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An Intelligent Online Environment for Active Music Learning

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Abstract

This article analyses the possibilities to improve the performance of the students of a Music High School, creating an online community thorough the online platform OPEN SoundS: a virtual studio where students and teachers can create collaborative musical projects. This project has focused on improving the effectiveness and quality of the learning process. A number of factors contributed to students' positive perception: a desire to be involved and engaged in a music project, a view that the traditional educational style is not best and the possibility to be a member of a transnational community. This methodology has been tested on a selected group of students of different ages and academic performance.

Keywords: Collaborative learning, learning motivation, music education, online classroom, peer-learning.

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1. Introduction

The new forms of online community could be described as networks of people who adhere to determined values and assert their membership by engaging their passion (Kim, 2012). This can also be considered as the place where people sharing common interests and value, inevitably end up meeting and recognising one another, thus developing new communities (Brindley, Walti & Blaschke, 2009; Fini, 2009).

Such a community-universe gradually turned, through the Internet, into a parallel relational universe, Interacting, yet distinct from the «physical» one. In this fluid «membership system» the construction, acquisition and re-transmission of knowledge is perceived as a primary good, as an important instrument used by the people to show personal interests and state how much he/she feels involved in the community (Minocha, 2009).

Moreover, a model of knowledge construction/transmission freely referable to any kind of community cannot be found. In fact, it could be said that each community tries to define an original model of its own, depending on its openness towards the outside world, on interests shared within, on how it relates with the Net, and a number of other factors. It could be said that «we are in the presence of a continuously learning community, where knowledge forming the connective tissue of the entire community is the fruit of an uninterrupted re-elaboration process open to all community members and, although carried out differently every time, favours the collective playful and voluntary features of the learning process, as well as the experience achieved from it» (Pollarini, 2007).

The research presented in this paper shows a case study conducted in a Music Hugh School using the learning environments OPEN Sounds, in order to improve the skills and the performance of the students in the area of Music Technology. The main focus was on how to support learners considering the concept of "learning styles" as a central component to all learning processes.

This paper is organised as follows. Section 2 describes the new dimension for teaching and learning. Section 3 describes the learning environment OPEN SoundS. Section 4 shows an experimental test that illustrates the effectiveness of the proposed method and finally, conclusions are drawn in Section 5.

2. New dimension for teaching and learning

In this new educational scenario emerge different behaviours. They establish connections between worlds where knowledge is a construction or a production performed by a student or among students (Winters, Walker & Rousos, 2005). The new interactive roles and the new subjectivity they express are cogent in that the connection practices, which in our time provide the perceptive sense of the globalised world, can't kept off the educational pathways of the near future, including more conventional ones (Yang, Okamoto & Tseng, 2008).

On the base of these considerations, the aim is to give pedagogical legitimacy to the new forms of expression and practical approaches, typical of communities (real and virtual). At the same time, a new operattional support has to be supplied to the education system, because completely new and unexplored dimension can already be seen (Della Ventura, 2014).

The new online learning environments represent an important tool for teaching and learning: students can learn how to enter in a logic of time and space dilatation in the making their works (Codone, 2001; Hwang, 2014). There is no timetable to keep: work can be done anytime and according with personal psychological, emotional or physical disposition.

Time and space open, modify and pursue each other in infinite forms of expression as in students' emotional, cognitive, affective and social life (Klimova, 2015).

These online learning environments' features represent fundamental factors to motivate students to actively seek out and participate in activities without having to be rewarded by materials or activities outside the learning task.

The project presented in this paper used the online platform OPEN SoundS. This is an online platform that offers a new dimension in training on the Net: the possibility to produce and share music remotely within communities. It has the same features of a virtual community like a Social Network: students and teachers can work together, sharing ideas, experiences and knowledge. They can use a formal or an informal language, chat one-to-one or all togheter, download audio/video file… The aim is to take advantage of these features to improve the skills and performance of the students in the area of Music Technology.

3. OPEN SoundS

OPEN SoundS is an online platform open to student and teacher of Music Schools from all over the world. The OPEN SoundS Community is a meeting point for students and the various actors involved in the creation of music in a collaborative, remote and transnational dimension. The community involves:

- students from schools, music academies, universities, research centers and relevant networks (school, producers and/or artists networks)
- students from public and private vocational institutions
- teachers from the various music education areas
- musicians and other operators from the communication industry (cinema, TV, advertising)
- community of music ICT (Information and Communication Technologies) professionals and software developers
- companies involved in the multimedia supply chain and, in particular, in electronic music (specialised manufactures of music computers and software).

OPEN SoundS is a virtual learning environment dedicated to the creation of music: shared support tools are provided to act within it.

The networks of interest in this area are related to:

- the development of creative musical products
- skills around the operation of technological equipment (software and hardware) for the production and creation of music
- the acquisition of more general skills related to collaborative learning environments.

