return.

The rehearsal may be considered a teaching–learning scenario for amateur choirs, or for primary or secondary school choirs, conservatory choirs and professional choirs which regularly rehearse. A large variety of research studies have appeared in recent years on this type of group, dealing with issues such as cooperative learning, the

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development of social skills or the construction of gender identity in teenage choirs. These research studies have on occasions studied the singers and on others the choir conductors. In this chapter we will focus on the latter. We will observe and analyse different types of choir rehearsals, which depend on the conceptions (see chapters “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” and “[How to Know and Analyse Conceptions on Learning and Teaching](#)”) and practices on music learning (see chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”) shown by the conductors. To do this, we will analyse examples from a study on choir conductor profiles associated with implicit conceptions (Corbalán, 2017; Corbalán et al., 2019), and from several interviews and audiovisual documents.

## 2 The Choir Conductor’s Viewpoint

### 2.1 *What do Choir Conductors Try to Achieve in Choir Rehearsals?*

In a rehearsal, which serves as a learning environment (amateur choirs, academic choirs, etc.), the singers are the learners, whilst the conductor is both *musician* and *teacher* at the same time. In contrast, in a rehearsal with professional singers the conductor acts almost exclusively as musician, and is limited to modelling/imitating and giving direct and precise instructions to the singers on technical and interpretative aspects of the compositions so that they sound like the version s/he has imagined, in keeping with his or her own criteria.

In this case, the conductor draws up a plan of action and puts it into place so that the choir can interpret a series of musical pieces. This plan contains the basic components of learning mentioned in chapter “[The Psychology of Learning Music](#)” and which answer the questions of What, How, and When, Where, How much, With whom to teach. In other words, in ascending order of the intervention proposed by Pozo in Fig. 1 in chapter “[The Psychology of Learning Music](#)”, the conductor begins with a series of actions (singing, listening, playing, modelling/imitating, etc.) with certain conditions (such as rehearsal structure, types of interaction between singers or between singers and conductor), to promote the management of certain cognitive processes by the singers to achieve learning outcomes. These may be psychomotor or procedural (polyphonic audition, voice technique, learning of different voices, etc.), conceptual (for example, levels of musical score comprehension) or expressive-attitudinal.

We are going to focus on observing how conductors concentrate on some of these components, depending on their different implicit theories (conceptions) of teaching-learning and what the consequences are for the choir from an individual and group viewpoint. The first aspect to impact the way a conductor manages rehearsal is the goal the choir work has for him or her. Let’s take a look at the relationship this may



have with their implicit theories. Roberto, the conductor we began this chapter with, states:

The choir must serve to broaden the students' musical culture [...] I try to select a repertoire that contains all eras [...] so they may become familiar with the styles, genres, which they will never know in their instrument practice, like, for example, opera, oratorio [...] In general these children are not cultured: they don't go to museums unless they go with school, they read practically nothing [...].

This conductor's working aim for his choir is to instruct the singers in music. To do so, the most appropriate way to go about this is for him to always select the repertoire, which will form part of cultured music. The children by themselves will not have access to the genre and it will always be taught from his point of view. This positioning concurs with a *direct* conception of teaching (see chapter "[Teaching Music: Old Traditions and New Approaches](#)" and "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)"). The conductor does not consider the possibility of reaching an agreement with the singers in even a part of the repertoire, including also musical pieces which could interest them because they fit in with their musical tastes, and this could increase their intrinsic motivation. When we suggested this possibility to him, he justified his stance with the following reply which is an even better summary of his direct conception:

What is the point of singing what the children like to them? They can do this in front of the TV screen, they can sing without you. The teacher is the illustrator, the maestro, I love that word: maestro.

Cecilia, a conductor of a mixed choir also always selects the repertoire of her choir, commenting that she usually translates the texts from languages which are not familiar to most of the singers:

They need to understand everything they are doing, not only understand: to feel it, so I can address their feelings [...] *and they can see what resources the composer has used to express the words that are sung.*

If we recall what characterises the *interpretative* teaching style, we can say that this conductor displays it. Her translation of the compositions is at the service of facilitating understanding and, with that, the emotional expression by her singers. However, resorting to translation could be used from a *constructive* stance, leading to the singers seeing the need to understand the text and searching for its translation individually, or in a group. This activity would enable them to get to know the piece by themselves and could increase their motivation to sing it.

Let's go on with another example. Fernando, a secondary music teacher directs an after-school choir which often performs concerts. When asking him about his goals he says:

I prefer to speak of 'choir education' rather than direction. With any new composition they learn, I take on the role of 'conductor' during the final rehearsals, when I do explain how I want them to interpret the piece, once I have gleaned their possibilities and learning ceiling.

When we work on a piece in several rehearsals, the final sound is the result of the learning the singers have achieved. The aim of our work is that they themselves create the melodic,

rhythmic and harmonic leaning of the piece as far as possible. Everything above that, rather than learning, is pure imitation. They can imitate it but no learning would take place if they have not done it consciously.

This goal speaks to us of a constructive conception of choir learning. In fact, Fernando often composes *ad hoc* pieces for the choir depending on the learning he believes is required at each given moment of development. The point is to adapt the music to the singer and not the reverse. Another common practice of conductors more centred on the singer than the music is to adapt already written pieces to the type of voices they will be working with. For example, changing the octave to certain notes or making harmonic changes between different voices. This is very obvious in teenage choirs because of the male voice changes, but it is also necessary in any other type of choir because of their different casuistry. However, there are other aspects which define the conductor's conceptions regarding learning, as we shall now see.

## 2.2 *Different Types of Conductor and Choir*

Choral direction includes most of the characteristics from *implicit theories*: direct, interpretative and constructive (Corbalán et al., 2019) which was found in studies on instrument teaching (and which is dealt with in detail in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”). The conductor's functions and roles may vary depending on their conceptions. S/he may adopt the role of *musician*, whose choir reproduces their imagined versions of the repertoire through the exercise of their indisputable authority, as occurs in the rehearsals of a professional choir before a concert (*direct* conception), or the role of artistic conductor who promotes cognitive processes with more or less reproductive purposes (*interpretative* conception), or even function as the mediator in the singers' diverse music learning acquisition (see Table 1).

We will now follow with the actual choir rehearsal setting to give examples of some of the characteristics which discriminate the styles of direction and to reflect on their educational scope in practice. The parameters or characteristics we will concentrate on are: the types of interaction taking place in the rehearsal between conductor and singers or between the singers themselves; time management of the rehearsal by the conductor, the representation modes used and the different forms of using repetition and imitation.

**Table 1** Profiles of the choir conductor associated with their implicit conceptions on learning

Choir conductor profiles	Examples given by conductors
Traditional (Direct)	<i>“My main aim is the sound I wish to achieve and for this I use songs and voice”</i> <i>“A good conductor has to analyse the black spots of the score, study the solutions and bring them, already prepared, to rehearsals”</i>
Centred on reading (direct-interpretative)	<i>“The conductor of an orchestra or a choir has to make the musician work; it is not a question of the maestro doing everything... the choir members have to be responsible for their own intonation and sound ... your function is to work psychologically with them so that they achieve this and of course, to be absolutely meticulous about intonation”</i>
Centred on learning and representation (Constructive)	<i>“The conductor is just another member of the group; their role is to coordinate the musicians”</i>

### 3 Choir Rehearsal Focused on the Singers

#### 3.1 From Monologue to Dialogic Interaction

The type of interaction promoted in a group is firstly closely linked to the conductor's conception of authority and on the type of leadership preferred. Roberto, our teacher and conductor of the teenage choir in a specialized music centre, has this to say on the subject:

The primary objective of a choir is to learn to be together. To achieve this I have to gain their confidence. There has to be complicity. Acting like a lecturer never works. But.. they either all have to be tremendously scared of the conductor or totally in love with him...

Fernando, the secondary education music teacher and choir conductor says:

The conductor is the choir educator; their job is for the singers to come out of the rehearsal being able to say specific things they have learned each day. To do this the conductor is constantly asking them things so that they use their powers of deduction themselves...

Roberto's statement at the beginning could be indicative of a collaborative goal of learning but his own explanation about *“learning to be together”* suggests another meaning which could be understood as *“learning to obey (together) the conductor either through fear or through blind love”*. This example describes a common relationship between music teachers and students or between conductors and groups of musicians and is consistent with a direct, explicit conception. However, Fernando understands his work from a point of view centred on the singer, using the interaction as a learning tool. When we recorded and analysed Roberto's and Fernando's rehearsals with their respective choirs we were able to confirm that these declarations were consistent with their practices, analysed in accordance with the system of

analysis presented in chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices”.

As Pozo points out in chapter “The Psychology of Learning Music”, a trait which identifies musical teaching centred on the student (see also López-Íñiguez & Pozo, 2016) consists in converting teaching monologue into dialogue in rehearsals to help the singers construct their own learning. Dialogues in rehearsals build up different contents from the musical composition (procedural and attitudinal) and these correspond to what in chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” we have called *IRF interaction cycles* (*intervention-response-feedback*). (Chi et al., 2001; Wells, 1999), where the feedback globally corresponds to further questions and different types of help (*external or internal, cold or warm*) offered by the conductor or the teacher (from Sixte & Sánchez, 2012) in other non musical contexts.

Cecilia, our mixed choir conductor now provides us with an example of *warm help*, offering direct support to the singers through dialogue, sometimes suggesting the answer, which would correspond in terms of conceptions to a *direct* or *interpretative* teaching style:

- conductor (D): *These two phrases, are they the same, do they look the same or different?*
- Choir (CC): *they look the same*
- D: *they look the same but ...*
- CC: *they are not the same [...]*
- D: *what happens when you come in the second time?*
- S (Singer): *they have different lyrics.*
- S: *they do the same thing as at the beginning.*
- D: *but...?*
- S: *it is not the same.*
- S: *they are not the same notes.*
- D: *but what is it that is not the same?*
- D: *come on, I am staring at you, that means I am giving you the answer. Instead of fa, what do we have?*
- CC: *Do.*
- D: *That's it!*

Something different happens in a dialogic type of interaction, centred on encouraging processes in the singer, such as the *supervision* of their own learning and their *self-regulation*. Let's look at the following example:

- conductor (D): *Which of these two melodic cells do you think is the most difficult to sing?*
- Coro (CC): *the second! / The third!* (Different suggestions from different singers).
- D: *OK; why?*
- Singer 8 (S8): *well because in the third... you have to maintain the same tone both times and... we don't do that.*

- D: *Ah! So maintaining the same note twice is difficult ...*  
 S8: *After these two times, when another note comes along, yes.*  
 D: *Who agrees with this?*  
 CC: (Most singers raise their hands)  
 D: *So if you were the teacher, what would you go over the most?*  
 CC: *the third!*

[They immediately go over the melodic pattern chosen, imitating a sequence of ad hoc vocalisations proposed by the conductor, aimed at audibly consolidating these more “difficult” interval patterns at different pitches.]

Here the choir gives feedback to the conductor through their own supervision and self-regulation. Furthermore, interaction takes place in the rehearsal from the individual and collective emotions the music itself generates in the performers. The conductor, who is attentive to these emotional expressions, is able to help the singers to use the technical resources of their voices related to resonance and voice projection and impostation at the service of this emotional expression, which will consequently lead to more prolonged and meaningful learning.

Lastly, we would highlight that the rehearsal is essentially a cooperative space where the resulting sound will always depend on the whole. For details on cooperation in musical groups we would recommend the readers turn to chapter “[From Individual Learning to Cooperative Learning](#)”.

### ***3.2 Rehearsal Time Management***

Choirs usually rehearse for limited time periods, ranging from two hours a week to up to four or more—depending on the objectives, repertoires and level of the singers. The best use of this time is one of the conductor’s major concerns and is related to rehearsal planning. But: how is that time managed? Is there a link between that management, conductors’ conceptions and their practice style?

Without a doubt, the first conditioning factor of time management by the conductor concerns their proposed goals for the choir. A conductor whose objectives centre on “*getting certain pieces ready for a concert taking place at an established date*” will organise the time whilst searching for outcomes to match the proposed terms and levels of sound perfection. Sergio, conductor of a choir and orchestra, explains what he understands by time management:

It is vital to go to the rehearsal with a script, so as not to repeat just for the sake of it. Optimizing time is essential for a conductor. You have to get straight to the point. The singers or the instrumentalists want the conductor to always be ahead of them, so that they anticipate difficulties and know exactly what has to be done, when and how.

This type of management may be useful for the conductor-musician who works with a professional choir and sets up their imagined version, or it could be an example of direction with a direct or interpretative profile. However, even from this direct or

interpretative perspective, planning according to foreseen difficulties in the musical score is essential but cannot be a closed route because the “human instrument” at which we are directed is, fortunately, not entirely predictable. Unforeseeable difficulties may arise, unexpected vocal problems or the reverse, a positive advance in a passage where greater difficulties were envisaged.

However, in a practice centred not on outcomes but on the musical learning of its singers, the goals are more in tune with the processes the conductor wishes to promote than in setting up certain pieces in time for a concert date. The planning in this case follows a different criteria. Here we will be interested in promoting processes such as *attention management*, *epistemic repetition*, *intrinsic motivation* or progressive *self-regulation* of the singers.

This could affect the proposed repertoire, which should be flexible. It helps that the conductor has a plan B or even C, essential when working with non-professional choirs, where it is possible to change pieces that were to be played at the concert, if necessary. Planning of these characteristics means optimising the time so that concert outcomes match the learning goals and not the reverse.

Let’s see how Fernando assigns a specific time to a supervision activity which the singers themselves are given, which also demonstrates a constructive practice:

D: “*You have three minutes to discuss in groups what you have to change so that this phrase is sung better; what should you do or stop doing? Something highly specific, get on with it!*”!

(Three minutes later...)

DIR: *Right, time’s up! Listen please, now the solutions are coming and this is always what is the most pleasing: when someone is capable of doing something again that they did not know how to do before* (points at the spokesperson of the first group)...*Group one! [...]*”

Another aspect related to time management and in general, to practices encouraging more complex forms of learning, is the type and quantity of musical representation modes used in the rehearsal, as we shall see in the following section.

### ***3.3 Representation of the Music: Not Just Reading Musical Scores***

As explained in chapters “[The Psychology of Learning Music](#)” and “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, decoding a score is not the same as learning music. This also occurs in vocal music. The use of different forms of representation in addition to the score, helps with understanding the symbolic significance of the piece (Mathers, 2009; Maxwell, 2002; Nápoles, 2012) as different aspects of voice interpretation.

We would remind the reader of an important preliminary aspect. In the case of instrumental music, the symbols of the score become an external sound to the instrumentalist when they are coordinating a series of actions whilst reading (the

correct positioning of the hands, fingers or mouth, if this entails wind instruments, etc.). Mediation through the body is also necessary for the singer as a technique, when several actions and coordinated proprioception (breathing, hearing, emission and articulation, and voice resonance) intervene, but in this case, the resulting sound is internal (from the actual voice) and the body is the instrument. As a result, the sonorous control of the voice itself is less predictable than that of an instrument.

This is why the internal and external forms of representation are highly useful in learning aspects such as intonation, dynamics, phrasing or sound expression. Different bodily, or facial gestures, or those relating to breathing become essential in learning singing and the proprioception of singing.

However, the way in which the different representations are promoted in the rehearsal correspond to the different approaches, depending on the more traditional or more complex learning conceptions of the conductors. Let us look at some examples.

Sergio, our already quoted conductor of choir and orchestra, would therefore defend the use of suggesting images to the singers to achieve an expressive sonorous outcome:

Instead of describing where to use the voice and how to breathe I say to them: ‘I want to hear the waves softly breaking on the sand’ to describe a whispered sound that I want to achieve. So my aim is to introduce into their minds a much stronger image than any technical explanation could achieve.

