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1. LEARNING BETWEEN MEANS AND AIMS

INTRODUCTION

An increased political and professional interest in learning has manifested itself in a shift from content-based to outcome-based curricula and in an increased focus on evidence-informed teaching. Within schools, among teachers and in the overall field of education, the paradigmatic shift from content-based to outcome-based curricula has been followed by enhanced interest in, as well as debate about, how learning outcomes are operationalised into learning objectives or targets in study regulations and syllabus/lesson plans, and in formalised assessment of learning. The political focus on evidence-informed teaching and learning has manifested itself in an enhanced focus on the quality of teaching and teaching methods, including an interest in a summative assessment of learning. Educational research on evidence-informed teaching claims the relevance of an enhanced focus on transparency in expected learning targets and on an assessment of the effect of teaching and teaching methods on learning. However, research also clearly underlines that teachers' and students' interpretation and sense-making, as well as their process-related and formative assessment of learning, play a fundamental role in what students' learn (Bryk, Gomez, Grunow, & LeMahieu, 2015; Rønsen, 2014). Furthermore, it is obvious that in practice, didactisation, i.e. reflection on teaching, and ongoing re-didactisation, where teachers change track in teaching due to unforeseen situations, opportunities or challenges, both take place (Hansen, 2006, 2010; Heyerdal-Larsen, 2000; Skjeldbred, Solstad, & Aatmosbakken, 2005).

This book addresses the multiple aims/means structure in educational processes of learning. Learning happens everywhere. When dealing with learning in educational contexts, means and aims always have both a normative and an instrumental content. An aim might be that students are able to read and write. The explicit or implicit normative content of this could be to get a job, to prepare students for participating in a democratic society, or to become able to enjoy literature. The instrumental content might be to differentiate between nouns and verbs, or to use invented spelling. Furthermore, in educational contexts, learning always actualises itself in terms of methods and targets and must be viewed from a teacher's as well as a student's perspective. We understand learning as a phenomenon, which is only possible to derive from observation or people's reports. It is impossible to 'see' the essence of learning in itself. In order to get a grip of learning, researchers and practitioners might use models or metaphors, as for example Anna Sfard does in her paper 'Two

metaphors of learning' (Sfard, 1998). In this book, we deal with learning by using 'means' and 'aim' as metaphors, which, if viewed as intertwined, show a multiple structure of the phenomenon of learning. In educational contexts, we have both long-term aims and means of an educational process and short-term aims and means of a lesson. These are pursued by facilitating learning by means of teaching. Here, on the one hand, learning might be the result of teaching activities. On the other hand, learning describes various means that might be activated either by the teacher or the student, in order to facilitate, understand or evaluate the student's processes of learning. The teacher can use 'aims' and 'means' as a kind of tools to reflect and decide on different teaching strategies, while at the same time the teacher and perhaps also the student strive to bring about learning. As a means, learning is the description of something, which happens in a process, which aims at 'something'. In order to make 'something' happen, means must be operationalised into actions, in terms of habits or methods. As an aim, learning is the description of 'something' that 'somebody' (the student or the teacher) intends to be the target of a learning process. We will discuss how we are to understand the relationship between means and aims in the process of learning.

In order to get an analytical grip of learning as a phenomenon in teaching and within student/teacher interactions, this chapter conceptualises and discusses the multiple aims/means structure, which we assume characterise processes of learning that involve a teacher and a student.

HOW IS EDUCATION POSSIBLE AND HOW TO UNDERSTAND EDUCATION?

