Twitter As a Music Education Tool to Enhance the Learning Process: Conversation Analysis

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Abstract In the age of Web 2.0, the social media (SM) represents an important part of the communication in sharing information and, therefore, knowledge. The term SM is often used without clear outlines, and teachers and students do not understand the importance that they could have in a learning process. Teachers and learners can change the method to communicate: when communication is efficient, both the student and the teacher take advantages. This research presents a case study that analyzes the effect on teaching and on learning brought by the use of Twitter to support the classroom lessons of Music Technologies. Students were involved in team work, based on the Problem-Based Learning principle. The focus of the research was the analysis of the conversation among students and teachers to identify problems in the learning process and enhance the student's skills. Results showed that students with dyslexia compensated for their processing deficits by relying on learning strategies and help seeking.

Keywords Conversation · Dyslexia · Learning process · Motivation · Twitter

1 Introduction

Nowadays, Information and Communication Technologies supply teachers with a large variety of tools to enhance the learning process. These tools permit to communicate with people to share information and knowledge through a formal or an informal language: Information and Communication Technologies include communication, expression, and socializing tools (Ferrari, Carlomagno, Di Tore, Di Tore, & Rivoltella, 2013).

Unfortunately, many teachers are cautious about changing in the didactic (Bell, 2001). They are nervous when it is necessary to use the ICT in the classroom lessons; they lack the confidence to take the risk of using technology in their subject areas;

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they are afraid that computers could interfere with the traditional learning based on the book; they are nervous in the use of an unfriendly language, related to the ICT.

It is not the simple introduction of technologies into the classroom that can create innovation in didactics: cultural change is needed in order to go beyond the concept of the classroom being the context within which knowledge is passed on, to the learning environment intentionally designed by the teacher, in which students use different technologies in an integrated manner, taking advantage of their potentialities and allowing the students to become protagonists in the knowledge-building process (Rivoltella, 2015).

The Web technologies provide teachers with a large variety of tools to improve the learning process, tools through which students can learn independently, in their own way and in their own (formal or informal) language (Hatcher, Snowling, & Griffiths, 2002; Reigeluth & Curtis, 1947). The Web technologies offer the opportunity to converse with many people, asking information, answering questions, supplying help in solving a problem, and so on. It is possible to write a message, to record an audio message, and to read or listen many times to a message. These are important factors for all students but particularly for the dyslexic students: the Web technologies represent a support for them reducing the difficulties in the learning process (Gagné & Driscoll, 1988; Spitzer, 1993, 1995).

This paper describes a case study referred to as pilot project in Music Technologies based on Problem-Based Learning (PBL). The main aim of this project was to assist students to construct knowledge and develop skills in problem-solving and decision-making using Twitter. Results showed that Twitter increased student's motivation and permitted to improve educational achievement through work groups and the control of the conversation (communication) among students and teachers.

This paper is organized as follows.

Section 2 describes the social network. Section 3 explains the concept of conversation on Twitter. Section 4 shows an experimental test that illustrates the effectiveness of the proposed method. Finally, conclusions are drawn in Sect. 5.

2 Twitter: The Social Network for Learning

The social networks may be considered a tool "for and of didactics," and the common feature of these environments is content sharing (Boyd & Ellison, 2007; Boyd, Golder, & Lotan, 2010; Ellison, 2013).

Twitter is considered a social network characterized by an environment within which participants may share "what they are doing," by means of short messages (Tweets) (Zhang, 2009): a message may have a maximum length of 140 characters, and it may include an image as well; the distribution of the message depends on the interest among the followers (O'Reilly & Milstein, 2009; Small, 2011).

In a learning process, Twitter is a platform that permits (Java, Song, Finin, & Tseng, 2007):

- Information sharing, which provides opportunity for interactions among people (students/teachers) and the possibility to improve the learning process
- Information seeking, by means of the use of s tag (hashtag)
- Informal communication among students
- Experience sharing, which helps student to recognize a problem analyzed in the past; friendship-wide relationships (Ebner, Lienhardt, Rohs, & Meyer, 2010)
- Communication (conversation) any time (creating the potential for learning beyond the classroom), in a synchronous or asynchronous way, using a mobile device or a computer

The teacher may design a learning process based on problem-solving (Problem-Based Learning) (Della Ventura, 2014), inserting as discussion topic a query relevant to a certain set of problems to solve and taking advantage of the community to solve them.

On the base of the above considerations, it is possible to identify the potentialities of Twitter regarding the student's motivation and the characteristics that may respond to the needs of a dyslexic student: characteristics that may help him/her to integrate spontaneously into the group work, rather than isolate himself/herself (Rivoltella, 2004). The dyslexic student has intuition, the capacity to synthesize, and the problem-solving capacity. The conciseness of the messages helps the students who have a hard time reading, and it does not tire them when learning the content; the insertion of tags helps them in the text analysis; the possibility to write short messages helps them to develop the capacity to formulate a question or an answer (moreover, the automatic spell checker, already present in all devices, allows them to avoid possible spelling errors); the possibility to intervene when they want helps the students to organize and manage their time.