To achieve the sound this conductor is imagining, he suggests a sonorous representation of the desired expressive quality through a single image which he wishes to “*introduce into their minds*” (the singers) and they therefore do not have the opportunity to create their own images which would no doubt have been more meaningful as a result. Let us look at another example where Cecilia explains the resources she uses to work on the phrasing regarding breathing.

So that they understand the breath they need to sing a certain phrase, I play it on the piano and ask the choir to exhale the sound “s” while I am doing so. Once breathing is controlled for the duration of that phrase we can go on to sing it.

Lastly, another conductor of a mixed choir, Pablo, works on intonation of a descending melodic passage in this way:

[the basses sing the first phrase which has a descending order]. The conductor asks:

D: *What did it sound like?*

Choir: *It descended.*

D: *Everyone look for an image... do something with your body that helps you not to stall (descend).*

[One singer tightens an imaginary cord with their hands whilst singing the phrase. Another raises their right arm softly. The directly only motions the beginning and end of the phrase.]

D: [looking at several singers]: *What about now? What did it sound like?*

C: *Much better!...*

These two last examples of representation may be associated with different technical-vocal learning conceptions in the rehearsal (see chapters “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” and “Reading Music: The Use of Scores in Music Learning and Teaching”). In the first, the use of breathing is suggested by the conductor as a strategy helping the singers to self-regulate their breathing so we can say this is a resource associated with interpretative conceptions of vocal education. In the second, the conductor proposes that the singers individually seek the image they find most useful for sustaining the intonation of the set phrase. This leads to gestures such as “tightening a cord” or “raising an arm”, which act as representations of the action “sustaining the intonation but with descending melody”, not letting muscle tone lower and taking the sound to the highest bone cavities in the face.

These resources let each singer control their own strategy and also share their images with other singers, who in some cases adopt them, and this is the fruit of cooperative learning (see chapter “Learning Music by Composing: Redescribing Expressive Goals on Writing Them”), which would be consistent with a constructive viewpoint.

One aspect directly linked with the symbolic decoding of conventional musical scores (see chapter “Reading Music: The Use of Scores in Music Learning and Teaching”), is the fact that in amateur choirs some of the members are frequently not expert readers of music. Therefore, the conductors may help them with different external representations to support their learning of a piece. They frequently use recordings (of piano, the conductor’s voice or certain types of software) as sound representations of the written melodies for each voice. These external representations lead to other internal ones such as the creation of auditory and proprioceptive patterns.

With the regular use of technologies, one of the currently most used sound representations by singers are the versions of their repertoire they find on the internet, that they sometimes used to memorize their voice apart from listening to them. Naturally these versions, which are numerous, have a different interpretation quality. Several conductors strongly advise against the choir using this resource. However, this is a direct and impractical approach, since it is useless to impede the curiosity and anxiousness of the singers to find out what a new piece they are going to sing sounds like. Another possible approach by the conductor is to look at some of these versions with them and infer quality criteria, occasionally using some of them to support learning.

Help from other external visual representations, which are not the conventional score, have demonstrated their efficacy in the context of singing, as shown by several studies with lyrical singers (Liao & Davidson, 2007). The conductor Alfonso Elorriaga gives his teenager singers a new composition (composed by him), which serves as an unconventional visual representation and a dialogic interaction:

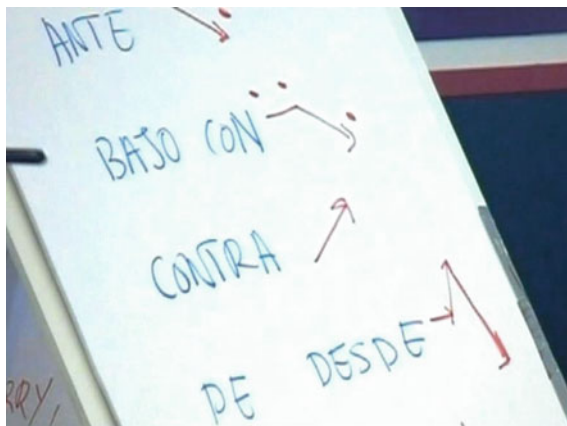
D: *So, what do you think this is?*

CC: *“Prepositions”.*

D: *OK, so... I am going to ask you some questions: what do you think these lines are, these little arrows in red, that I have put next to the words?*



**Fig. 1** Graphic representation of the melodic profile of the first phase of the piece “Prepositions” (with permission from Alfonso Elorriaga)



- C1: *I think they are singing instructions, aren't they?*  
 D: *You think they are singing instructions. Who agrees with what Fran has said?*  
 CC: *I do!* (seven children raise their hands)  
 D: *Who has a different idea?*  
 [...].

In this constructive dialogue it is the singers who progressively give significance to the symbols, before listening to the piece for the first time without having any previous information about it (Fig. 1). Effective representations will aid comprehension of the music they are going to play and subsequent learning.

### ***3.4 Should We Imitate/Model Singers or Develop Musical Language and Comprehension? Different Ways of Repeating and Imitating***

When learning vocals, as when learning an instrument, and with any motor.

skill, repetition is a necessary and unavoidable practice. However, several studies (Cantwell & Millard, 1994; Hultberg, 2007; Rostvall & West, 2003) say that the repetitive practice of instruments leads many students to abandon class because their teacher focuses too much on technique and not on communicative and expressive aspects. In the choral context, repetition or revision may be merely reproductive or may be associated with complex processes such as *auditory representation* and the *recognition of patterns*. One example of this last modality we also find in the conductor of our previous example (see Fig. 1). After the singers have inferred the melodic design of the phrase with help from arrows on the board, the conductor begins an activity of imitation, playing each of the melodic designs on a xylophone in an imitation game for the singers to find each preposition according to its design. Quickly, he plays and repeats these prepositions in random order on the xylophone

and the singers repeat them. When a repetition is incorrect the conductor uses one of these three types of response:

- a) Repeat the melody of the preposition on the xylophone requesting a new imitation.
- b) Repeat the melody of the preposition from a previous fragment that makes it more significant.
- c) Ignore the error and continue with the next preposition.

Here we see how repetition is controlled, and associated with other strategies which make it more significant than a simple repetition without reflection. On the one hand we find a form of *supervision* which keeps the singers focused, helping their *self-regulation and self-assessment* (these singers appreciate whether the melodic patterns are right or not; the conductor responds in keeping with the procedures, ad hoc without assessing that correction), and which also constitutes a constructive procedure.

Here is another example where repetition is simply associated with promoting *intrinsic motivation* of the singers, as occurred at this end of the gospel rehearsal *Let me fly*, by Cecilia's choir:

D: *Very good. One, two, first voice! (they sing the complete piece). Isn't it pretty?*

CC: *Yes!*

D: *so.... again!!*

CC (they laugh and get ready to sing)

D: *Again! three and ...*

(CC sing the complete piece)

Something similar occurs with the practice of *imitation* or *modelling*, so well used in the choral context. In addition to support from musical score reading, the singers learn through imitation vocal examples given by the conductor, recordings, or the piano. This imitation may also be more or less epistemic or, what is the same, more or less useful because it is not associated with complex learning processes. Everyone who has sung in a choir will easily recall the image of a conductor who sings at the same time as gesticulating and demonstrating facial expressions to be adopted by the singers when intoning the piece, using an immediate facial postural technique. This illustrates *direct* practice because the singer only simultaneously imitates without knowing the reason why. A more epistemic alternative would be for the singers to intone the corresponding phrase, being asked to assess themselves whilst listening, and after this *supervision*, that they themselves suggest different exercises (that they already know and now apply or that they can suggest on their own accord) to resolve problems of intonation, mixing of sounds, etc. that they have identified. This is all related to the classical psychology differentiation between *exercises* (closed activity) and *problems* (open activities), mentioned in chapter [The Psychology of Learning Music](#) and which may also be further investigated in Pérez Echeverría (2004).

To sum up, when repetition and imitation are associated with *supervision* of the activity or to instructive *evaluations* based on self-observation and listening with the conductor and singers, they become a highly valued resource for choral learning.

## 4 Conclusions. Towards a Model of Good Practices in Choir Rehearsal

Learning choir music, save in academic contexts where it occupies a brief interlude in the curriculum, has not been of so much interest for musical education psychology as instrumental interpretation learning. The choir is usually identified as the instrument a musician, the conductor, “plays”. As a result, the professional development and learning of choir conductors is systematised in many different ways. Traditionally, this learning is aimed at acquiring tools to gain control over the “choral instrument” and make it produce sound, looking for the best version the conductor (expert musician) can imagine.

However, in the words of Miguel Ángel García Cañamero, conductor of the Spanish National Choir:

*Things do not work the way they used to in the 1980's or 1990's [...] the conductor is still the key piece, but above all s/he is the person who has to take control, and is not an end in itself as an artist. It is not the art restorer who restores Velázquez's "Las Meninas" who is important, it is "Las Meninas" that are.*

Elena González Correcher (2018): *Conversation with Miguel Ángel García Cañamero*, in coralea.com,

And who is behind *Las Meninas*? ... Unfortunately the restorers cannot act with Velázquez's own hand on the canvas but the choir conductor has before them the living instrument to make the musical composition ring with sound. At this point it is useful to mention the conductor's conceptions about music teaching- learning.

As it is inevitable that the conductor is a performer (but also teacher) it is unquestionable that s/he will know how to induce emotion, concentration, motivation, metacognition, etc. in the singers to make them *produce a sound* that s/he considers a good interpretation. In other words, amongst the most admired conductors are those who represent these direct and interpretative conceptions of learning. The words of a conductor, who trains conductors, may serve as an example:

A rehearsal [of an orchestra or choir] cannot be routine. We have to inspire emotion, a conquering spirit. We have to use our psychology to provoke emotions in the musician to make them interesting. For the conductor the rehearsal itself should be a performance, a work of art in itself, which is part of the concert.

Francisco Navarro Lara (2014): *7 Useful advice for a perfect rehearsal*

There are few conductors who offer tools to the singers so that they themselves can find the emotion implicit in the music, which would doubtlessly impact their cognition in a lasting manner. This is described by García Cañamero (González Correcher, 2018) when he relates a past experience he had as a student of direction by Simon Carrington, who is a singer and conductor of a British choir and founding member of the King Singers:

At this moment in time I could not tell you how he directed [Carrington], I cannot remember his gestures, but I do remember the power he had to change things [...] When we began the concert with Byrd's mass, something collective blossomed in the choir [...] and when we

got to the Agnus Dei I looked at Carrington and realized he was crying. I only saw one thing in his face: “Thank you”.

As several expert conductors explain (González Correcher, 2018; Gustems & Elgströms, 2008), the rehearsal is where all the musical work is controlled. The conductor is a prolongation of the choir and their work is to coordinate the musicians. It is in rehearsals, rather than in concerts, where the actual strategies of the constructive focus acquire meaning, particularly certain aspects like those we briefly analysed in this chapter: dialogic interaction instead of the teaching monologue, self-regulation of the singers and continuous feedback that accompanies this; time management associated with the stimulation of learning and concentration; combined use of different modes of representation of music and the epistemic repetition and imitation. No doubt further aspects could be worked on for focusing on the singer but these serve as a demonstration for reflection.

To change practices, then, one has to begin by re-describing the conceptions of the most traditional conductors. It is essential to stimulate this reflection in choir conductor professional development courses. Current education usually focuses on aspects such as vocal technique work; direction control and the transmission of technical skills to achieve interpretations from the singers which are in tune and expressive. These skills are usually communicated by direct imitation and explicit cognitive processes are not usually taken into consideration. There are some exceptions with an interpretative function, as we have seen previously in some examples.

At present the traditional style of directing carries great weight and a large number of singers (Corbalán, 2017) prefer to be led by conductors who offer single, clever solutions and who stir up emotions in contexts where the singer continues to be just a reproducer. This means that learning continues to be centred on the object: the music and the maestro, not on the singer. We therefore need to train conductors in constructive strategies, relating to the rehearsal issues we have dealt with in this chapter.

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# Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures



Amalia Casas-Mas 

## 1 Specificity of Learning Contexts

Changes during this century have affected the multiplicity of media, travel, and interaction with different cultures worldwide. This in turn has led to globalization, which for music has given rise to a predominance of collective thinking about popular music with unifying characteristics and patterns that appear to be detrimental to local types of music and variegated styles. It also seems that the culture of sound has become subjugated to vision, so much so that it depends on the acceptance by the latter. Leaving aside value judgments in this regard, our interest is to analyze the impact it has had on social and educational areas so that modernized action plans can be proposed.

Outside school, music is learned through digital formats, of video and *apps* (see chapter “[Learning Music Through ICT](#)”), in an unstoppable phenomenon that is leading to huge changes in cognition, in the use of the body and in the phenomenon of community around which musical learning in the last century was acquired. However, ethnomusicologists like Vallejo (2008, 2017) have described forms of atavic knowledge transmission which are still preserved by some population groups. What characteristics appear to be common to those social organizational systems and interactions prior to our technologies? Music is usually a social pivot and public service which anyone can freely use and it fulfils a crucial function for social cohesion.

It could be suggested that this still happens in the Western panorama, but there are highly significant differences relating to the forms of transmission (such as the use of different representational media using the body and the production of vocal and instrumental sound), that differ from the complement or “aids” of notation or musical scores (see chapter “[Reading Music: The Use of Scores in Music Learning](#)”).

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and Teaching”). The systems in which oral transmission of musical knowledge persists today have a musical abundance in their ordinariness linked to many activities. Learning sequences are usually self-regulated by the learners prior to receiving specific instruction and great emphasis is placed on communicative and expressive value receiving feedback from the community (Casas-Mas, 2018; Casas-Mas, Pozo & Scheuer, 2015b).

The analysis of several Spanish Roma minority community families and also that of other communities with an oral transmission of music within the family contexts they continue transmitting, as previously described, have allowed us to outline these educational aspects. We will now describe the differences framing the parameters of an informal model as a musical learning culture. As we have commented upon in previous chapters, the objectives, planning and structure of educational activity define the teaching-learning model. However, the fact that they are first drafted and intentional also secures their repercussions on learning. For example, the places and participants forming part of the action change, as does the link which is established with their realities and everyday lives and this affects the learner’s motivation (Table 1).

**Table 1** Differences between the formal and informal extremes of musical education contexts (Casas-Mas, 2016); adapted from Folkestad (2006) and Trilla (1997). CC-BY 4.0

	Formal	Informal
Planning	Activity sequenced a priori	Activity not sequenced a priori
Goal	Activity focuses on how to work/play/compose	Activity focuses on ways of working/playing/composing
Participants	Managed by the teacher. Generally one person leads the activity (not necessarily the teacher in the formal sense, but someone directs and organises the learning activity, e.g., one of the musicians in the group). This position does need not be fixed, although it normally is	The process is based on interaction among all participants in the activity
Motivation	There may be conflict at times and differences between teacher and learner motivations	Described as voluntary and self-regulated learning
Location	Within institutions	Outside institutions
Learning style (information source)	Learn to play from the musical score	Learn to play by ear and imitation
Activity leadership (who takes the decisions)	Didactic teaching from the teacher	Open and self-regulated learning from the learner
Intentionality	High	Low

## 2 What Do the Different Forms of Learning Provide?

Comparisons between formal and informal educational contexts aim at nothing other than letting us know of or specifying elements which we take for granted in one or the other and which may substantially change the phenomenon of teaching-learning. In the oral tradition learning occurs through imitation and modelling, or reproductive learning techniques that require associative or growth processes (Pozo, 2014), but above all, in those where the community is of great importance. Meanwhile “notation” cultures are not exempt from reproduction, as we have been able to read in previous chapters, but through this tool they may tend more towards individualism. However, both the oral and notation tradition may unfold into the reproduction-construction polarity and serve as different models of learning depending on different objectives.