The purpose and core idea of teaching and didactics is the focus of renewed attention. The rise and development of didactics is closely related to a growing societal complexity and the consequent changes of – and uncertainty about – the purpose or aims of education (Qvortrup & Keiding, 2017). Furthermore, it is closely related to changes in – and increased uncertainty about – answers to the question, "how is it possible to educate"? This concerns the question of how means of education sometimes might eventually contrast with overall aims of education, such as freedom, democracy and autonomy (ibid.). This is related to the condition of teaching, or the so-called pedagogical paradox saying that teaching operates through outer influences, but is directed towards inner changes. The paradox is specified in relation to, on the one hand, the principle about the child's sensitiveness to formation or plasticity (Bildsamkeit) and on the other hand, the principle about the request for self-action (von Oettingen, 2001). According to Herbart, 'Bildsamkeit' is the foundational concept of education (Herbart, 1965[1841]: 165; English, 2013: 11) and education would not be possible or understandable without Bildsamkeit, because education requires the capacity to form as well as the sensitivity to be formed. Andrea English expresses it as follows: "The concept [Bildsamkeit] captures the individual's capacity to form and to be formed and thereby connects to the notion of Bildung" (2013: 12). The idea that the individual should have the capacities 'to form

and to be formed' might be helpful for the teacher's understanding of education, because it helps him to see that from the perspective of the student, teaching and learning involve active as well as passive dimensions. If we are to understand these passive and active dimensions, we need to dig deeper into teaching and learning as interactive processes between a teacher and the students. Furthermore, we need to conceptualise the content of these interactive processes. We will argue that the concepts of means and aims, in terms of a multiple aims/means structure, might be helpful in this endeavour. Therefore, we pose the following questions: How can we capture the meaning of means and aims in the institutionalised processes of learning, which involve interactions between individuals such as teachers and students? What do these concepts mean if we understand means and aims from the perspective of the students as well as the teachers? What are their most important elements? And what is the relationship between means and methods on the one hand, and aims, outcomes and targets on the other hand?

THE RELATIONSHIP BETWEEN TEACHING AND LEARNING

In order to discuss the relationship between means and aims, we must first understand the ongoing development of the understanding of the relationship between teaching and learning. Since the end of the last century, the phenomenon of learning has received increasingly more attention. According to A. Hargreaves (2003), this change is linked to globalisation, the emergence of 'the knowledge society' and an enhanced focus on innovation and creativity. Knowledge and learning are considered to be fundamental resources for future development. The focus on learning, however, must be understood in light of the developments in the Western world that already happened in the early part of the 20th Century. The so-called 'second industrial revolution' demanded an educated work force and this led to a view of workers as 'human capital' (Becker, 1964; Mincer, 1958). In relation to the increased interest in learning, a great variety of new concepts of learning appeared. One difficulty involves coming to terms with constantly changing definitions of learning (Qvortrup, Wiberg, Christensen, & Hansbøl, 2016). As argued by Qvortrup and Keiding (2016), the preoccupation with learning activities and concepts like "students as chief agents or constructors of their own learning" and "from teaching to learning" seems to have changed how we talk (and think?) about teaching. Some researchers consent that the new orientations have guided the attention away from teaching, and consequently from the discipline didactics and theories of instruction, towards the learner and learning strategies, and have placed activities referring to learning on the centre stage (Haugsbakk & Nordkvelle, 2007; Richardson, 2003; Terhart, 2003). According to Biesta (2012: 37), we have witnessed a new language of learning in the education system and a shift from teaching to "teachingandlearning", which he deliberately writes as one word, as this is how many people seem to use it nowadays. The consequence is a "learnification" of the education system (Biesta, 2010). Another difficulty, therefore, relates to the

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question of how to understand learning and teaching in schools as two mutually related but independent phenomena. This is no simple matter, and often the attempts to establish connections between the concepts or understandings of learning and teaching are based on educational designs attached to particular views of knowledge and learning. Examples of this can be found in some (social) constructivist theories of teaching activities, which take their point of departure as the view that knowledge and learning are always socially situated and arise from collective and personal constructions (Lave & Wenger, 1991). Manifold teaching or pedagogical patterns, such as student-oriented inquiry teaching, problem-based teaching, cooperative learning and computer-supported collaborative teaching, have been conceived and referred to as if they inherently belong to particular social constructivist notions of knowledge and learning. Several of these attempts tend to focus on the teachers' proactive efforts to design teaching activities that facilitate student learning through encouraging individual and collaborative/cooperative efforts to construct knowledge (Keiding & Qvortrup, 2015; Hattie, 2009: 26; Cobb, 2007: 5).