Through OPEN SoundS students and teachers can:

- access a virtual learning environment dedicated to collaborative music production which functions remotely and transnationally
- work with students from all over the world to create and share music remotely within the education system
- access training and information resources for the conscious and strategic use of digital music technology and the Net.

In this learning environment, is possible to upload any type of files and more precisely all types of audio and MIDI files, samples, as well as Scores, Patches and Schemes of composition. At any time is possible to see every aspect of the project: description, specifications, used files, individual contributions and posts.

OPEN SoundS, through a highly innovative and creative practice in fact wants to be a means to stimulate and support for the development of key competencies for initial and continuing training.

4. Application and analysis: a case study

The research presented in this article refers to a project realised in a Music High School, using the online platform OPEN SoundS. This project, conducted for a time period of 4 months (from January 2017 to April 2017), involved 10 students belong to the third grade of the School. The subject proposed to the students consisted in the realisation of a Historical Documentary about the city of Castelfranco Veneto (Italy), the city of Giorgione (a painter who lived between 1477 and 1510).

The disciplines forming the object of the project were Music Informatics, Music Composition, Foreign Language (English) and Art History. Every student had high academic performance in some but not in all these disciplines: in this way each student could help the other students to impove they knowledge and skills.

The students had to determine the subjects of the Historical Documentary (as well as Giorgione), collect the information, write the text, record the narrator voice, write the music texts, record them and join them to the voice, record the video and finnaly realise the video. The students worked on the project through interventions that proposed every time an idea or changes/additions to a preceding idea.

In this new context where students learn through OPEN SoundS, the central role is played by the operations of **monitoring and analysis** (Della Ventura, 2015). Without them the online environment will barely be able to emancipate from a perception that envisages it only in ancillary terms with respect to the education system and not, as it should be, as an **element integrated** into it and, actually, able to guarantee **added value to it** (Della Ventura, 2017)**.** Table 1 shows the skills monitored and analysed by the teachers during the period of the project.

Table 1. Skills: monitoring and analysis

Discipline	Skills	Unsatisfactory	Almost satisfactory	Satisfactory	Good	Excellent
Music informatics	Music information retrieval					
	Music recommendation (audio/video)					
	Technical language					
	Digital sound synthesis					
	Sound recording and digital sound					
Music composition	Music analysis					
	Use of stylistic features					
	Grammatical mistakes					
	Music harmonisation					
Foreign language	Use of language writing					
	Accuracy (appropriate use of vocabulary)					
	Fluency and interacation					
	Language structures					
Art history	Critical thinking and					

analysis
Attention to detail research
Comfort adapting content for different audiences and users

At the end of every month an examination was passed in the classroom for each discipline, taking note of the students' results. Figure 1 shows the score of the students in each discipline, at the beginning of the process (blue columns) and at the end of the process (red columns). The x-axis represents the Students and the y-axis the score of each student (where 10 is the maximum).

Every two weeks there was a meeting of the teachers of the disciplines involved in the project:

- to compare and analyse the data collected by the monitoring of the activties on OPEN SoundS
- to compare and analyse the data collected by the monitoring with the results obtained by the students with the examinations passed in the classroom
- to define the strategies to adopt to help the students
- to define the strategies to adopt to motivate students and retained them on OPEN SoundS.
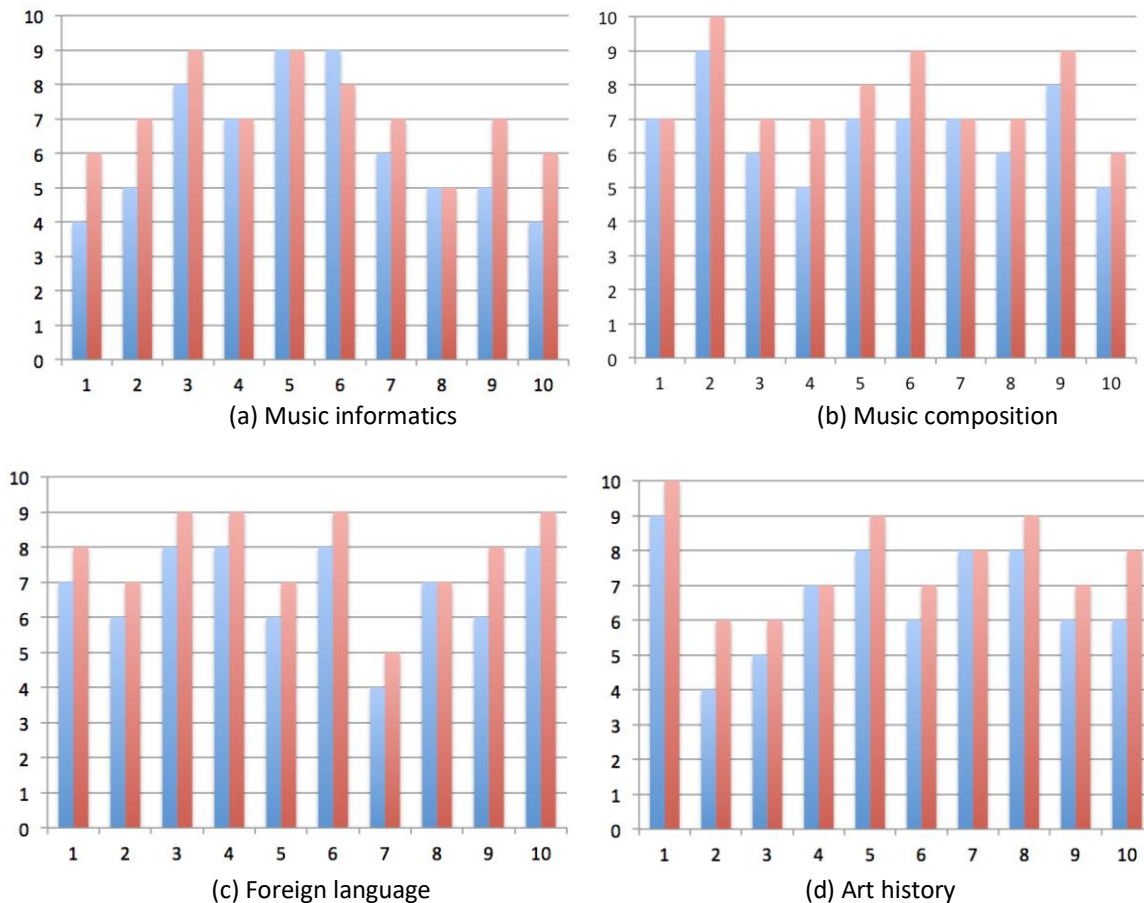

(a) Music informatics

(b) Music composition

(c) Foreign language

(d) Art history

Figure 1. Results of the examinations. (a) Music. (b) Music composition. (c) Foreign language. (d) Art history.

At the beginning (first month), students thought that the project on OPEN SoundS did not involve any advantage, but also any drawback. Moreover, students found that the project required more time, resources and effort. In fact there was poor participation of students in group work activities; every

one of them proposed own idea without express their opinion about the other students' proposals or without suggest changes or corrections (relative to errors in the use of the different technologies, or mistakes in the composition); few students asked the help of the other students to realise the own idea; few students asked the help of the teachers.

Teachers decided to adopt the following strategies:

- chose a conversational tone that makes students feel comfortable in the OPEN SoundS
- allow students to become process managers in the online course by giving up some of the traditional power of teachers
  allow students to take responsibility for their peers' learning as well as their own through discussion forums
- use of smaller and more frequent assignments throughout the course to provide learners with opportunities to process course concepts and content
- model the right way students should communicate online
- use of formal and informal language in writing a post
- use of brief orientation for students to get familiar with the terminology and tools used to realise the project
- provide feedback to all assignments and comments
- quick answer to students' concerns or technical difficulties
- use of peer assessment to provide additional feedback to students.

In the following period, students find the work on OPEN SoundS more interesting, challenging and enjoyable, as well as it allows self-directed learning and makes them be proud of their work. Other aspects considered as very positive by the student regarding the project were: cooperative work, active participation, transversal skills integration and better self-knowledge. Students are more satisfied and are more positive regarding their learning, while students in the traditional curriculum often tend to evaluate their experience as irrelevant, passive and boring.

At the end of the project, there was a substantial improvement of the students in all disciplines (see Figure 1). From the notes of teachers' reflections we found out that students involved in the project confirmed that OPEN SoundS allowed them to acquire higher skills in the new languages and codes of the Internet, with teamwork tools and digital technology. They also underline a higher self-confidence in the promotion and management of ideas and creative projects needing shared approach. They improved their ability to adapt, take responsibility and solve problems, along with increased interest in innovation.

5. Discussion and conclusions

This article presented a case study about a project in the filed of Music Education, one domain that has traditionally taken place in a face-to-face mode. The aim was to realise a learning environment for active music learning. The introduction of OPEN SoundS was truly satisfying: there was a positive and significant impact both on the learning and on the teaching which was subsequently mirrored by the results reached at a didactic level.

The benefits of using new technologies in a learning process depend on the teachers' approach towards ICT, applied to teaching and to learning. This propensity depends on the type of education that teachers received and on the competence level that they succeed in reaching in the use of ICT.

There are still many research directions to investigate under the same lines presented in this article. One important direction concerns the research of methods for supporting students with special needs, such as dyslexic students.

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