In this chapter we aim to describe specific cases within the three musical learning cultures with some of the most common difficulties and limitations we have found in each one. We will then suggest an alternative which serves either to increase learning in a self-regulated manner or guide it and facilitate it in the students during teaching practice. The examples used are cases selected from the flamenco musical learning culture (in oral tradition communities) and from the classical musical learning culture (Central European Western tradition) as a contrast or polarity of the informal and formal areas (with use of musical scores) respectively.

As an intermediate space between these two cultures we have selected cases from the jazz musical learning culture, because it has things in common with the two previous areas and is in-between formal and informal. We thus define it as non-formal. Non-formal education is defined by not complying with some of the formal learning characteristics (Trilla Bernet et al., 1998). Generally it is an educational structure which does not offer accreditation although its educational intentionality may be high and a teaching-learning process planned. It may occur both within a school or institutional environment. Jazz has increasingly been incorporated into musical educational institutions but *jam sessions*, as learning sessions are defined with characteristics which are closer to the oral tradition (Casas-Mas, Montero & Pozo, 2015a). Furthermore, chord chart type notation or the melodic-rhythmic-harmonic framework it improvises on position it differently in time to the musical production of formal and informal cultures.

Musical production covers all processes from the creation of the musical idea to the product to be performed or, if applicable, crystallisation into some kind of recording support, although this is not dealt with in this chapter. In the three learning cultures discussed one production system is given priority over another. The classical and flamenco cultures are opposite one another in the formal-informal continuum, but their modes of production are similar because the learner’s piece is closed, either due to the score or to the teacher (see chapter “[Teaching Music: Old Traditions and New Approaches](#)”). Therefore, the termination of instruction is approached at different levels of reproduction of the piece. In contrast, in jazz the mode of production is more open and terminates with the person or group who improvises (Gioia, 2011;



Martínez & Pérez, 2008; Murphy, 1994), which in our case are the learners. In this case reproduction of the subject matter is not as high a priority as the use of elements which are characteristic of the language or style.

Once we have outlined the terminology and focal points to be used we will put forward certain learning situations and propose different ways of focusing on them. These will be taken from practical examples and real discourses from our research studies into the learning cultures we have presented. Firstly, we shall address problems with the sources from which they extract knowledge and the mediating tools that shape the learning conditions. Secondly, we shall put forward several conflictive situations in the use of certain psychological processes of learning which are both cognitive and orctic (or emotional; see chapter “[The Psychology of Learning Music](#)”). Thirdly, different types of outcomes will be analysed and we shall see how each learning culture leads to different products through the psychological conditions and processes activated during the different learning procedures.

### 3 Learning Conditions

As shown in chapter “[The Psychology of Learning Music](#)”, the teacher is responsible for generating the *conditions* that help the student to feel, be attentive, be motivated, remember or learn music. In the cases given below we will firstly see the conditions that learners experience from the moment they extract information to learn by. These different ways of confronting the initial moment of learning may inspire teachers with qualitative nuances they could promote in their classroom. We will now provide examples of the learning processes these conditions stimulate and lastly the different results pursued or those achieved by different routes in accordance with the three learning cultures we described above.

#### 3.1 *Case 1: Where Do We Get the Information for Learning and What Do We Do with It?*

Our first case is a guitarist, Irene, who has just been accepted into the Higher Conservatory of Music in the classical guitar specialty. She is really excited at beginning this new stage and is very proud to have been selected, although she is also a bit fearful because she does not know anything about her new teacher and the teacher seems to be demanding things from her that she cannot deliver. For example, every week she asks her to have read at least a couple of new compositions and she has to express aesthetic issues they both possess and differences between them and she has to agree on these with other colleagues.

Her previous professional development teacher had helped her a lot to deal with very difficult pieces, teaching her very good technique, fingering, posture, working for long periods, but now this does not seem to help her at all.

When she was little she loved music and spent all day singing. Her family have always told her she has a special talent which distinguishes her from her siblings. This is why she first took music classes in the local school and then in the professional conservatory. Here she got to know her teacher who has been like a father to her for the last six years. He meticulously trained her, giving her very clear and sequential instructions for each composition. However, she is not able to do what is now required of the new teacher. She cannot quickly read two pieces weekly and also compare aesthetic issues at the same time.

### ***3.2 What Can We Do with the Information When Beginning a Piece and What Makes the Activity Difficult?***

#### **From the Classical Learning Culture**

A common way of starting for many learners is to quickly read the new piece of music. Here we already find differences between learners. This brief glance-over should serve to get an overall impression of the composition, its aesthetics, communicative intent, movement and analysis related to the macrostructure and general language used (main harmonic functions, type of language, etc.). However, often this first reading becomes a “micro” type (note for note) reading, full of stumbling, stopping, and repetitions, particularly when the writing is thick with textures and annotations. In chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)” (on reading music) we saw how people with less experience (the novices) tended to make first readings as described in both musical and non musical domains (Marín et al., 2012; Vaughan, 2002). This appears to be a general phenomenon linked to expertise.

However, there is also another variable that comes into question here, the type of learning conception and we see that classical tradition learners also carry out molecular or “micro” approximations compared with those who are equally proficient but who have more constructive conceptions. The source of knowledge in the classical learning context is mainly the musical score and frequently initial approaches are usually more technical than strategic (Casas-Mas et al., 2015a; Marín et al., 2013). In other words, what happens to our protagonist, Irene, is that her first readings have

been more centred on decoding levels (notational and syntactical from the musical score), than in seeing things more globally and comparatively of macrostructure on an analytical level, or of emotional or aesthetic intentions on a referential level. The latter stems from the contrast between versions and reflection on her own intention or taste, which is what her new teacher is proposing.

Therefore, based on learner observation with more constructive formats of learning we would propose a rapid first glance reading of the whole piece to get a general idea, without stopping to look at details:

I try to read it like this, quickly, from top to bottom, to see what it sounds like, without fingering, just to see what the sound would be like [...] a general view of the whole piece together and see how the movements are structured to know what it is I am going to play [...] and then focus on the first movement, I would make a short formal analysis of the structure, elements which turn up again and the main keys and changes of texture. (Constructive learner of classical music, in Casas-Mas, 2013<sup>1</sup>)

Also, instead of considering the musical score as an unquestionable authority, it could be conceived as a guide to follow and on which learning is to be asked about and established from initial stages to advanced levels (see chapters “[Reading Music: The Use of Scores in Music Learning and Teaching](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”; see also Casas & Pozo, 2008; López-Íñiguez & Pozo, 2014; Welch et al., 2008). Reading would be considered epistemically, allowing for modification of elements upon which criteria were to be made. The focus of attention in this initial session could precisely be the expressive process or what I wish to communicate: “*A specific example is in the introduction, how I think the regulators should be enhanced when it is played. The musical score says nothing about this, I have added them*” (Constructive classical music learner).

## From the Jazz Learning Culture

Another of the initial actions which some learners do is to listen to a version of what they will be working on. However, in the classical context they usually listen to a version which also tends to be highly appreciated and even idealized and very few systematic comparisons are made between versions. From the jazz learning context reference is made to the need to learn a great deal of pieces for social reasons, and so this is closer to a vision with many different perspectives surrounding each piece worked upon (Casas-Mas et al., 2015a, 2015b).

[We do] twenty [pieces] per year and they are the ones everyone knows best, everyone has to have a common repertoire, because then you get together with someone, and what shall we play and I know this one and I know that one and I don't know any... and [then you get ] learning group management problems. (Traditional jazz learner)

It is also true that in classical music (in the interpretation specialty) not everyone shares the learning in these initial stages, since it is more of an individual process.

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<sup>1</sup> All the examples in this chapter are taken, with permission, from Casas-Mas (2013).

Jazz is conceived as a collective process even though the others are not present, and therefore one of the objectives to bear in mind is the musical texture, the different voices and functions they will have in each section. These textures are not normally explicitly in their musical score because what they often use is the chord chart, or melodic-harmonic guide, a framework upon which to build their version or arrangement, but this already means decisions will be taken by the person who will perform this piece.

The tools players use to support this objective through individual learning stand out here, and may be different types of audio sequencing software and apps, so that they let the learner complete the other voices that would be present in a collective learning situation. Also, they help with sequence and micro-sequencing rehearsals which may programme in a loop format until with repetitive practice they are interiorized. Finally, they use transcription a lot or write “solos” and themes from listening. There is a great difference between bringing out a version as the ideal to be reproduced to comparing versions, which implies that it is not only a support tool for the memory but also becomes a process of comprehension and decision-making.

I have made a comparative melodic study with different versions of singers, different instrumentalists, so I can do my own interpretation. (Constructive learner of jazz)

### **From the Flamenco Learning Culture**

Repetitive practices are highly characteristic in popular music formats, particularly if they are in a context of oral knowledge transmission where existing in the memory depends on the use and construction the body makes. In the ethnic Roma communities we had the opportunity to systematically observe (Casas-Mas, 2013, 2018), musical learning is essentially made collectively from the beginning, in the family and intergenerational environment. The practice, as Green (2002) shows for describing informal learning, is usually more sporadic or subject to what the social context propitiates (a celebration, a more or less spontaneous event, etc.) and in these cases it may become highly intense in duration. This idea contrasts greatly with the dynamics of regular and constant practice the learners are educated in, particularly in the classical area, although it is a crucial idea in any formal learning.

The next relevant element is that since no use is made of notation in these communities the flamenco learners often use other types of representations of sound and movement with the use of technology and software, as in other popular music fields (Casas-Mas, 2013; Cox & Warner, 2017). They use their mobiles to record a video of the teacher and other people to then reproduce it and copy it. The selection of videos on both YouTube and recordings of their environment focuses on listening to music in their own style, coinciding with listening to more “idealized” versions (major performers or relevant figures in the community) which we explained in the classical learning. They express a priority of making music just for fun with other people rather than playing alone, in contrast to the first learning culture we described. This means that the social and group context lends the learning great communicative significance:

Practise the beat, yes I say that to any girl [her sisters] come and get clapping into the beat, or to my cousins who are usually more often with me, they do not tire because maybe they like it as well. (Constructive flamenco learner)

A third question is that in the informal areas with oral transmission emphasis is on memorisation and improvising although there are differences in the formats of education of improvising to discourse (in jazz) and in micro-compositions or micro-improvisations (in flamenco) that are inserted into other previous compositions. One example is the case of a traditional type of flamenco learner who incorporated a micro improvisation on a harmonic sequence of Andalusian cadence with secondary dominants that is not related to what was reproduced in the video of his teacher, but could be assembled with the previous material due to the proper key and rhythm it was performed in. The learner identifies this fact as a non intentional element.

However, we can see other (not very prodigious) cases where the learner also has a constructive-communicative type focus where they give us clues of what they do with this reproduction of the material extracted from a video. This is what we have called expressive processing (see chapters “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” and “Instrument Mastery Through Expression: The Learning of Instrumental Technique”) referring to those procedural contents of an interpretive-intuitive nature that help us to embellish and give meaning to the musical discourse. This is highly related to considerations of rhythm, such as accents and beginnings or endings in a specific beat:

[...] Taking in air. From listening to the teacher doing it, I also did it, because what you need to emphasize well are the notes, so I can do this (flat) and I can do this (with air), so putting in rhythm, air and accents. Notice where it goes faster, where the rhythm is held, so that it comes out as if it were dancing. (Constructive flamenco learner)

We also find it highly linked with the holistic processing, which is the one most characteristic of this type of learner. In other words, with interpretative-intuitive type contents that allude to holistic comprehensions or references to the composer, the style and the global nature of the piece (Casas-Mas, 2013). We have already given examples of this, together with the expressive processing, mentions of *air*, the concept and finality of the piece being highly related to the representation of the movement as dance. These types of processing are made easier when the music is played by “ear” because this allows you to establish holistic type communicative nuances together with the more global approaches we saw during the three cultures which had been greatly useful to our guitarist of the first case.

“You perform a *falseta*<sup>2</sup> of Tomatito and it won’t sound the same, because what he does with all of his notes, he tries to take in air, so it’s as if he is dancing all the time”. “The concept is, as the teachers say, that it should sound more or less like you are dancing”. (Constructive flamenco learner)

For Irene, in our first case, this aesthetic-emotional construction could be highly useful if we also complemented it with the epistemic view that constructive learners

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<sup>2</sup> *Falsetas*: variations or musical phrases inherited from teachers or self-composed.

in the cultures that use musical notation express. These learners do not consider the musical score to be an unquestionable authority. For them, it is a guide they can follow and which they can use to contemplate and consider their learning. These ways of using the materials from which information to learn is extracted brings us to the need to probe into the psychological processes *during* learning (see chapter “[The Psychology of Learning Music](#)”), or into that which is not visible at first glance but which marks a huge difference in the learning.

## 4 The Learning Processes

In this section we will offer examples of the learning processes activated by the learners or which as teachers we can use to stimulate them to activate. The processes are the less visible part because they are based on the learner’s cognition and emotion, together with that of the teacher (if there is one) but they have a huge impact on what we wish to achieve. We are therefore faced with the *quid* of the question. As in the other chapters we have the opportunity to see examples of basic psychological processes such as concentration, memory, previous knowledge, etc. In this case we will focus on those where we observed the most difference between the learning cultures, which are the transference of knowledge and emotion (Casas-Mas, 2013).

### 4.1 Case 2: What Moves Us to Learn?

The second case is a flamenco guitarist, Adam, who began to have classes with a renowned teacher 3 years ago. He has a large family because his cousins and aunts and uncles live in the same building and in others nearby. Some of them play the guitar professionally and others play it all the time, although they do not make a living from it. Also, other members of his family are very good at playing the *cajón* [flamenco box drum], singing and dancing. Ever since he was small he has felt very emotional when listening to the older members playing the guitar and although they let him have a go from time to time, when he was 9 he asked his family if he could learn with someone. In the family they spoke to one of his uncles who is a revered maestro in the community and he began to attend daily group learning sessions with him.

Since he began to play more seriously and get together with his guitar school peers every afternoon he became increasingly disconnected from secondary school. It was not that he had to sit for a long time, which was also the case with the guitar, but that what they learned there seemed light years away from what moved him and what he shared with his environment. Here, at least, when he got together with his peers they shared musical knowledge, they played falsetas, rhythms, clapped, etc. and he felt that he had something to offer the others. However, this knowledge was not only ignored in the high school where he was studying but they also forbade him to listen to music on his mobile or to take in musical instruments. He prefers to get together with his friends and make music and practice. Sometimes there are petty “needles” between them, but he does not attach much importance to this.

## ***4.2 What Can I Do to Make a Learner Motivated to Learn?***

### **From the Flamenco Learning Culture**

Early drop-out from secondary education is more common than we would like to think. The rate of early school drop-out indicates the percentage of the population aged between 18 and 24 who have not completed the second stage of secondary education and who are not engaged in any type of learning. This rate in the community of Madrid is a mean of 14.9%, which is higher than the European mean of 10.6%, and is much higher in boys (17.8%) than girls (11.0%) (Ministerio de Educación y Formación Profesional, 2019). In some communities of population groups and neighbourhoods students gradually distance themselves from the academic system of formal education, leaning towards other educational structures that are non formal or are even informal contexts at early ages.

In the flamenco learning culture, in these instrumental learning stages, up until very recently there was no formal academic accreditation. The incorporation of instrumental and vocal flamenco into conservatory studies is very incipient in Spain. The Act on the Regulation of the General Education System (LOGSE, 1990) was the first to mention, in Royal Decree 617/1995 of 21<sup>st</sup> April, the flamencology and instrumental flamenco guitar specialty but it was not until the Organic Law on Education (LOE, 2006) that greater systematisation took place. This fact is reflected in the way learners coming from non formal and informal environments express a very high intrinsic motivation in what they do. They choose to learn from the mere pleasure of enjoying what they do, enjoying collectively and excelling, without expecting anything after the actual learning itself, such as accreditation. Thus, it is highly linked to positive emotions. Collectively, the similarities to what they are learning with the music from their social environment, taking decisions on what they learn and

the establishment of their individual goals in this informal atmosphere are variables which may be responsible for their intrinsic type motivation. (Pozo, 2008).