The starting point of this book is that in educational institutions, one reduces analytical extent and potential if the duality of learning and teaching is placed in a hierarchy, or if one side colonises the other. The two sides are mutually dependent and do not enter into a superior/subordinate relationship with each other. As Dewey says in the two versions of his book, *How we think* (1991[1910]: 29; 1986[1933]: 140): one might as well contend to have sold without anyone having bought than to contend having taught without anyone having learned. When we talk about learning without relating to teaching, we move outside the domain of school and teaching, and when we talk about teaching without relating to learning, we talk about teaching while turning a blind eye to its aim. Furthermore, it will always be the case that teachers as well as students are part of the landscape, although the relationship may function in various ways. In the educational landscape, teachers deal with aims and means in order to influence the students' processes of learning, while at the same time, students perhaps deal with other aims and means.

An example might be useful. Teaching children to read short texts might be the aim of the teacher in a classroom. The teacher's idea of a means for learning to read short texts may be certain reading strategies, such as direct instruction on background knowledge, graphic organisers, text structure, paraphrasing, or summarisation (Watson, Gable, Gear, & Hughes, 2012). The aim of the teacher (the child is able to read the short text), if understood by the student, may influence the learning process of the student, but the striving of the student does not necessarily mirror the reading strategy suggested by the teacher. Furthermore, the child might not be interested in, or even understand, the aim and means of the teacher. The idea is not to simplify the very complicated play between teacher(s) and student(s), but to clarify the many perspectives involved when dealing with aims and means in education.

The example illustrates that aims and means do not necessarily mean the same for the teacher and the student. Learning is not necessarily a direct consequence

of teaching, but the educational landscape consists of teaching as well as learning distributed between students and teachers, with many conceptions of means and aims in play. This manifold structure of aims and means we will call the multiple aims/means structure in order to point to teacher as well as student perspectives. The idea is that in order to be able to identify and structure teaching and learning aims, it is necessary to focus on the multiple aims/means structures of learning.

An Analysis of the Concepts Means and Aim

In the previous section, we addressed the multiple aims/means structures, which, we assume, characterise processes of learning in educational settings. In the following, we will firstly discuss the concepts of aims and means and then move on to develop a conceptual framework for the features of the very complex landscape of aims and means in the interaction between teachers and students.

In the introduction, we referenced Dewey for saying that teaching that does not relate to learning is turning a blind eye to its aim. In this, he agrees with Luhmann. According to Luhmann (2006: 81), the aim of educating (that is bringing up and learning) is what defines education. He says that interaction without an intention to educate does not count as teaching. However, both Dewey and Luhmann acknowledge that different aims emerge within teaching (Keiding & Qvortrup, 2014). One may differentiate between the planned, the taught and the experienced aims (Hopmann & Künzli, 1994; Kelly, 2009), and between the explicit and implicit/ tacit or hidden aims (Kelly, 2009), which are shaped by personal, societal or cultural norms and values (Heimann, 1976; Olteanu & Olteanu, 2013) and subjective theories and epistemological assumptions (Helmke, 2013). According to John Dewey education as such has no aims – only persons have aims (Dewey, [1985]1916: 114). He differentiates between the aims of the teacher and the aims of the students and makes the assertion that:

> It is as absurd for the latter [the teacher] to set up their "own" aims as the proper objects of the growth of the children as it would be for the farmer to set up an ideal of farming irrespective of conditions. Aims mean acceptance of responsibility for the observations, anticipations and arrangements required in carrying on a function…. (Dewey, 1985: 114)

How is this statement of Dewey to be understood? Dewey suggests that the teacher should deal with aims and means. But he also emphasises that the teacher must strive to make the aims and means, in concrete processes of learning, become the aims and means of the students.