3 Conversation on Twitter

In these new learning environments, where students learn through Twitter, the teacher must focus the attention on the conversation among students. A learning conversation is different from a "normal conversation" because there is a specific focus for thinking and talking (Huth, 2011).

The conversations have to promote learning for all students (non-dyslexic and dyslexic students) involved in a project, by means of:

- A problem-based methodology where "problem" required a solution
- A conversation for investigating theory and practice in a collaborative work among students
- A conversation that is collaborative and challenging

When communication is effective, both the student and the teacher benefit (Ghislandi, Cumer, & Raffaghelli, 2012). Communication makes learning easier, helps students achieve goals, increases opportunities for expanded learning, strengthens the connection between student and teacher, and creates a positive expe-

rience. If the teacher shows interest in an opinion of the student, that student will feel that their ideas are appreciated. This increases self-esteem and confidence (Della Ventura, 2015). The teacher can evaluate the effectiveness of a lecture by student feedback: by asking questions, the teacher can determine if the student needs help to support the personal study (Della Ventura, 2016). If there is a lack of responses from the class, it is likely that the students were unable to understand the lecture. This can lead to poor performance (Venable & Milligan, 2012).

One of the aims of the teacher is to analyze the communications among the participants, using a set of quality indicators (see Table 1).

4 Application and Analysis/Research Method

The research presented in this article refers to a pilot project that analyzes the effects on learning and on teaching brought by the implementation of the social network in the classroom lesson. The discipline forming the object of the project is Music Technology. The research was conducted for a time period of 7 months (from November 2016 to May 2017), and it engaged the third grade of the Music High School, with a total of 29 students (16 girls and 13 boys) of which 3 are affected by dyslexia.

The Music Technology discipline was taught once a week in a 2-h class. For the first 2 months of work, the students participated in the lessons in the classroom listening to the teacher's explanations and taking notes in addition to the teacher's lecture notes. During this period the students were introduced to the knowledge of microphones and stereo recording techniques. During the classes explanations were also given on how to assemble and disassemble the recording equipment.

Simultaneously (starting with the first week of work), Twitter was used with simple questions related to the topics explained in class, to analyze the presence of potential doubts and then try to exceed them by group work. This way we tried to make the students more familiar with the SN.

At the end of the period, a practical/theoretical simulation, identical for non-dyslexic and dyslexic students, was carried out. The dyslexic students were allowed to use the compensatory tools and the dispensatory measures, specified in the PDPs (Personalized Didactic Plans). Each of the three students used what was specified in the corresponding PDP.

The result supplied important (and at the same time expected) indications so as to be able to continue with the project. In particular, the following data emerged (Fig. 1 – color black):

1. Thirty-eight percent of the students (11 students – none of the dyslexic students) knew how to assemble the cables for the recording equipment (without being guided by the teacher), motivating their choices and making connections between different concepts (Fig. 1 – *column 1*).

Table 1 Quality indicators to evaluate the conversation

Indicators referred to the internal process	Construction of simple sentences for the message
	Use of the technical terms in simple sentences
	Use of target language
	Creation of an inclusive experience for the students
	The messages are used in meaningful ways to engage and support learning
	Willing participation in tasks and activities
	Student ability to assess own progress and to reflect on learning
	Students are aware of his/her role in the work group
	Provides accessible information for intended target audience
Indicators referred to the learning and growth process	Number of messages
	Choosing the adequate strategy to solve the problem
	Number of messages from dyslexic students
	Number of strategies to compensate gaps of the technical language
	Student develops skills in using a variety of technical terms
	Absence of correction in answering a message
	Correction without explanation in answering a message
	Correction with explanation in answering a message
	Correction and proposal for reflection and help
	Number of proposals of a new theme on a theme already presented
	Number of student-led discussions
	Conclusions are connected with other knowledge and experience
	Use and exploration of contributors' terms, concepts, and meanings
	Discussion of explicit and implicit explanations
	Clear conceptual links between messages and presentations of original data
	Discussion of strengths and weaknesses of data sources and methods
Indicators referred to the user's perspective	Increase of the awareness of the group work
	Awareness of the teacher's short-term planning
	Awareness of the teacher's long-term planning
	Awareness of learning processes and teaching methodologies
	Apprehension about communicating in the target language
	Reflections on the impact of the researcher on the research process