Also outstanding is the fact that they rarely express attributions, or search for the causes of mistakes or otherwise, or the detection of difficulties. In the contexts of informal learning metacognitive activation of supervision of the actual learning is infrequent. When it does occur, it is not usually explicit. We have hardly ever found an expression of negative assessment (Casas-Mas, 2013). On the contrary, positive overestimation may be present. Once in individual study, we were able to observe in the most constructive learners the use of the insertion of fragments, micro-compositions, or micro-improvisations.<sup>3</sup> For example, in the case of Adam, he creates new material from listening to the music of the major guitarists, from films etc., in the middle of reproductive fragments, with a motivational end. This in a formal learning sessions could be classed as *digression* (see chapter “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices”), and could even activate negative emotions through an oversight of the activity, or procrastination, in this case fulfilling a function of connection, transfer of learning and positive emotions which increase the intrinsic motivation and facilitate persistence in the activity.

### From the Classical Learning Culture

In contrast, in the classical learning culture we were able to observe that the students expressed extrinsic type motivation on occasions, such as learning to obtain a certain mark or not failing. In several learners we identified motivation oriented at success manifested by the need and enjoyment in listening to the melodious result of the composition as soon as possible. However, filtering or maintaining that success made them prone to boredom with the subsequent draining of intrinsic motivation. Also, this process is, on occasions, accompanied by a competitive vision with other colleagues on the results of learning (Casas-Mas et al., 2015a), concerned as to whether they are more or less advanced as others regarding the number of compositions, their length or complexity.

[...] my teacher always said to me ‘you get tired so easily’, and that’s because you play it so many times you tire of it. I have a good time when everything is ready and it sounds [...] I’m sure Miguel (classmate) did it really well, because I know he studied guitar a lot, more than me, didn’t you? (Traditional classical music learner).

This comment is not irrelevant. Quite the contrary. If we, as teachers, do not manage our students’ emotions they may get frustrated or have a sensation of not being competent, which leads them not to practice. The learners of more constructive conceptions in classical and jazz music cultures were better able to manage their emotions and negative assessments, conceiving them as learning opportunities

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<sup>3</sup> To probe into this implicit learning format (Pozo, 2014) consult chapter “From Individual Learning to Cooperative Learning” (collective learning), with the definition of minimum units of cultural transmission or *memes* (Dawkins, 2016) arising from the processes of enculturation and transfer of information of the individual in a social group.



instead of errors (Casas-Mas et al., 2015a). This takes us to the teacher who offers help to the learner to seek the causes of certain “failures” in internal issues which may be modifiable and controllable by the actual learner. In Adam’s case, what firstly needs doing is to identify the negative attributions and the attached emotions rather than avoiding or ignoring them. It is a crucial step if that learner is not used to identifying them in his environment of learning. Secondly, he would need help to search for what he could do as a learner, from attributions that were accessible to his action and which complied with learning objectives. Finally, he would be helped to structure a learning plan where Adam could define his strategies and techniques and also how to supervise his learning and how to assess if a change had taken place (regardless of the positive, or negative value judgment which would come later). To demonstrate an example about this learning regulation we propose our third and last case.

### ***4.3 Case 3: How Do We Manage the Student’s Learning?***

Our final case refers to a jazz guitarist, Diego, who is starting higher level studies that have just begun in a certain school. He is excited by the fact that after so many years they are inaugurating specialties which before were only possible with a private teacher. He had begun to study in the conservatory when he was little, but had ended up very tired and unmotivated from the exertion invested and the difference in results compared with those achieved academically in secondary school. He abandoned his music studies and focused on a computer technology degree which to date has given him great independence in the management of software and programmes. From here he has been able to take up music again from a different approach, using apps which further his self-teaching method.

Nobody in his family was a musician nor had any specific education in this regard, In fact, they were happy that he focused on his university studies although they were also a bit sad that he had stopped his music. Now that he is able to return from a different learning approach he is greatly motivated intrinsically and this has led him to prepare for the entry exam to the higher jazz level. His new teacher scares him a little since he told him he had to learn twenty pieces for the year, but he thinks this is a fantastic goal because he is the one choosing them. Diego has begun to make a highly detailed plan of the steps to be followed in each study session, where he includes technical warming up activities and harmonic analysis procedures of the pieces and scale work on

these harmonic structures. He believes he will be able to get ahead in this new phase.

#### ***4.4 What Can I Do to Help a Learner Self-Regulate***

##### **From the Jazz Learning Culture**

The choice of a piece is very highly linked to the culture of learning and the musical production modes we suggested in the introduction (Baño, 2018; Pozo, 2014). When there is an open production mode, as in the case of jazz, it coincided that this was the culture in which we found most autonomy in the learners when choosing their learning subjects. However, in the case of the flamenco culture in these communities there were many informal group learning situations in which the learners chose and practiced pieces chosen by them, which may not have coincided with those suggested by the teacher. In the classical culture case we found there were differences in the choice of pieces by the teacher in learners with more traditional approaches and those chosen by the learner if the approach was more constructive. In general, the most constructive learners are the ones who mention greater autonomy and decision-making in learning compared with the most traditional learners of those same cultures (Casas-Mas et al., 2015a).

A crucial element of differentiation between a more traditional and a more constructive learning within the jazz learning culture is that for the former, planning such as that described in the case of Diego, is usually made. In other words, a sequence of actions is established which is usually prefixed and applied invariably (Casas-Mas et al., 2014). These learners are more inclined to follow the plan than to achieve goals, and therefore do not review the direction their objectives are going in because it is the plan that is prioritised, and this limits taking decisions. Markers of this focus are verbalizations of the type “this must be”, “I have to”, “I ought to” which implies external regulation or workload. In contrast, the more constructive mode tends to identify learning objects more, fix goals more (many communicative and expressive) and increasingly assess every time their goal has been reached and therefore confirm if they have changed strategy.

In the first session I was thinking of the type of voicings [positioning of the notes in the chord] and looking and trying not to stop, stopping as little as possible. In the second session it was more playing on the metronome, doing a few continuous rounds, trying to vary a little, and this is what is most difficult, because you tend to produce more or less similar rhythms. Then, I [tried] to get out of it; anticipated, delayed, offbeat and in beats. (Constructive jazz learner)

The jazz learning culture has served as a model for learner regulation. Here there is a higher transformation of the material and it is the student who adapts this material

more to his or her circumstances and needs instead of the learner having to adapt to the musical score. Nevertheless, this we can also see from within the context of the classical constructive learner, when s/he changes finger work and expression when they want and in keeping with their aesthetic conception. Another important element is the detection of difficulties in the jazz culture and progressively decreasing also in the classical and lastly flamenco. This detection once again minimizes the concept of error as something to “avoid” and converts it into a “challenge” with oneself. However, it also makes us question the concept of complexity, as a construct with a positive value. A judgement sometimes made in art and not always related to the emotion provoked is that something is good if it is complex (Casas-Mas et al., Casas-Mas, Montero, et al., 2015; Vaughan, 2002).

## 5 Conclusions: The Outcomes of Learning

The open and closed models of production lead to different learner outcomes. Nuances can also be found in the learning cultures and what each one prioritises. In our case the importance of rhythm is essential in the cultures of popular music, jazz and flamenco (Casas-Mas et al., 2015a), even though each one has a different production model. The most mentioned tools are the metronome, the clapperboard or the rhythmic accompaniments of other people. The aim of group synchronisation was expressed as priority. In contrast, the classical learning culture prioritises tuning and note height, which we believe could be related to the notational system where the musical score is regarded as an element to be reproduced as faithfully as possible. Here there is not much room for personal construction or negotiation with other people.

Therefore, it is not just the production model but its combined use with notation and external body representations that make learning models more individualistic as a result and where each person prepares their part in the most effective way possible and everything becomes the sum of its parts, instead of a new construction. We believe written musical language requires rethinking so that it is not pigeon-holed, or at least considering the forms of noting the variety of rhythmic, tonal structures, and the fine-tuning of music based on orality or with open production processes (Casas-Mas, 2016). However, it is not just a question of objectivity of these technical parameters, but also of the communicative and social context to which each song and each musical composition is linked. Thus, notation would be used in a more epistemic manner, instead of the actual knowledge, as pragmatic, as an end in itself. This configures a sonorous identity in each learning culture (Hormigos-Ruiz, 2009), which on occasions hinders empathy in the understanding of others.

A cross-sectional outcome in the three learning cultures is a constructive approach aimed at the quality, rather than the quantity of the musical practice, just as studies with experts have found (Duke et al., 2009; Jørgensen, 2002). These learners emphasise practice where perception and expression of rhythm are important, making similes with dance and therefore the transcendence of pulse and accentuations

perceived bodily. The transferences between modality of musical processing; audition; visualisation; proprioception and different forms of representation notation (Corbalán et al., 2019) stimulate a learning where the music is embodied and shared. This is the point where musicians of very different origins find opportunities to communicate. It is the way in which we can conceive of a new EEEE mind (Pozo, 2017; Rowlands, 2010; see also chapter “Teaching Music: Old Traditions and New Approaches”) in this new century and which may guide us as teachers, but also as self-regulated and communicative learners.

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# **Teacher Training, Innovation and Research**

# Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century



Amalia Casas-Mas  and Guadalupe López-Íñiguez 

## 1 Introduction

Extensive research and policy work in recent times has advocated for a transformative approach to both initial (e.g., OECD, 2019a) and continuing professional development of teachers (e.g., Kennedy, 2005; OECD, 2019b). For instance, in their report on improving initial teacher preparation systems carried out in several countries, the OECD (2019a) acknowledged the need to equip teachers with “updated knowledge and competences [...] ensuring a comprehensive, coherent, relevant and continuously updated initial education [...] involv[ing] research-based reflections on teaching and learning [...] [with]in a continuous professional learning culture” (p. 12). To achieve this, the OECD (2019a) suggested building on good practices—an aspect related to effective mentoring understood in the same report as “not (being) yet robust enough” (ibid). Across the pages of this book, we have pointed out a similar need for modifying, expanding and improving teacher training in Western-based music education contexts.

In Chapter “[Learning and Teaching Music in the Twenty-First Century](#)” we acknowledged the performing career uncertainties of graduated instrumentalists (e.g., Bartleet et al., 2012; Bennett, 2014; López-Íñiguez & Bennett, 2020), and how a great majority of them would engage in teaching as their main profession within music, for which motivational and empowering pedagogical formation should be offered. We expanded this by critically assessing the teaching–learning issues that derive from

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the specific music education culture based on the traditional, centuries-old *conservatory model* widespread in the European context (e.g., Burwell, 2005; Ford, 2010; Sarath et al., 2014; Small, 1998; Tregear et al., 2016), but also outside of it, and how these impacted on recent educational reform demands in Europe which advocate for student-centred instructional practices (e.g., AEC, 2010; Cox, 2007; Klemenčič, 2017).

Chapter “[The Psychology of Learning Music](#)” provided insight on the teaching conditions which can help the student to progressively manage their own learning processes, while briefly introducing the idea that the learning that takes place in the music classroom relies largely on what happens elsewhere, such as, for example, during the selection of teachers in entrance examinations. Chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” focused on describing (from the framework of conceptual change of learning and teaching conceptions; e.g., Pozo, 2014) that, to change our practices, we should be aware of what we actually do as teachers and the conceptions we hold on how learning should be facilitated, contrasting that information with diverse pedagogical models and approaches. For this change to happen, Chapter “[How to Know and Analyse Conceptions on Learning and Teaching](#)” introduced methodological approaches to evaluate our conceptions on learning and teaching instrumental music—only by knowing, rethinking and restructuring our own praxis as teachers (e.g., Schön, 1987; also Martín & Cervi, 2006) can we achieve the desired change towards student-centredness promoted by leading international bodies.

The SAPEA system for analysing what happens in the instrumental music classroom (see Chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”) was an empirically-based attempt by some of this book’s authors to provide a useful window for innovation, for achieving educational change, and for the promotion of reflection through critical analysis and observations. This system, as well as the entire book, aim at fostering a *comprehensive education* (in line with Bologna’s pursuits; see ESU, 2015) that attends to what is happening at each instructional moment, knowing what to say and knowing what to do (Martín & Cervi, 2006), and always based on the psychological processes that become activated in student-centred learning (see Chapters “[The Psychology of Learning Music](#)”, “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)” and “[Student-Centred Music Education: Some Ideas to Improve Learning and Teaching](#)”). However, apart from taking into consideration those psychological processes and pedagogical models, there are other subtle nuances that can either foster or impede (and even hinder) educational change towards reformist and student-centred teaching and the teacher training behind it. We will attend to those nuances in this chapter by organising our research-based conceptualisations and practical examples in relation to following subsections that we find relevant, based on our experiences as musicians-researchers-teachers and through the feedback generated by our music pedagogy and music psychology performing students across the years: pre-service and in-service education, contemporary educational demands, and the need to connect lifelong learning to the education of instrumental music teachers.

## 2 Pre-Service Education: Initial Teacher Training in Instrumental Music Education

### 2.1 Teacher Certification: Contents, Types of Training, and the Practicum

European legislation indicates that the study of a musical instrument is the “backbone” of music education; it is the subject that will accompany the student throughout all elementary and professional education. The maturing process of musicians is exceptionally long—there are intellectual, artistic and physical aspects of the musician profession that require dedicated practice from an early age (EFMET, 2004). Therefore, the content around which the study of music is organised, from around 8 years of age up to higher education, is the musical instrument. In Spain, for example, where a large part of the research underpinning this book has been undertaken, this did not begin to diversify until well into the twenty-first century, with Royal decree 631/2010 (Ministerio de Educación, 2010). Two advanced level specialties have currently been extended and the main instrument has been re-positioned between other equally necessary areas of knowledge for incorporation into social and working life: Composition, Conducting, Musicology, Pedagogy, Interpretation, Production and Management and Sonology (Consejería de Presidencia de la Comunidad de Madrid, 2011). However, there is no law which guarantees that the student who does not take the Pedagogy speciality in the Bachelor of Music can be professionally dedicated to teaching. An even more thorny issue is that part of the student body who have not completed their Bachelor of Music studies in any instrumental speciality—i.e., they only have the Intermediate or Pre-professional Level certificates—can professionally dedicate themselves to teaching music in centres of extracurricular music teaching (both public and private) without having actually trained as teachers.

This is something that may be observed in other countries inside and outside Europe, where the certification and education of instrument teachers is unregulated and where this in turn contrasts with recent models (not as extensive as we would like) of professional development for in-service music teachers, like that offered in Finland through its single higher music education centre, the Sibelius Academy. Here, instrumentalists from all over the world and representatives of different musical genres and instruments can obtain subject instrumental music teacher non-degree qualifications<sup>1</sup> after completing a master’s degree in the institution by completing, as separate studies, the required studies in the subject to be taught and/or pedagogical studies for subject teachers, with a total of 60 European study credits (ECTS), including 20 ECTS of *practicum*, in the official languages of the country and also in English. This trains them for teaching and is largely based on the pedagogic principles promoted by this book and by other reforming pedagogic trends, with some emphasis on research as a tool for reflection and optimization in lifelong teaching practices. However, in

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<sup>1</sup> <https://www.uniarts.fi/en/study-programmes/non-degree-pedagogical-studies-for-teachers-in-the-arts/>.

order to avoid comparing or criticizing as the Finnish model is sadly not replicated elsewhere, we will focus on examples within Spanish legislation so that the reader can reflexively analyse whether they occur similarly in their own particular context and what types of learning are fostered in the students.