> There is also an inclination to propound aims which are uniform as to neglect the specific powers and requirements of an individual, forgetting that all learning is something which happens to an individual at a given time and place. (Dewey, 1985: 115)

Then, what does it mean, when we say that teaching and learning might *be directed by* aims, and how can we understand the relationship between aims and means? Is it the case that means only exist in relation to an aim and vice versa? Would it make sense to discuss aims in education without discussing means?

Regarding the first question about the directedness towards aims, as mentioned at the beginning of this chapter, in recent years we have witnessed a revitalisation of the dormant interest in how aims are operationalised into learning targets in study regulations and lesson plans (Biggs & Tang, 2011; Guskey, 2013; Redelius & Hay, 2012). Within the framework of this book, this operationalisation cannot be understood as a one-way process, but as manifold processes where teachers, students and teaching go through an operationalisation of different aims and direct themselves towards specified targets. These targets are not solitary and simple. Furthermore, the directedness towards targets does not say anything about the effect of aims and means, or about the relationship between a point of origin and a terminal point. On one hand, this relates to the presence of the multiple aims in the concrete practices. Practice is also justified by moral, social, and educational reasons, among others (Kvernbekk, 2011: 522). On the other hand, it relates to the fact that the inclination towards aims and targets is not about the realisation of causal relationships, but about directedness and reflection on effectiveness, justified by *how* (not *if*) gains in learning compare to prespecified targets. One may argue that the function of aims and targets is support. We might say that aims and targets function as support for the teacher as well as the students.

The Double Aim/Means Structure of Learning

Learning is a phenomenon which we cannot observe directly and which, on the one hand, is spoken of as the aim and maybe the result of teaching activities and, on the other hand – we must assume – describes various activities, which lead to the achievement of learning 'something'. From the perspective of the teacher, learning might be analysed in terms of aims and means in order to find suitable means for the achievement of the students. Aims and means are concepts the teacher uses to reflect and decide on different teaching strategies.

The analysis is complicated due to the perspectives we must include; namely the perspective of the teacher and the perspectives of the students. It might be illustrated as in the figure below:

It is important to notice that the aims and means intended by the teacher might not be the aims and means intended or experienced by the students.

If we look at means as the motor of learning it is relevant to focus on the relationship between the means of the teachers and the means of the student. Furthermore, we must look at the relationship between the aim of the teacher and the aim of the student.

We believe that this double aims/means structure can help identify the phenomenon of learning in relation to teaching. The idea is to understand the relationship between

Table 1. Aims and means

	Aim	*Means*
	Aims might be specified into targets	*Means might be operationalized into methods that perhaps turn into habits*
Teacher perspective	Teacher intentions. The teacher might have an idea or image of an aim or target for learning– for example how to do something in an excellent way.	Means the teacher is using in the classroom and which she assumes will help the student to learn, such as for example instruction methods or explanations.
Student(s) perspective	Something inherent in the process of learning, which might not yet be unfolded because it is dependent of what is going on in the situation. The student may not be aware of the aim.	Means as something which moves the process of learning and which is the motor of change. The student may not be aware of the means.

the means that the teacher are stating and using and the means which are actually part of the student's process of learning and which might be part of how the aim of learning is structured. In empirical studies, the idea might be to combine actual processes of learning with teacher intentions of learning and to discuss whether teacher methods and means actually make sense. Put in another way: Is there a match between the means used by teachers and the means that might be identified in the learning process of the student? Furthermore, is there a match between the aims of the teacher and the aims and means of the student? These questions need to be investigated in empirical research. In this book, our intention has been to sketch out a framework, which might be useful in empirical research.