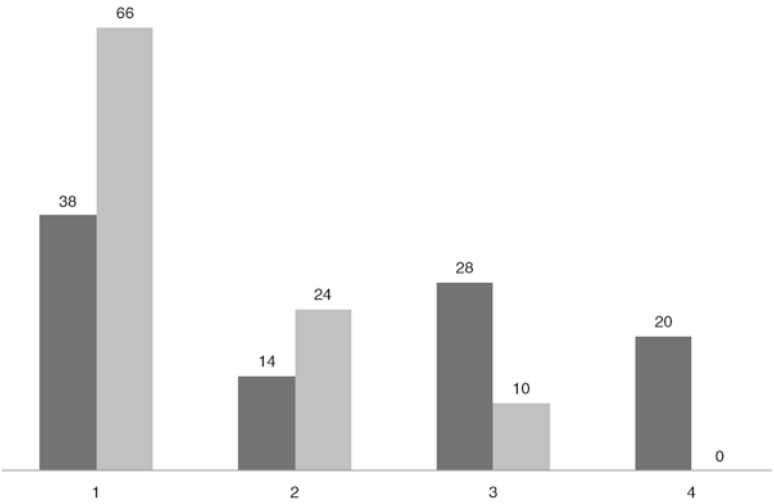

Fig. 1 Results of the first (black color) and second examination (gray color)

2. Fourteen percent of the students (four students of which one dyslexic student) knew how to assemble the cables for the recording equipment (without being guided by the teacher), motivating their choices and partially making connections between different concepts (Fig. 1 – *column 2*).
3. Twenty-eight percent of the students (eight students of which one dyslexic student) knew how to assemble the cables for the recording equipment (without being guided by the teacher), motivating their choices and partially and approximately making connections between different concepts (Fig. 1 – *column 3*).
4. Twenty percent of the students (six students of which one dyslexic student) knew how to assemble the cables for the recording equipment (without being guided by the teacher), without motivating their choices or making connections between different concepts (Fig. 1 – *column 4*).

In the following months, during the in-class lessons, the students were introduced to the "case study," to search for solutions to problems proposed and related to specific situations of audio recording. Simultaneously, a didactic path was initiated on Twitter, where the teacher proposed a set of problems different than the ones analyzed in class and the students were asked to find a solution, motivating and documenting (even by indicating links to external websites) their own choices and commenting on the messages of other colleagues.

At the end of the period, another practical/theoretical simulation, identical for non-dyslexic and dyslexic students, was carried out. The dyslexic students were allowed to use the compensatory tools and the dispensatory measures, specified in the PDPs (Personalized Didactic Plans). Only one dyslexic student used what was specified in his own PDP.

The results met the expectations (Fig. 1 – *gray color*):

1. Sixty-six percent of the students (19 students – none of the dyslexic students) knew how to assemble the cables for the recording equipment (without being guided by the teacher), motivating their choices and making connections between different concepts (Fig. 1 – *column 1*).
2. Twenty-four percent of the students (seven students of which one dyslexic student) knew how to assemble the cables for recording (without being guided by the teacher), motivating their choices and partially making connections between different concepts (Fig. 1 – *column 2*).
3. Ten percent of the students (three students of which one dyslexic student) knew how to assemble the cables for the recording equipment (senza essere guidati dall'insegnante), motivando le scelte e facendo collegamenti tra concetti diversi in modo parziale e approssimativo (Fig. 1 – *column 3*).

Beyond the numerical results that may be read in the diagrams, one of the important points that emerged is related to the fact that all the students motivated the choices they had made for the recording, even though in some cases only partially (Fig. 1 – column 2) and to a minimum extent only approximately (Fig. 1 – column 3). There was a general improvement within the classroom and, above all, for the dyslexic students, two of which managed to perform the delivery without using the compensatory tools and/or the dispensatory measures.

Two main purposes emerged from the analysis of the Tweets: instant communication and content sharing. From an ex post questionnaire submitted to the students, it emerged that most of them agreed or strongly agreed to have drawn benefits from Twitter via interactive learning, instant communication, and autonomous learning.

5 Discussion and Conclusions

The research presented in this paper supports the idea that the social network (Twitter) is not only a tool to enrich the teaching but it is an active tool to increase students' motivation allowing them to be active in the learning process. While the use of Twitter to organize the learning process did not require special attention, the pedagogical use does require advanced planning for leading the work group.

On the base of the achievement tests, the result of this pilot project demonstrates the effectiveness of Twitter in the learning process: it allowed students to create a learning community to share knowledge through messaging.

It allowed the creation of a repository in the field of Music Recording, available for successive analysis of real problem.

The presence of the teacher in the Twitter group had an added value in the learning process. Students perceived the presence of the teacher as facilitator: a teacher who does not operate under the traditional concept of teaching but rather is meant to guide and assist students in learning, taking their ideas and creating material through self-exploration and dialogue.

Every school might start to use Twitter as an important part of the learning process.

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