According to Royal Decree 631/2010 (Ministerio de Educación, 2010), the educational administrations “will propitiate teacher-training plans according to knowledge of the basic principles, structure, organisation, new methodologies and assessment and research systems which correspond to the European Higher Education Area” (p. 8). However, whatever is specified by law does not necessarily happen in the employment sector. In fact, in this sector it is obvious that there is continued belief in instrumental “training” being the key element of musical and professional development (Fernández Morante & Casas-Mas, 2019; Gaunt, 2010; Presland, 2005), together with underestimation of other skills that have been traditionally ignored in the conservatory model (Burwell, 2005; Carey, 2008; Gaunt et al., 2012; Jørgensen, 2000; López-Íñiguez & Bennett, 2020; Mills, 2002). It seemed that the population was gradually coming to terms with the need for knowledge on learning and teaching to address the early stages of teaching, including the teenage years. However, professionally, as the age of the population to be educated drops, the teachers usually suffer from worse employment and salary conditions, and this may sometimes have an effect on access of people with fewer qualifications in learning and teaching, and those with less experience (see, the example in Table 1).

**Table 1** Case 1: Example of pedagogical knowledge-experience absence in instrumental teachers

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Naomi is a magnificent clarinettist who finished pre-professional music training last year. She is deciding whether to dedicate herself to music and enrol in the higher clarinet level, but to finance her studies she has sent her curriculum to several schools of music in her city. She is happy because one of them has called her and is looking for teachers of introductory music and music and movement courses. They have decided to employ her and from now onwards she will give classes to groups of children from four years of age and above. She had taken several separate courses in musical education in some of the highly renowned twentieth century pedagogic trends. Although she is a little afraid, she thinks this will allow her to handle herself in the classroom

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The reality is that, one month after beginning the classes, she feels totally overwhelmed by the behaviour of her pupils. At first they appeared to be interested in some of the songs and dances, but they now spend a great deal of the class time running around, fighting or shouting, without paying attention to what she suggests. She talks to her colleague, Mark, about it, who is studying a degree in teaching and begs him for clues on what to do in her class. Mark offers her loads of activities and songs that they are being taught on his course, but says he has never tried them out on any real child because they have not yet begun to give group classes. He gives a few instrument classes and sits on a chair and individually explains to his pupils how to play the songs and how to start to read the scores

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The activities shared by her colleague help his friend for a few days, but some work and others don't, as if that were an internal property of each activity, and even the same activity that worked once, does not work two classes later, as the students have tired of it and do not want to do it again. She does not really know why this happens nor what to do

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*Source* Own elaboration

In case 1 which we have just presented here, Naomi lacks pedagogical knowledge and experience in the situation she is placed in and this has major repercussions because the raw material is childhood. We find ourselves faced with the recurrent problem that knowing how to play a musical instrument does not mean that a person knows how to manage learning processes in other human beings, and even less that they can adapt to very different age ranges (e.g., Burwell, 2005). Our protagonist, who is still a student herself, therefore has to go to a colleague who has specialised in teaching, to ask for help in her new professional occupation. Knowledge on learning and teaching began to be offered to instrument degree students during the first decade of the twenty-first century in Spain, but the curricular modifications finally made during the second decade meant these areas of knowledge were exclusive to the teaching degree studies governed by Royal Decree 1614/2009 (Ministerio de Educación, 2009) which was specified in the Decrees of each autonomous region a couple of years later. The idea was thus reaffirmed that the instrument students are essentially trained as interpreters and do not require this type of knowledge for what will probably be their future employment—teaching. It is as if becoming a teacher were a sudden about-turn at the end of their studies (Burwell, 2012; McPhail, 2010; Persson, 1994).

In this section we again need to refer to the *practicum*, since the lack of it, or short duration and type of activities pursued in teacher training, largely explain the problems faced by our protagonist in the example given in Table 1. For instance, we know that the years of educational theory have little or no affect on teaching practices in terms of student learning (Desimone & Garet, 2015), as we shall see in the second case (Table 3), and they should therefore be accompanied by real experiences with real students. To do this, emphasis must be placed on frequent and lasting opportunities of *practicum*. Notwithstanding, duration is not really a guarantee either. There could be cases of *practicum* which, with luck, would start in the last years of the professional level or the first year of the higher level and be on a par with learning in pedagogy and educational psychology, and yet would not manage to transform conceptions of the students on learning and teaching music (see Chapters “How Teachers and Students Envisage Music Education: Towards Changing Mentalities” through “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices” of this book), because the activities undertaken: (a) either do not stimulate analyses and reflection on the actual practice (Chapters “How to Know and Analyse Conceptions on Learning and Teaching” and “SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices”), (b) or lead to poor supervision by teaching staff who do not teacher educational psychology, (c) or the centres where these internships are carried out are not representative of innovative practices. Furthermore, we consider that the *practicum* should be organised according to the elements we will present overleaf and that, to a large extent, they can be worked on from the principles which we will include later on in the subsection on collaboration and cooperation among pre- and in-service teachers.

## 2.2 *The Gender Gap in Connection to Working Conditions and Educational Levels as Relevant to Pre-service Training*

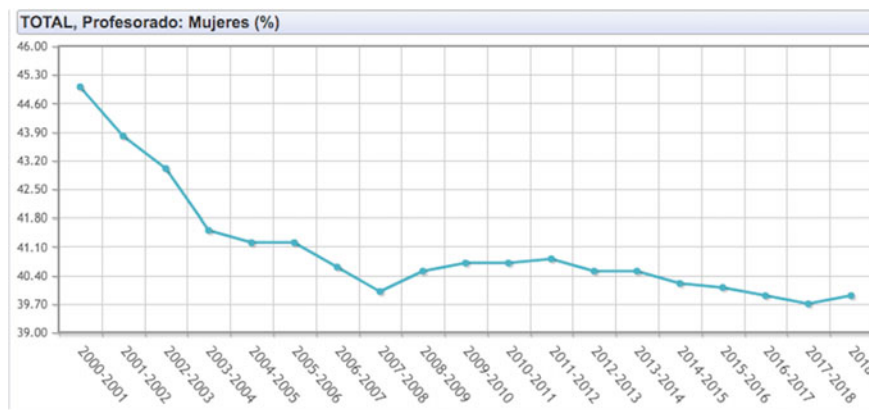
As the age of the children to be educated drops, salary conditions of the teachers also usually drop, whereas the representation of female educational professionals rise (e.g., de Boise, 2018). This is a reflection that, although in the explicit legal area it may be believed that in certain countries equality between the sexes has been achieved, reality continues to showcase the inequality implicit in employment distribution. In the education sector this inequality is extremely obvious, and several authors such as Ballarín (2008) and Jones et al. (2019), have coined the term *smokescreen*: due to the majority participation of women in the education systems, which, as a mean in the 27 countries of the European Union (EUROSTAT, 2020<sup>2</sup>), does not drop below 95% and produces a perceptive effect that may prevent us from visualizing the discrimination and inequality situations from which women suffer.

The drop increases in female classroom teachers and academic staff as the academic level rises in musical studies in Spain. Specifically of the 100,606 people enrolled in formal music teaching during the 2018/2019 year, at Elementary Level 56.3% were women, whilst there is a progressive loss of them through the Professional level up to the Higher Level (or Degree Level) where they account for 41.2% (Ministerio de Cultura y Deporte, 2020). Of the same cohort who enrolled for the Bachelor degree now, when they began Elementary Level, 10 years previously, 54.6% were women (Ministerio de Cultura y Deporte, 2009). In other universities degrees, the mean percentage of females enrolled is 60.8%, although for sound and image engineering degrees (26.6%) and development of videogames (11.8%) a lower percentage of women continue to enrol.

When we get to the teaching staff of formal music teaching in Spain, only 39.9% are women and as we see in Fig. 1, there has been a drop in the contraction of teachers during the last two decades. This problem is not unique to Spain, since in-depth studies such as those by Green (e.g., 1997) in the UK have notably reflected on the inequalities, from the moment of choosing the musical instrument, to the inequalities of participation in certain specialties such as composition and improvisation, or in certain musical genres. Other factors, such as maternity and social class, are related to inequality in the creative media industries and reflections from the different countries in this respect should form part of initial training if we wish to see the process transformed.

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<sup>2</sup> Eurostat Database (period between 2013 and 2020), online data code: EDUC\_UOE\_PERD03. [https://ec.europa.eu/eurostat/databrowser/view/educ\\_uoe\\_perd03/default/bar?lang=en](https://ec.europa.eu/eurostat/databrowser/view/educ_uoe_perd03/default/bar?lang=en).



**Fig. 1** Evolution during two decades of female teachers of formal music teaching in Spain (total percentage shown on the left axe). *Source* Ministry of Education and Vocational Training in Spain, MEFP, Spanish National Statistics Institute (2020)

### 2.3 Control of Knowledge and Watertight Education

Debates on the curriculum are a reflection of different forms of conceiving society and its future (Young, 1998). In the end, both the explicit and hidden curriculum reflect the values, history, social divisions and dominant interests of modern society and in the classroom privileged spaces are generated for building up our interpretations about reality with the students (Torres-Santomé, 2019). It is only certain people who decide on subject contents, classroom activities, assessment models and interactions between the students and with the teacher, which, in the education system, reflect ways of ignoring less affluent collectives. The context helps to construct a common feeling which overlooks certain unjust realities, and serves to justify what cultural contents the dominant groups select and impose as academic material. Thus, in instrument degrees contents which would nurture reflection on reality—for example anthropologically, sociologically, socio-historically, psychologically, economically, etc.—are marginalized (if not totally excluded) in favour of more technical types of knowledge which do not require rethinking the essential foundations of application. This is of greater importance for future teachers whose academic studies have become branded as “elitist” (Cavicchi, 2009; Richardson, 2007), for their forms of entry (Abramo & Bernard, 2020) and even for a lack of questioning the actual notion and genre of music which is predominantly taught in the conservatories. This has led to studies being related to the violence of musical symbols in the classical tradition (Powell et al., 2017) or the colonialism of musical education.<sup>3</sup>

<sup>3</sup> See, e.g., the special issue “Towards a decolonial music education in and from Latin America” edited by Favio Shifres and Guillermo Rosabal-Coto in ISME’s *Revista Internacional de Educación Musical* (Shifres & Rosabal-Coto, 2017).

If the students exposed to the system are without stimulation from the teaching staff to reflect, they have no other option than to accept the meanings facilitated by the teachers, who are in the position of power. Knowledge and control are thereby interlinked (Brown, Lauder, & Sung, 2015; Young, 1998); on the one hand, in the *content* of the knowledge—what is studied—, and on the other, in the *stratification* of the knowledge which promotes the typical classification between ‘high status’ and ‘low status’ knowledge in the curriculum. Reflection of the prevailing cultural conceptions, as shown in a recent study by several of this book’s authors on the use of ICT in relation to teachers’ conceptions of instrumental music learning during the Covid-19 pandemic lockdown in Spain (Pozo et al., 2022), indicate that the highest status is usually held by knowledge which is verbal, abstract, individually acquired and assessed, unconnected to everyday life, and written. Meanwhile, practical, concrete knowledge, acquired by a group of individuals and assessed in group terms, connected to everyday life, and from oral transmission, remains inferior and is usually excluded. The relationships or barriers between areas of knowledge are also a reflection of power and may be located in a continuum between being conceived at one pole in isolation, or totally interconnected at another. However, the latter option is not the most extensive within the context of Western societies. How is it possible not to facilitate that opportunity for reflection on the construction of knowledge for teachers in development? Is it possible that once they are thrown into the music education working world they no longer need to revisit these reflections over the course of their professional development? Are society, students, music, musical genres, and access to information static elements or are they constantly and rapidly evolving? The exclusion or non exclusion of certain areas of knowledge for teacher professional development, leading to reflection on them or otherwise, and facilitating their connection between both areas and everyday life, is not a trivial issue. It is a form of control over the students they will train for the future.

### **3 In-Service Education: Continuous Professional Training for Instrumental Music Teachers**

The conceptions sustaining the separation between theory and practice and the prioritisation of the former is not exclusive to music studies, but in performing arts subjects it is of greater relevance for being the antithesis of its own embodied essence. The professional education of music teachers appears to require doubly practical work: the teaching work and the musical work. However, does the quantity of practical training guarantee teaching efficacy? Is any type of practice valid for good education? What do we understand by good, effective instrument teacher professional education? The fact is that the type of musical practice—understood as eminently procedural activity—has already been questioned for decades (e.g., Jørgensen & Lehmann, 1997). This is such that if the quality but not the quantity of my practice is not good, regardless of how many hours I dedicate to the instrument, I will not

easily be able to perform the music on stage with creditworthiness. Here what we are questioning, in extrapolating from instrumental education to instrument teacher education, is whether the pre-service teaching preparation really shapes the *practice* the teacher will later develop (see, the example in Table 2).

There are several circumstances to case two of Table 2. The first is that of an experienced teacher with a series of routines, acquired over time, which have worked or have not—although he has not contrasted this fact either—, especially because if a student drops out he attributes this to (1) s/he was not prepared to take these studies; prior preparation or quantity of practice or (2) s/he did not have the necessary conditions required for the instrument. Music studies should pay particularly attention to the high rate of student drop-out from elementary to advanced level. The tradition of “excellence” studies mean that research has paid more attention to successful than to drop-out cases. It is only very recently that follow-up of these drop-out cases has begun, by analyzing the contextual and family issues, age at the start of studies, initial motivation of students, amount of practice, etc., which could have an

**Table 2** Case 2: Example of clash between theory and practice in instrumental teachers

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Oliver is a cello teacher and head of the string instrument department. He meticulously prepares his students' classes. He has over twenty five years of experience and in each year he uses a grid notebook, where he jots down what he has worked on with each student and what he has established with that student for them to practise for the following session. This academic year he also has to supervise a new teacher, Nicolás, who is a probationary official at the conservatory. This is an additional activity for Oliver because he has to train the new teacher in everything regarding the centre documents, teaching programme, tutoring, and centre organisation. Among other functions he has to visit Nicolás' session at least twice a month and observe his work with the students, and provide guidance

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Nicolás has begun his student classes with great enthusiasm and a desire to innovate. He is pure energy. He has asked them to keep notebooks of their own for daily learning and has wanted them to open a collaborative forum with one another to clarify doubts. When he took some of the optional subjects of basic principles of learning and teaching during the final years of his degree, he adopted ideas with which he himself would have liked to have learned when he was little, but which were not yet available at that time

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In his role as supervisor, Oliver tells Nicolás he should prepare his sessions better because they are too broken up, with Nicolás wanting to address a lot of elements and wasting a lot of time making his students reflect, by asking them questions and having a group class. The result is that they have hardly advanced in the instrument during the two months he has been working with them. He has to be more direct in his objectives and instructions to attain the standards imposed by the curriculum, bearing in mind the few teaching hours available to him to prepare the required repertoire for each year

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Nicolás's students seem to be very happy at first, although Oliver does not appreciate any great advances being made, but at the Christmas auditions these students are noticeably at a disadvantage to those of other teachers. Their marks are lower than those of their peers and parents and teachers begin to compare with one another, which evokes external pressure, leading to a point of no return. In the end Nicolás stops dedicating class time to help students learn to manage their own learning and keep their own diaries, and ends up fixing the objectives and timing to coincide with adaptation to his environment

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Source Own elaboration



impact (e.g., Gerelus et al., 2020). However, there is less questioning of conceptions and teacher practice, of the counseling sessions, and professional educational guidance as possible accountables behind the fact. In short, the confrontation of these two teaching practices shown in our second case are examples of knowledge and educational-psychological actions that the institution should follow up on in-service training.