The next chapter, Chapter 2 'Prerequisites of learning from various means and aim perspectives' by Merete Wiberg and Ane Qvortrup, focuses on how aims and means might be understood as prerequisites and conditions of learning. The chapter also focuses on and analyses how various prerequisites influence the way students and teachers perceive aims and means of learning. Prerequisites for learning are divided into three categories in order to deal with the following three perspectives: (1) the child/student perspective (2) the teacher perspective and (3) the shared context of the student and the teacher. In the first category, concerning the perspective of the child/student, 'meaningfulness' and 'persistence' are addressed as complex aims and means of learning. In the second category, the 'teacher's view on learning' and 'teacher's reflection and listening' are addressed. And in the third category, prerequisites that are considered central for analysing the shared context of the student and the teacher are 'meaningful experience' and 'disturbance' and 'interruption'. The chapter analyses and discusses these selected

prerequisites in order to offer a more nuanced picture of the interaction between students and teachers in a shared context.

Chapter 3, 'On learning (how) to learn', by Oliver Kauffmann, Merete Wiberg and Christopher Winch, deals with the concept 'learning (how) to learn'. The idea of the chapter is to develop arguments for a more fruitful conception of 'learning to learn' and to discard the problematic view that 'learning to learn' refers to a prime mover for learning and therefore can be viewed as an efficient means of learning. It is argued that 'learning (how) to learn' is a metaperspective on learning and not a reference to a specific competence or essence in human beings. Instead, it is argued that 'learning to learn' is a meaningful concept if it is understood with the background of a number of conscious, reflective acts, which enable the person to further develop concrete abilities, such as literacy and numeracy. Furthermore, the advancement of such reflective capacities is intimately related to bringing virtuous capacities and formation of the person to life on both an individual and a social setting. In this sense, learning to learn might be seen as a means for developing already-experienced processes of learning and as an aim with respect to living a good life.

In Chapter 4, 'Practical emotions in processes of learning', Søren Engelsen argues that emotions are of vital importance to learning processes. In the chapter, he deals with how emotions influence the learning processes of the teacher as well as the student. Engelsen analyses students' experiences of intrinsic motivation and meaningfulness and addresses the role of the teacher's own emotions in being sensitive to such experiences. By applying basic points in philosophical and psychological theories of emotion to a phenomenological investigation of value experience, the chapter investigates the significance of the way emotions function and dysfunction to processes of teaching and learning. From an aims and means perspective, certain emotions are seen as important means for learning, but at the same time, they can also be argued to be aims in their own right.

Chapter 5, 'Motivation, learning, and the educational dialogue' by Klaus Nielsen, takes as its starting point the motivational crisis and the growing experience of boredom as a problem related to the arrangement of the educational system. The chapter suggests that the learning objective paradigm introduces a way to conceptualise student participation, student intentionality and student agency that replaces the humanistic psychological and Piagetian theoretical framework with a behaviourist framework especially inspired by Skinnerian thinking. It argues that with a reintroduction of Skinnerian behaviourism through the learning objective paradigm, the educational system might run into the same problems that Skinner's work ran into five decades ago, namely a conceptually underdeveloped understanding of student intentionality and student agency, leading to a growing sense of boredom and lack of motivation among students.

In Chapter 6, 'Learning objectives as frameworks and resources in upper secondary education', with Luhmann's second generation systems theory as a theoretical framework and based on a literature review and empirical studies in three upper secondary schools, Ane Qvortrup and Hanne Fie Rasmussen investigate how

learning objectives are realised within upper secondary education, how teachers and students experience and respond to them and how these experiences contribute to their expectations of and participation in teaching. The chapter draws a picture of learning objectives as engaged in complicated conversation. Learning objectives are used by teachers in an ongoing mediation of the communication with students to set direction, to stay focused and to keep on track. This is done, for instance, by accentuating sudden aspects of learning, such as needs or prerequisites, and by evaluating student success. Furthermore, the objectives are used in the teachers' re-didactisation to support didactical choices in teaching and to reduce uncertainties. The objectives often refer to the national curricula, but also the tradition of the subject and teachers' values and beliefs play an important role. Altogether, the chapter draws a picture of learning objectives as engaged in complicated conversation, where they mediate as and between the aims and means of education.