Educational Policy and educational administrations in Spain, like many countries these days, insist on making teacher training plans at the proposal of the institutions, for the updating and intensification of music disciplines in their different areas (Ministerio de Educación, 2010). However, these plans remain just good intentions which are rarely converted into the genuine modernization of teaching staff. In our case we found there was a clash between two points of view. On the one hand, the novel teacher's attempts to make their students reflect on how they conceive of the music they wish to make and how they could achieve it and therefore learn, and on the other the way the experienced teacher questioned this, and where priority was attached to the prescribed teaching or didactic repertoire, external to the students. The proposal of the young teacher is called a student-centred approach (Kember, 2009), which fosters different skills (autonomy, collaboration, critical thinking, etc.) versus a teacher-centred approach aimed at information presented by teachers, predominantly verbally even in the instrument classes.

### ***3.1 Class Preparation as Innovation***

Recent studies with teachers from different countries appear to reaffirm the idea that when teachers of instruments explain their type of teaching they allude to former pedagogues, resulting in a cycle that is neither questioned nor intensely repurposed, but which is self-perpetuating from inertia (Daniel & Parkes, 2017). This is the master-apprentice tradition, the emotional ties of which are strengthened through the one-to-one lessons (e.g., Gaunt, López-Íñiguez & Creech, 2021). This provokes an inertia strongly rooted in the transmission of information in instrumental education in academic areas. There is no questioning of whether the focus is centred on the student and her/his processes, such as selection of the repertoire and the search for information, its organisation and its creation. The only way of breaking these self-multiplying structures is with in-service training, where spaces exist for individual and collective review analysed in such a way that, like with the students, no errors are penalised. Situations exist that are not optimal but serve as points of reflection and improvement.

Lack of class preparation forms part of this tradition of information transmission in one-to-one lesson, the teaching staff usually giving their opinion about the musical interpretation of the student and correcting them more or less minutely over any technical or interpretative element, as if the actual activity would be transformed into content (Daniel & Parkes, 2017). Another exhaustive class preparation option has been to question the previous model, stamping instrumental teaching with a

questionable pedagogic tone that remains anchored in the preparation of content instead of reflection on processes. In other words, they continue promoting a teacher-centred learning, which is actually content-centred, instead of evolving towards the preparation of sessions by reviewing the actual classroom recordings or organising the ideas which the students can reflect upon and produce, helping them to rethink their objectives. These processes can become genuine innovation projects if rigorous follow-up ensues, if they are appropriately documented and the opportunity is given to contrast them in teaching teams. This proposal is not reflected in the many courses that serve for accreditation and promotion of in-service teachers, who from the content-centred focus continue providing questionable new information in this crucial aspect and try to disguise it with technological novelties.

### ***3.2 Selection Process for Instrumental Music Teachers***

Teacher selection continues to this day with the strong tradition that high-level performers must be recruited to teach, despite having no formation on pedagogy (Burwell, 2005; Daniel & Parkes, 2017). We have observed this in the priority of entry examination in several countries, where the first stage of entry exams continues to select performing excellence. The performing selection carries with it many other implicit selections, since in the areas of artistic life of a specific place the people tend to know one another previously and as specialists in their instruments detect the “school” of other performers. Also, developing social media to amplify each performance and promote the idea of being highly sought after on the stage, is another element which could lead to bias of those who have to assess competence, beyond that of the performer or community manager, actually as a teacher.

The second phase usually refers to the selection of teaching staff according to pedagogic aptitude but in a grotesque manner, since it proposes that the candidates come up with planning, often annually, and then with specifications of more limited time periods, but to work with a hypothetical student body with supposed difficulties and without knowing what their baggage, or context or learning is. Therefore, this type of planning or programming is still centred on the content to be taught, ignoring the appropriate strategies of each specific situation, with repercussions on ethereal methodologies and procedures for assessment which are not in keeping with demands (Encarnacao & Blom, 2020), or which only centre on content. The criteria could centre more on assessing the development of intrinsic motivation of the aspirant through individual interviews and also group interviews to find out their communicative ability and adaptation to collective work, their emotional management of difficulties, preparation of reports about reflections on their teaching and hereafter intentions, the witness accounts of family members, students and teaching staff with whom they have worked.

Finally, there is an overriding need to take action on equality and diversity policies as endorsement of the representation of certain under-represented collectives, due to the cultural distortion in teaching selection. This is the case of women, as described

above, and also ethnic minority communities, particularly in tertiary level teaching (e.g., Darling-Hammond et al., 2020). In sum, the models to promote children's and students' well-being, healthy development, and transferable learning need to be highlighted.

### ***3.3 The Role of years of Teaching Experience as a Relevant Factor in Understanding Teachers' Praxis***

As we saw in Chapter “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”, it seems that there are both generational differences between music teachers and those relating to experience and professional education. These largely determine what they do in class with their students: what contents and learning processes they encourage and how they assess what has been learned. These practices would be determined to a great extent by the conceptions or ideas of these teachers on learning and teaching and which are described in detail in the chapters of Part One of this book. Research conducted by some of authors of this book indicate that the most constructive conceptions centred on promoting metacognition and autonomy in the students are apparent in new teachers, whilst teachers with more years of experience tend to simplify their ideas towards more traditional stances (e.g., López-Íñiguez et al., 2014). Furthermore, advanced level teachers usually offer their students more space for developing autonomous practices and for taking on responsibilities for their own learning, whilst in initial stages the teachers exercise greater control over their students, represented by a more traditional profile regarding the power hierarchy of the conservatory model.

It is important to keep this aspect in mind when educating new teachers, but even more so with in-service teachers, since it is this group that seems to need incentives in psycho-educational updating and to reflect on the activation of automatic ideas. This may be due to the inertia of the conservatory culture and curricular demands (as occurred in the example in [Table 3](#)), to lack of education in constructivist and updated pedagogic principles, or to burnout from a profession (e.g., McPherson & Welch, 2018) which is highly gratifying in itself, but which demands great preparation and dedication with a salary that is substantially lower than that of elite footballers or corporate lawyers, to mention just a couple. Part of this reflection for promoting change in conceptions and practises of teachers may consist in attending courses where innovative strategies based on recent research on effective student-centredness are promoted (López-Íñiguez et al., 2014; Torrado & Pozo, 2006). They may also include aspects such as recording classes, as we shall see later on in this chapter, and also group reflection with other teachers of diverse levels and experiences, depending on the models we will see in the following section. As a result, they will be exposed to varied ideas and practices, since the teachers with the greatest experience may

simplify their ideas, but usually have more pedagogic strategies than new teachers, due to their years of experience (see Chapters “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” through “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)” and 9”).

## 4 Preparedness for Contemporary Teaching Demands

As we have been describing throughout the chapter, the restructuring of traditional, teacher- and content-centred practices is a huge challenge for teachers. One of the ways in which we could promote that change towards practices which help the student to progressively manage their own learning for artistic agency and autonomy, is to foster reflexive actions that support experiential learning to reconstruct individual conceptions from their uses in practice. Also, analysis of *critical incidents* over the course of our learning pathways as instrumentalists and during our teaching career may help us to realise which models we were exposed to in our trajectory as students (López-Íñiguez & Burnard, 2021)—and which we would, for better or worse, reproduce in our practices without noticing, unless we made an in-depth review of these events.

In conservatories and schools of music we insisted on the need for formal psycho-educational learning of students from the last years of Intermediate or Professional level. We also believe it would be positive to establish interdisciplinary collaborations with external agents in the community in order to develop intrinsic motivation and future employment. Firstly, with regard to professional guidance, it is interesting to be in contact with other educational institutions, orchestras, professional associations, producers, editing bodies, to ensure that students and teachers are aware of the competences required by society and the employment market (Ponce de León & Lago, 2009). Secondly, it is also interesting to detect areas of possible intervention through music. Thus, the institutions should start up *Service-Learning* programmes or community immersion programmes where not only is contact made according to the demands of the employment market but where the real needs of people within a community are visible and it is possible to empathise and create alternatives as well. Forrester (2019) analyses how to combine learning objectives with community service in order to provide a pragmatic, progressive learning experience while meeting societal needs. Provided that this does not include jobs that should be remunerated for being structural, but which are disguised as forced “voluntary” actions to gain certain accreditation.

**Table 3** Case 3: Example of good practice. Activation of self-assessment and cooperative practice

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Carmen has been a trumpet teacher for 15 years in a conservatory of intermediate level studies. For the last three years she has been developing an interdepartmental project so that the students of different instruments will work more together, and with the environment. She and her teaching team decided to put the plan into effect in different stages: first they began analysing what the student interests and concerns were by means of a short questionnaire. From this initial analysis two students of trumpet and percussion, Isabel and Nuria respectively, were outstanding for their huge motivation and experience in carrying out cooperative activities at their schools, which are located near the conservatory

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During the second stage they determined which students were going to participate: either because they were excited by playing with companions from other specialties or because their teachers thought that by participating in the project they would increase their motivation in music, and their skills. As the person in charge of the project, Carmen organised groups of 2 to 5 students each. She organised scheduled meetings in keeping with the student's timetable so that they coincided in two classes per term for each instrument teacher responsible for the student of each group. They then began to select the repertoire and began rehearsals

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Carmen thought that these two students could work on coordination with their classmates for an online fortnightly forum of session supervision dealing with doubts, problems that arose, and the search for possible solutions. They also organised quarterly meetings to share music as fun, searching for a common thread to the different pieces and including dramatisation or dance, text, or poetry that was connected. They sent out new questionnaires to the students at the end of the year and the experience was so good that the participants wanted to continue the project the following year and a good number of new students were encouraged to participate. For the following stage they are thinking of opening the doors of the centre to any audience who wishes to watch the performances and to take them to nearby schools, homes for the elderly, etc. where it would be possible to transport basic instrumental material

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Source Own elaboration

#### ***4.1 The Importance of Research Skills and Interdisciplinary Awareness in the Professional Education of Music Teachers***

Addressing education is open to many opportunities, either through innovation or research. By educating teachers appropriately, we can achieve a community of knowledge development to describe, understand and maybe sometimes specify what occurs and why in our educational environment. In case three (see, the example in Table 3) that we have just presented, the trumpet teacher, Carmen, is coordinating the introduction of an action-research (Lewin, 1946/1988) in her conservatory with which it would be possible to: (a) describe the needs detected in the classrooms by the teachers, (b) identify several objectives, such as the improvement of student involvement through a more interactive participation between peers, establishing common group objectives, (c) plan different cycles and steps for application, (d) apply the first cycle, (e) establish an assessment process for the first cycle, and (f) carry out the necessary modifications to continue with the application of successive cycles with their corresponding assessments, reviewing the objectives after each assessment.

Another descriptive option which has led to considerable contributions to education is the *case study* (e.g., Stake, 2005), purposely selected or not, depending on the circumstances, and from which an in-depth follow-up is made to describe its characteristics and evolution in a report. And of course, from the *ethnography* stemming partly from the British cultural anthropology and partly from the School of Chicago, incredibly interesting and useful descriptions of groups who share a culture have been made and analyses may be made to comprehend the psychosocial and human cultural processes in a holistic vision (León & Montero, 2015). Ethnography may be used as a research tool and as a perspective to carry out analysis of educational policies where the educational anthropologists research the cultural context that involves groups of people in relation to the changes and resistance to educational policies to achieve specific goals in their everyday lives (Dixon et al., 2012). Cross-cultural data has been used from the critical approaches of the U.S.A. to report on the educational policies of many countries in the world. They have common data collection techniques, including participant observation, interviews, archive data analyses, oral histories, and statistical analysis.

As we shall see in Chapter “[Student-Centred Music Education: Some Ideas to Improve Learning and Teaching](#)” and at the end, one of the most relevant principles in teacher training is to understand the close connection existing between reflection on teaching practice regarding not just existing teaching models or psychological processes to be promoted in our students, but also the research of praxis itself. For this it is essential to train both pre-service and in-service music teachers. One of the most effective ways of developing this aspect is for the teachers to read articles and books on research into education, psychology, the neuroscience of music, and also material where good practices are described. Beyond this, it is important to train teachers in basic methods and principles of research so that they can collect data about what is happening in their own class with their students, and about progress and challenges which arise, the issues that work and those that do not, and that they analyse (for example, using the SAPEA system of Chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”) their ideas and practices, and their students’ responses. Detailed development of the analysis system makes it greatly applicable to both descriptive studies, like those mentioned above, and to other ex post facto, quasi-experimental and experimental studies. A very useful tool for this is the use of video and the collaboration with other teachers and experts in pedagogy and research, as we shall see in the following section.

## ***4.2 The Use of ICT in Teachers’ Professional Development***

It has been acknowledged that ICT use in the music classroom offers several benefits. However, many other research studies have shown that the use of such tools in instrumental music instruction is not only scarce but that when they are used they have been incorporated more as a strategy to externally motivate and control the attention of the students, without essentially changing or improving the pedagogical

practices taking place (e.g., Savage, 2010), often consolidating traditional practices as we described in the Part One of the book. This non-reflexive use of ICT in music classrooms coincides with findings from major international studies on the integration of technologies in schools, which demonstrate rather more traditional uses in many contexts that do not improve learning results (Biagi & Loi, 2013). In fact, in a report which summarises decades of research around PISA studies, it was concluded that “the results also show no appreciable improvements in student achievement in reading, mathematics or science in the countries that had invested heavily in ICT for education” (OECD, 2015, p. 3). So one aspect that should be included in teacher training spaces is the utilisation of ICT in ways that promote constructive practices, similarly to those described in Chapter “[Learning Music Through ICT](#)”, as we know that when ICT is used to facilitate instrumental music learning, it is to promote reproductive learning (Pozo et al., submitted).

Another technological tool that could be thought of as relevant in the promotion of good teaching practices among teachers is the use of videos as reflexive-analytical tools for real classroom situations (e.g., Powell, 2016). The use of recordings of one’s own practice—both for in-service and pre-service teachers—and, if possible using an analysis system like the one presented in Chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, can support teachers in a number of ways. For example, it can help them to analyse which conditions, learning processes and outcomes described across this book that they promote in their lessons by (1) observing the psychological principles they activate in their students, (2) attending to the socio-emotional interactions taking place between the students and teachers. But it can also support them in getting to know themselves as teachers according to their personality traits, their strengths and weaknesses, and their ability to self-critique their practice.

Different stances exist today regarding how the virtual world may be totally immersive and those who think that virtual venues should still be researched in depth. One thing is certain though: a decade ago, we were open to ICT but always critical of them (Turkle, 2009), but at the beginning of the second decade of the twenty-first century they clearly have a high impact on the configuration of our musical and teaching identities. Now we have to respond to questions about how a musical identity is created in a virtual world and why teaching music in a virtual world may improve our comprehension of musical education (Green, 2011) and its underlying conceptions and practices.

### ***4.3 Collaboration and Cooperation Among (Pre- and In-Service) Teachers: Reflective Modelling, Collaborating and Mentoring***

As a demonstration of good practice for teaching a concept or an approach to learning, through video or in person, modelling is a highly effective technique of vicarious

learning in teaching practice. However, we believe it is insufficient for changing the conceptions which will finally guide action and to do this modelling needs to be seen to be guided and accompanied by profound reflection, of either one's own or someone else's practice. In music, as in other areas, teaching cases have been progressively transformed into video-cases (West, 2013). Now, however, it is not so much a case of demonstrating what the "correct" model is, but using it as *bait* to generate reflection, through a dilemma, a bad praxis, comparison of different possibilities, etc. These situations for inducing reflection and taking debated decisions have the advantage of embodying and contextualising the situation. This, in turn, encourages visualisation of action and action by whomever is observing and debating. Marchesi and Martín (2014) or Schön (1987) attest reflexive learning situations for teacher training. Also, if these practices are carried out with colleagues and experts in educational psychology, they generate a collaborative space for reciprocal observation and accompaniment for the development of teaching strategies. The SAPEA analysis system (Chapter "SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices") was developed for working from this outlook of collaborative and reflexive action.

Finally, in the last few years the figure of the mentor as a guide to reflection on teacher training practice has been much increased. Berg and Rickels (2018) define this as a role of accompaniment to the novel teacher, for activities including curricular design, research, collaboration with other colleagues, administration and management, and professional development. Abramo and Campbell (2019) argue that to generate mentoring for the cooperating teachers, three dialectic dimensions must be negotiated: reflecting versus modelling; emergence versus purposefulness; and learning to teach in specific contexts versus preparation that transfers to teaching music in all settings. This links up to what we commented upon in the section on Class preparation, since the authors advocated that cooperating teachers support novice teachers' educational growth, in a framework construction of flexible action adapted to the situation rather than the transmission of closed solutions applicable to all educational situations. There is urgent need for mentoring in conservatories and schools of music and this may be coordinated from the recently created Departments of Educational Guidance in Spain, but requires the effort of also supporting the mentors (Berg & Rickels, 2018 ; Weimer, 2020) and even taking advantage of the potential of appropriately trained retired teachers (Berg & Conway, 2020).

## **5 Summary of the Chapter in Connection to Lifelong Learning**

In this chapter, we have discussed issues that are relevant to instrumental music pre-service and in-service teachers, such as the gender gap and working conditions; the need for teachers to strengthen their teaching strategies and skills; the importance of offering official certification in Higher Education; the importance of reflexion on their



teaching practices; the types of support and tools available for their development as educators (such as the SAPEA system introduced in Chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”); the contemporary demands in terms of new awareness that are demanded by our society, and the systems of access (or lack thereof) to the profession. This has helped us to build a holistic understanding of the instrumental music teaching profession in current times, and also to acknowledge that the pedagogies underpinning student-centredness in instrumental music learning are lacking to a great extent, as we have also been discussing in the entire book. We have argued here that one of the main reasons for this problem is the lack of adequate teacher training and good mentoring opportunities offered to instrumentalists who will—like it or not—need to engage in teaching as a profession (OECD, 2019a; in music, e.g., López-Íñiguez & Bennett, 2020).

Following this spirit of the importance of continuous, high quality teacher training development opportunities, the UNESCO’s Faure Report (Faure et al., 1972) popularised already five decades ago the concept of *lifelong education*, which was later on further developed in the Delors Report (Delors et al., 1996), which put forward an important vision for *lifelong learning* that still stands today in the light of the research presented across this chapter. Lifelong learning is an aspect that will be discussed further in the chapter that follows (Chapter “[Student-Centred Music Education: Some Ideas to Improve Learning and Teaching](#)”), particularly in connection to the *learner identity* of musicians, students and teachers alike—a type of growth mindset that can help them to engage with the pedagogical agility towards the topics presented across this chapter, and which is being required of teachers in the second quarter of the twenty-first century. Furthermore, as was discussed in Chapter “[Learning and Teaching Music in the Twenty-First Century](#)”, musicians need to be aware of their employability possibilities. This, in a world that has becoming increasingly “complex and disorganised” (Bennett, 2016, p. 112) but also diverse, and where job opportunities require much more from instrumental music educators than has ever been required. Beyond their skills as professional instrumentalists, they will have to adopt a variety of professional roles in the music area (Burnard, 2014). It is our hope that this chapter offers some research-and experience-based ideas for the further development and strengthening of those professional roles for instrumental music teachers and musicians alike.

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# Student-Centred Music Education: Principles to Improve Learning and Teaching



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## 1 Educational Principles That Support Student-Centred Instrumental Teaching

Please keep calm, dear reader, this book is nearly at an end, and we began it by drawing attention to the need for a profound change in instrumental music education. The first two chapters examined the reasons why this change seemed necessary and the presence of a general social awareness that instrumental teaching is currently a non-starter. Several times the book has referred to Ertmer (1999) for whom there are two types of obstacles, Type I and Type II which we interpreted as extrinsic and intrinsic in chapter “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”. These obstacles impede educational change and by overcoming them we could rid ourselves of this feeling of failure. Without wishing to undermine the importance of extrinsic obstacles about the way in which education in a country or a community is organised, or about conservatory environments and pathways to the teaching profession (see chapters “[Learning and Teaching Music in the Twenty-First Century](#)”, “[Teaching Music: Old Traditions and New Approaches](#)” and “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”), this book has essentially concentrated on

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the intrinsic obstacles. These involve the way in which educational intermediaries, and particularly teachers and students, perceive of learning and teaching for both music, as well as other educational contents in formal education, and consequently how educational spaces are organised for learning and teaching (see the chapters from Part I of this book). Furthermore, throughout the book and especially in Part II, alternative non-traditional ways of learning and teaching have been presented. We believe these accomplish a double mission of providing better instrumental learning and paving the way, together with many other factors, towards a change in teachers' and students' conceptions about teaching (see chapter "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)") and the practices to be implemented in the classrooms (see chapter "[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)"). We used two tools (or restrictions as we called them in chapter "[Learning and Teaching Music in the Twenty-First Century](#)") for this project. Firstly, the book is mainly targeted at music teachers, advanced level music students and at researchers who have a passionate interest in how music is taught and learned in the classroom. We believe that the drive for educational change is specifically inherent in what goes on in the classroom, and the type of learning this may involve. Our decision to target teachers, advanced music students and researchers has led us to focus on the types of knowledge and situations which we think may interest these types of readers. This knowledge embraces how to teach and learn better and more effectively and involves another related aspect which is how we can gain more enjoyment from these learning situations. Secondly, one of the tools of analysis we have used is the enlightenment offered by psychology on how we learn and acquire knowledge of different types, because psychology has always been our working context. However, we are aware that in doing so we are ignoring several doubtlessly highly important artistic and sociological aspects which if included, would have made this a different type of book.

To summarise the material we have worked on throughout the book, we could say that student-centred education (Fung, 2018; Hallam, 1995; Hallam et al., 2009; Hultberg, 2002; Viladot et al., 2010), is none other than that which starts with the students' own traits. This implies realizing that music class activities cannot be designed without taking into account what these students already know (intuitive or embodied knowledge of music, knowledge obtained in other music classes and outside of these classes) but neither can they be removed from their musical tastes and the music they share with their friends and companions, whether this be in garages (Westerlund, 2006), concerts, or YouTube. Starting with the students' own traits also involves knowing how they learn, what learning processes need putting into practice, as explained in chapter "[The Psychology of Learning Music](#)", and what conceptions they have on what learning is and how to do it (chapter "[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)"). Lastly, it involves knowing how students really face these different learning situations, what their techniques and strategies are, their fears, their insecurities and their convictions, and how they emotionally react to their instruments.

Nevertheless, as we have also seen throughout the book, starting from these traits is not enough. All education begins with the need to help the learner, either partially



(the way they read music, their tastes, their sensations or the way they hold the instrument) or more globally and holistically with changes referring to the individuals themselves, as music students or musicians. These changes also have a direction and a purpose: learning music is facilitated by the use (or appropriation) of a musical instrument. The content of what will be learned also determines and impacts learning processes. Learning music is not the same as learning physics. Music is tied to the expression of emotions, whilst physics refers to objects. Our approach to these subjects is therefore necessarily distinct, as are our different intuitive knowledge on these objects (the sounds that express emotions or bodies falling). We need to add to this list of factors relating to student-centred learning—again with its double connotation of significance and the emotional dimension of that activity—that students study music with very different goals in mind. They may wish to be a music professional, either interpreting music, teaching it or exercising any other profession related to musical content. Learner-guided teaching therefore also means contemplating the different reasons why music is studied and the need to develop a curriculum which promotes the necessary skills and expertise for these different objectives, including those connected to professional development.

An analysis of the traditional conservatory teaching approaches (see chapter “[Teaching Music: Old Traditions and New Approaches](#)”) suggests that the majority of factors and characteristics we have just referred to are not normally considered. The chapters in Part II of this book demonstrated that the teaching of the different aspects of music is far from learner-centred. They also showed there are alternative ways to teach and learn which, as we shall see, take some aspects of learning and teaching into informal contexts, but also add emphasis on more constructivist and restructuring learning processes. Student-centred education does not imply undermining the teachers’ role, but instead broadening and changing it. The student cannot be just surrendered to the music, or simply exposed to it, as occurs in some informal contexts. The idea is to design activities which may change the way they approach music, beginning with that embodied intuitive musicality mentioned so often previously, which helps them to feel and experience the more standard musical forms but impedes participation in more complex forms. This is similar to intuitive physics which is there to move us and move the objects in the everyday world but not to understand the underlying principles to those movements and even less to produce cultural or technological devices capable of moving around in the real world (Pozo & Gómez Crespo, 1998). The idea is therefore to start with the student, to place them at the centre of educational processes but with the aim being to modify his or her forms of feeling, living, knowing, interpreting and enjoying music. In reality, the purpose is not so much to help the learner by stopping him or her liking funk and beginning to enjoy a repertoire of baroque or romanticism as to expand their repertoire of knowledge. Constructivist learning processes (chapter “[The Psychology of Learning Music](#)”) lead not only to accumulative but also restructuring results. Previous learning is not forgotten or immobile. The tunes which previously got your body into dance mode may still do so. Similarly your football team’s anthem still affects you and you want to cry when you hear it either after you’ve won a match or after you’ve lost one. Just like the case of the children in chapter “[Early Initiation to Music Learning:](#)

[Little Children Are Musicians Too](#)” we continue using musical parameters which communicate these emotions. However, this knowledge should be modified during teaching so that it can be applied to an instrument, expanding and engaging to create and feel emotion about other types of music.

In chapter [“How Teachers and Students Envisage Music Education: Towards Changing Mentalities”](#) we saw that changing educational concepts is guided by a series of processes which included progressive clarification of intuitive or embodied knowledge about music. This clarification, which involves realising which resources are normally being used to manage sounds or how learning itself is taking place (numerous examples of which were given in Part II of the book), along with the acquisition of other knowledge, enables intuitions to take on other formats (for example, musical scores), which in turn helps to drive theoretical modifications and changes that restructure intuitive knowledge. In other words, interpreting intuitive knowledge through other formats modifies and reorganises that knowledge, or combines it hierarchically with the new knowledge learned. This same process of change also comes into play when music is learned. Clarification is impossible without help or competition from others, in this case teachers, who should design activities so that students increase this awareness and simultaneously develop metacognitive processes, progressively taking control of what they have learned and how they have learned it (Pozo, 2014; Weimer, 2012).

With music, prior knowledge is essentially embodied, i.e., knowledge about the body itself and in the body itself, which helps us to manage sounds so as to cause an emotional impact on the listener, as occurred in the telephone example given in chapter [“Instrument Mastery Through Expression: The Learning of Instrumental Technique”](#). As with informal situations, this embodied knowledge is what gives learning meaning and lets the teacher or the teaching situation take its first steps towards its own modification so that the student can clarify, modify and hierarchically integrate his or her own knowledge. But teaching has to offer its students spaces designed to solve problems to help them develop their personal and artistic identity and their learning skills and, above all, develop their identity as a music learner throughout their life (see further on in this chapter). This will help them adapt to new situations, depending on what demands for change future societies have. Also, this emphasis on learning forces them to modify spaces and learning and teaching activities, setting up more fruitful and more diverse scenarios (see chapters [“Learning and Teaching Music in the Twenty-First Century”](#) and [“Teaching Music: Old Traditions and New Approaches”](#)). In doing so, challenges arise and problems to resolve are pursued. Music learning is then approached through exploration, structure, supportive learning and collaboration (Carey et al., 2013) among peers and between teachers and students.

As we saw in chapters [“How Teachers and Students Envisage Music Education: Towards Changing Mentalities”](#) and [“How to Know and Analyse Conceptions on Learning and Teaching”](#), changes in pedagogic practices are not at all easy for teachers (Baker, 2006; Jørgensen, 2001) or students. Although several authors state that today’s so-called “Generation X” students reject traditional teaching methods focused on the teacher and on the class contents, as described in chapters [“Learning](#)

and Teaching Music in the Twenty-First Century”, “Teaching Music: Old Traditions and New Approaches” and “Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century” (see also Barnett & Coate, 2005; Garrison & Akyol, 2009), others consider that it is precisely their “consumer” notions on education (Healey et al., 2016; Pauli et al., 2016) which preclude them from being proactive in their learning processes (Entwistle, 2009). Our outlook in this book is to explain this problem in view of studies on students’ notions of learning, which are very similar to their teachers’ notions (see chapters “How Teachers and Students Envisage Music Education: Towards Changing Mentalities” and “The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning”), and which are extremely difficult, albeit not impossible, to change in both cases. Most of the chapters in Part II of the book deal with this. We may hope that the change in these conceptions will occur simultaneously in teachers and students (e.g., Martín & Cervi, 2006; Mateos & Pérez Echeverría, 2006). For this to occur modification of teacher professional development and education is crucial (see chapter “Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century”). These changes are unquestionably linked to a progressive modification of learning and teaching practices, as will be shown in the following section.

### ***1.1 Guidelines for Music Learning as a Personal Search for Meanings***

As previously stated, one essential issue that needs changing in music classes is to understand that to learn, the focus must be placed on the student. The educational content, instrumental music and the student’s individual characteristics are also salient. In all the previous chapters, and particularly in Part II, our intention has been to show what a teacher can do to focus teaching on the students. We will now summarize the applied and contextualised principles from those chapters. It is not a question of creating a recipe book with instructions on what should be done. Points of interest repeated throughout the book referring to specific contexts or situations will be highlighted:

- **We should start from the premise of what the students know, from their prior knowledge, both explicit and implicit.** For Ausubel et al. (1978), the most important principle of all education was to begin with the learners’ knowledge. Chapter “Early Initiation to Music Learning: Little Children Are Musicians Too” showed how very small children already have intuitive knowledge on the parameters which convey expressiveness in music. Working from this and other knowledge is, as we have previously demonstrated (and may also be seen in chapter “The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning” with small children and in chapters “Instrument Mastery Through Expression: The Learning of Instrumental Technique” and “Learning Music Through ICT” with

older students), the only way of finding a meaning from the different teaching situations. It is also the driving force for developing authentic experiences to activate or respond to these previous embodied and implicit learnings, or for those which are within their *zone of proximal development* (Vygotsky, 1978; also see chapter “[The Psychology of Learning Music](#)”). A certain idea or procedure, even an attitude, only makes sense and is significant when the students possess the necessary means of interpreting it. Change is only possible from that interpretation.

- **Classrooms have to be regarded as *problem-solving spaces*, with a problem being understood as a situation somebody wants or needs to resolve** (e.g., Pérez Echeverría & Pozo, 1994). In this sense, being able to arrange one’s body to obtain the desired sound or reproducing the musical scale in a specific instrument could be conceived as a problem when it responds to the student’s needs. In chapters “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)” we saw how the teachers used the need to take an action (make the doll go to sleep), express a certain emotion, or create a story or song (three different problems) to provide meaning to the musical scores (also see chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”), and to the technical and bodily knowledge needed to play the instrument.
- **An activity becomes a problem when it has a purpose or a direction at which to aim and a medium is created to resolve it.** When this problem becomes routine, it stops being a problem and becomes an exercise. As such, *a problem always begins with a situation where there is a conflict* of greater or lesser import (in line with D’Angelo et al., 2009) or where the thoughts and actions and presumptions of the students (and teachers) are challenged. Problems and conflicts always start from personal interest and from known and new differences, as may be seen in chapter “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” when the students are asked to play the same musical score expressing different emotions.
- **Working at problem-solving also means working with the student’s *creative processes in several different ways*.** On the one hand, it encourages the search for solutions through processes that are new to the student. Thus, *activity objectives should be shared* by teachers and students. In the two chapters mentioned above (“[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”) we saw that teachers and students were searching for the same things. They agreed about what they were searching for—the expression or creation of a story-song—, which helped them value the mediums used—the musical score, postural control—as being more or less appropriate and to modify and innovate the use of these mediums whenever necessary. In chapter “[The Choir Conductor: Interpreter or Maestro?](#)” we saw that during the classes of the constructivist teacher there was much more dialogue than in the classes of the direct teacher and that this dialogue fostered the establishment of common aims for singing “prepositions”, whilst the language of the more traditional teacher aimed

at the students meeting objectives (those of the head teacher). Several examples of this type also appeared in chapter “[From Individual Learning to Cooperative Learning](#)” which clearly pointed out the differences between working in a group and working through cooperation and that cooperation begins with these common objectives, either between teacher and students or between the students. On the other hand, processes leading to innovation through the creation of songs, improvisation, technological arrangements and usage, and through regulatory processes in the arts, such as dance, song or movement, are conceived as problem-solving processes (e.g., Brinkman, 2011; Burnard & Younker, 2004; DeLorenzo, 1989).