In Chapter 7, 'The didactics of group work: Between means and aims in theory and practice', Gerd Christensen discusses aims and means of group work as a teaching and learning method. In Denmark, group work has been implemented at all levels of education since the 1970s, from primary school to university, but also in training sessions in organisations. The discussion in this paper takes its point of departure as pedagogical textbook introductions, where group work is often presented as a means to learning social skills and co-workability. However, as most students and teachers know, this is not always the case. Observations of long-term group work show that this can be a tough experience for the students. Contrary to expectations, the group work seemed to foster anti-social behaviour and development of selfish skills. The paper therefore concludes by suggesting how the (often) laissez-faire group pedagogy, which is dominant in Denmark, could be improved. The suggestions focus on alignment of the aims and means of group pedagogy.

Chapter 8, 'Formative reformulations in interventions on school development: A longitudinal case study of a project on student note-writing' by Torben Spanget Christensen, deals with an intervention project aiming to investigate and eventually change student note-writing at an upper secondary school. Inspired by Engeström's idea of 'activity systems', the teachers in the project are analysed as collective subjects acting within and between activity systems striving to develop and produce a meaningful object for change. The most important activity systems are the various school subjects that the teachers represent. The content of the object to be developed is student note-writing which is seen as a means for learning as well as an aim, due to being a tool for developing the students' disciplinary learning in combination with development of selfhood. The focus is on teachers' understanding of students' notes and subsequently their way of dealing with them in their teaching practice. This chapter also includes views from the student concerning how they learn from note-writing and analyses of how note-writing on an online platform initiate new ways of communication between students and teachers.

Chapter 9, 'A Luhmann-inspired approach to include neuroscientific knowledge concerning adolescents' motivation for learning in high school instruction', by

Nadja Marie Mariager, presents a theoretical framework for including insights about brain maturation and correlations with motivation for learning in adolescence, in teachers' planning and execution of instruction in upper secondary education. The chapter suggests that understanding the fundamental principles behind brain development in adolescence has the potential to improve understanding of students' prerequisites for learning, as well as understanding of the impact of classroom instruction on the brain's development, and thus on the student's prerequisites for further learning. More specifically, findings support psychological motivation theories and empirical educational studies that stress the importance of social cognitive as well as social-emotional abilities in a learning context. In this way, the chapter suggests that neuroscientific knowledge may help teachers to select existing learning theories that seem to be more effective than others. Furthermore, the findings have the potential to point out new normative guidelines for teaching, as there is some evidence that brain regions that support social-emotional functions are less active whenever the individual is performing task-required cognitive functions.

In Chapter 10, 'Patterns of Participation: A participatory account of learning to teach', Jeppe Skott takes a situative and socio-cultural perspective on learning to teach. Drawing on social practice theory and symbolic interactionism, he introduces a participatory framework called Patterns of Participation (PoP), which aims to understand (1) teachers' contributions to the interactions that emerge at their schools and in their classrooms, and (2) their experiences of being, becoming, and belonging as they relate to such interactions. The framework can be used to investigate the reflexive relationships between novice teachers' shifting professional identities, their changing positions among their colleagues and at the school in general, and their contributions to emerging classroom practices.

It is a pleasure for us to be able to present the work of these researchers in this second book from the network 'On the Definition of Learning'. We wish to thank all the authors for their very interesting, strong and groundbreaking work presented in this book, and for their contribution to the network in general. Furthermore, on behalf of several of our contributors, we would like to thank the reviewers for their effort. Work like this is what propels us to continue our work in the field.

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