- **Establishing objectives and assessing the mediums used requires that the student becomes aware of how to use these mediums and this often demands making the procedures and knowledge explicit.** In chapter “[Learning Music Through ICT](#)” we saw how the use of technologies (recording videos and giving explanations through WhatsApp) helped this clarification and subsequent awareness raising. The teacher of the constructivist choir in chapter “[The Choir Conductor: Interpreter or Maestro?](#)” also provided clarification using dialogue between the students with one another, guiding this dialogue towards awareness of the resources used by the students in each case. Feedback provided by the teacher with this model did not focus on telling the students what actions were good or bad (what the more traditional teacher in chapter “[The Choir Conductor: Interpreter or Maestro?](#)” did or the *Tuba* with the invisible baton of the first example of chapter “[From Individual Learning to Cooperative Learning](#)”), but rather on guiding dialogue so that the student became aware for him or herself, which is what the constructivist teacher in chapter “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)” also does. Questions about “why” something is done in a certain manner and “how” it could be done differently, using an appropriate language to avoid pressure and tensions (Dweck, 2007; Green, 1986), may be another form of guiding towards clarification and awareness raising. There are explanations of this type in chapter “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, in the dialogues between teachers and students about understanding certain symbols (*f*, *mf*) of the musical score, or knowing how to interpret a musical style.
- **Working with errors is another tool for dealing with clarification and feedback.** Errors provide information on the student’s type of comprehension, and on their intuitive ideas or ones they previously had. They are also an opportunity for joint reflection. In fact, immediately stopping a student when they make an error should not be the teacher’s first option, because it reduces the student’s ability to think for themselves, and sends out a critical message that undermines them and induces resistance to feedback (Lerman & Borstel, 2003). Furthermore, this feedback should always be specific if it is to be of use to the student (Biggs & Tang, 2011; Sadler, 1989; also see chapter “[Learning Music Through ICT](#)”). As stated in chapter “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”, when the objective of the music is expressive, the only possible error is not to express what one desires, and when the student becomes aware of that error, it is the starting point to reconstruct musical knowledge itself.

- At the same time, **this clarification and awareness raising helps the students *toprogressively take control* and develop the *metacognitive processes* they need so as to be the architect of their own learning, to develop learning strategies and address conceptual processes of change.** This leading role played by the students (through self-management, initiative, critical reflection, learning to learn, etc.) will be greater the more plentiful the musicality models offered. For this, the student has to travel further than the classrooms (concerts, cultural activities, etc.) to observe and participate in a variety of aesthetic experiences which stimulate and enrich their interests and achievements in the arts (see chapters “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”, “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)” and “[Learning Music Through ICT](#)”).
- Moreover, **although the majority of interpretation classes are dyadic, a large part of the learning and teaching processes previously described could be offered in collective class where *cooperative work* is fostered with classmates, with peers.** As we saw throughout chapter “[From Individual Learning to Cooperative Learning](#)”, or in the WhatsApp messages of the chamber musicians in chapter “[Learning Music Through ICT](#)”, regulatory processes and awareness raising become easier when one is surrounded by companions who both help with these processes and also offer different perspectives. Chapter “[Learning Outside the Music Classroom: From Informal to Formal Learning as Musical Learning Cultures](#)” also shows several examples of this type of references by flamenco and jazz musicians. This work also helps to provide opportunities for solo or group interpretation. Working in a group is not enough, as chapter “[From Individual Learning to Cooperative Learning](#)” shows. For group work to become cooperative, learning in joint cooperative activity is required.
- **The most important aim of instrumental education is being able to communicate musically, and connect with your audience, developing interpersonal skills which can only be had by *working in groups and for groups*.** As a result, a multidimensional environment/context needs to be established for conversation and interaction, similar to that seen in the informal teaching mentioned in chapter “[Learning and Teaching Music in the Twenty-First Century](#)”, and to organize the classes and materials around these objectives.
- As observed in several chapters (e.g., “[Reading Music: The Use of Scores in Music Learning and Teaching](#)”, “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”, “[Instrument Mastery Through Expression: The Learning of Instrumental Technique](#)” and “[Learning Music by Composing: Redescribing Expressive Goals on Writing Them](#)”), **motivation with this model is linked to the sensation of learning and progression and to the search for a musical learning aim.** If the problems proposed are *authentic* in the dual sense of being *student problems and relevant problems* regarding music and musical interpretation, the student’s purpose is intrinsic and connected to resolving these musical problems.
- **All of the processes we have just described change the meaning of *evaluation*, for both teacher and student,** as shown in chapter “[Re-thinking How to Assess](#)

**Students of Musical Instruments**". This includes the *initial evaluation* where the knowledge of the teacher was sought and the *evaluation of progress* at the different learning stages. In this model, evaluation and accreditation have different goals although they should be interlinked. Formative evaluation becomes part of the process of learning and teaching and is not the final purpose of that process. This optimises learning.

- **Evaluation practices should therefore be understood as tools of self-analysis rather than tools for giving out marks, scores or numbers.** Evaluation should be more interlinked with learning and teaching that emphasizes the results of learning (formative evaluation). This would be easier if during the actual learning process one also learned how learning and teaching could be *evaluated collaboratively* amongst colleagues and students. However, as shown in chapters "[Re-thinking How to Assess Students of Musical Instruments](#)" and "[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)", collaboration between teachers, sharing rubrics and forms of assessment would provide students with common criteria which could doubtlessly help in this self-analysis.
- **Teachers should therefore *critically reassess the role of musical education access systems and exams, including giving a score to interpretation exams, tests with scores of any type, music competitions or contests, or awards where the aim is to motivate the students from outside*** (more detail in chapters "[Re-thinking How to Assess Students of Musical Instruments](#)" and "[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)"). Instead, musical production spaces would be useful where goals were communicative and collaborative, with autonomy and self-regulation. So too would the creation of activities to promote composing and generating music to accompany other activities, etc.
- **All these constructivist processes should necessarily be accompanied by *more repetitive learning processes, aimed at learning and automation techniques***, as shown in chapter "[The Psychology of Learning Music](#)". When these more repetitive processes are shared-goal orientated and the student is aware of this, they make sense. They stop being visionless and form part of a process in which a wide variety of methods and strategies are used. Practicing is not just to repeat, it is for exploring variations or forms which inevitably involve repeating known sequences. However, these processes will always be surpassed by more constructivist processes and become a means not an end.

## 1.2 Guidelines for Promoting Deliberate Changes in Teaching Practices

As we saw in chapter "[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)", the processes from the previous section demanded both a different perception from the learner and

enforced changes on the teacher, their vision of themselves and their work. Similarly to the previous section we would like to highlight the principles and activities driving these changes and which have been referred to in the different chapters:

- **It is important to reflect on *teaching experience* with consideration of what teaching ideas are actually held and what practices are actually carried out.** Similarly to the students, teachers need individual reflection, but cooperative reflection with other teachers promotes both clarification and the development of alternatives. As we saw in several chapters (“[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, “[How to Know and Analyse Conceptions on Learning and Teaching](#)”, “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”, “[The Impact of Teaching Conceptions and Practices in Early Musical Instrument Learning](#)”) and possibly due to changes in professional development and education, new teachers may have more novel and complex pedagogic ideas, which are closer to the constructivist tendencies in the latest educational reforms, but they also have fewer strategies or experiences for putting these ideas into practice. Collaboration between teachers with different experiences is therefore highly useful. The different continuous professional development courses may also be a place to foster this reflection. More experienced teachers should also attend these courses because they promote a large range of strategies and innovative pedagogical approaches (López-Íñiguez et al., 2014; Torrado & Pozo, 2006; also chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”). Here again, regulatory and awareness raising processes are much easier to trigger when one is surrounded by companions who both help with them and also propose other outlooks (see chapter “[How to Know and Analyse Conceptions on Learning and Teaching](#)”).
- **There is a need to undertake *research in the classroom* and read current research on the different aspects affecting the learning and teaching of music** (musical pedagogy, educational psychology of music centered on new musical learning and teaching approaches, enriching teaching experiences), **and *document their practices and thoughts*, which means dedicating time to critically reflect on research, teaching practice, and pedagogic ideas.** These practices would be more worthwhile if they were employed within collaborative groups than if they were individual, as we saw in the previous paragraph (see also chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”).
- ***Exchange knowledge and experiences with colleagues and experts in pedagogy in cooperative and reflexive situations of learning to become a reflective practitioner*** (Marchesi & Martín, 2014; Schön, 1987) and thus seek opportunities to observe different practices of teaching and offer companions the chance to observe them to be able to develop *reflexive teaching strategies* (see chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”).



- **Reflect on or design instrumental teaching methods which highlight the principles described in this section and analyze teaching practice itself.** Class recordings that can be analyzed afterwards may be useful here (chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”). For this SAPEA may be used (a system for the analysis of music learning and teaching practices) as described in detail in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”.

### ***1.3 Developing Musicians’ Identity as Learners***

Throughout this book and as summarized in this chapter, our purpose has been to illustrate the changes we believe should be introduced into learning and teaching processes, and which should involve students and teachers respectively. However, music teaching cannot be modified by these necessary changes alone. It was not the aim of this book to deal with institutional changes but in chapter “[Learning and Teaching Music in the Twenty-First Century](#)” we noted that there is a clear division between the study of instrumental music in educational institutions and genuine practice in the professional world. This divide begs an in-depth revision of these institutions with their hermetic music classrooms and the welcoming of this professional practice, together with the twenty-first century’s huge array of music production and listening scenarios. Several chapters dealt with how educational institutions and the staff in charge of teaching in them have not yet adapted their practices to a multidisciplinary vision which encompasses the expression, innovation, technical mastery and declarative knowledge required for learning an instrument (Sarath et al., 2014), all upheld from a student-centred focus. With regard to the differentiation between associative and constructivist learning processes (chapter “[The Psychology of Learning Music](#)”), and the differences between implicit and explicit cognition (chapters “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)”, “[How to Know and Analyse Conceptions on Learning and Teaching](#)” and “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”), we have tried to point out the existing differences between more traditional forms of teaching and those which focus on the student. Our conviction is that with this focus, music students will not only learn an instrument and convey expressiveness and emotions, but will also become the managers of their own learning, mastering above the art of learning to learn. These changes are only possible when the teachers, as shown in chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”, have been capable of making changes to their own ideas about what learning and teaching is (chapters “[How Teachers and Students Envisage Music Education: Towards Changing Mentalities](#)” and “[How to Know and Analyse Conceptions on Learning and Teaching](#)”). This requires a different approach to teacher training, addressing the same processes mentioned above in the case of the students, as well as the need for insight and

investigation on learning and teaching methods offered by continuous professional development, classroom research and the creation of teacher groups capable of analyzing and discussing their professional business (see chapter “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”).

We insist, however, that it is not sufficient to change how music is taught and learned and how teachers are trained. As shown in chapter “[Learning and Teaching Music in the Twenty-First Century](#)” and reflected in studies and statements by a large number of music teaching associations, a paradigmatic change is required in the education of musicians. Much greater emphasis needs to be placed on factors such as all-round education, the social function of music, or revolutionary learner-centred pedagogies. However, as discussed in chapters “[Learning and Teaching Music in the Twenty-First Century](#)”, “[Teaching Music: Old Traditions and New Approaches](#)” and “[Instrumentalist Teacher Training: Fostering the Change Towards Student-Centered Practices in the Twenty-First Century](#)”, for this to occur music education centres need to foster spaces of reflection and the development of critical thinking for future musicians so that they can develop their identities as interpreters and will be capable of composing, innovating and developing as teachers or for other professions a musician can hold. In chapter “[Learning and Teaching Music in the Twenty-First Century](#)” we also saw that all of this is impossible if there are no spaces for working in a group. These spaces need to be represented by students, teachers, musicians from different professions and also the people responsible for political and curricular decisions, as well as specialists in psychology. In that same chapter, we briefly introduced the idea that one of the ways of addressing the multidisciplinary of learning and teaching was the development of the *learner identity in the students*, which is the central identity in any educational situation, but also on professional levels (Larsen, 2017). This multidisciplinary would include the interests and motivations of the students and their psychological processes, the necessary conditions for learning to produce holistic, inclusive results and simultaneously respond to the professional demands of the job market of a specific culture. In other words, the idea is to help build up knowledge relating to who we are (Coll & Falsafi, 2010; Monereo & Pozo, 2011), and also to what one “does not have and is not” (Reay, 2010, p. 2)—what one wishes to be and what one still needs in order to obtain one’s objectives and dreams that constantly change. All of this will affect the preparation for different professional roles a musician adopts during his or her life. However, there are many other aspects also inherent in the development of musicians, such as knowledge about employability (see chapter “[Learning and Teaching Music in the Twenty-First Century](#)”), artistic and expressive agency (Kondo, 2019; Kondo & Wiggins, 2019), creativity (e.g., Clarke, 2012), or conceptual and historical issues about the repertoire canon. It is therefore a matter of going beyond the “training” of a virtuoso, who has been trained as a soloist, and to understand the toing and froing between several roles of the same person (see *multiple-selves* by Monereo & Badía, 2011 or the cognitive plurality of the “I” in Pozo, 2011). Managing all of this essentially requires addressing the relationships between cognition (*what I think*), behaviour (*what I do*) and a person’s emotion (*what I feel*) (e.g., McPherson et al., 2017), with regard to

oneself (individual dimension, intrapsychological process) and other people (social dimension, interpsychological process). The role musicians play in society and in each individual culture is important too, as is learning from informal spaces, learning about the inclusive function music has within groups of different urban tribes, and the changes in musical repertoire that move and touch the entire diversity of the world's inhabitants. Above all, we need to understand that educating musicians does not mean "training" cultural elites who produce works that by their very nature only a few people can afford to interpret or listen to. Throughout this book we have continuously advocated for conservatories not just to mould *rara avis*, but to train musicians who are integrated into the culture and fabric of society and who genuinely enjoy what they do and the processes they have gone through to get there.

As stated in the long-forgotten chapter "[Learning and Teaching Music in the Twenty-First Century](#)", the education of musicians should not be removed from the ways in which music is experienced and felt in a society. Since these ways change, musical education must also change in response to demand. We know that no society or culture can exist without music. For some strange reason our species cannot have a social life without music. In all societies, both on a personal and group level, melodies and organised sounds are needed. We use them to synchronise our emotions: our images and actions converge but they also mutate and become personalised. If we wish to respond at one and the same time to the cultural universality and diversity that characterizes music, twenty-first century societies need melodies that stop making us feel the same in standard globalization productions and start making us feel the diversity that exists amongst us and deep inside each one of us.

Our society needs highly self-aware musicians, who construct their new, multi-faceted identities and who, through their music, help everyone and society at large to get to know themselves better and to multiply their identities and sensibilities. Music which enriches us instead of belittling, dividing or excluding us, is multifarious and inclusive. To achieve it we need musicians who retain their own cultural history but at the same time dare to explore new identities and new ways of making music, and who enjoy learning and being learners all their lives, with each new day discovering the pleasure of continuing to learn, surprising themselves and us with their music.

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