The impact of information technologies

within an art educational organization

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Abstract:

In this study we investigate the impact of information technologies (IT) and online learning communities to an educational organization. For this reason, we create an online learning community of tutors and students in a Greek music school and employ an e-portfolio and social networking platform in order to facilitate the educational process. The platform combines digital artifacts such as blogs, e-portfolios, forums, audio and video in a common social networking environment. Our initial hypothesis is that the traditional dyadic relationships would be transformed with the implementation of the aforementioned platform in terms of augmented interactivity, and performance improvement. Overall, initial findings indicate that the implementation of new media inside the particular educational organization creates a dynamic that necessitates further interpretations. The first issue that needs to be addressed is whether technological means can substitute face-to-face educational processes. The correspondence between the participants' needs and the available applications is another matter to be acknowledged. As a result, the use of the existing applications requires critical thinking regarding the selection of the appropriate means of expression (i.e. technical exercises are better demonstrated via video) while potential lack of applications demands strategic decisions in order to overcome this deficiency.

Résumé:

Dans cette étude, nous étudions l'impact des technologies de l'information (IT) et des communautés d'apprentissage en ligne à une organisation éducative. Pour cette raison, nous créons une communauté d'apprentissage en ligne des tuteurs et des étudiants dans une école de musique grecque et nous employons un e-portfolio et une plateforme de réseautage social pour faciliter le processus éducatif. La plate-forme combine des artefacts digitals tels que les blogs, les e-portfolios, les forums, audio et vidéo dans un social commun environnement de réseautage. Notre hypothèse initiale est que les relations traditionnelles dyadiques seraient transformées avec la mise en œuvre de la plate-forme ci-dessus en termes de l' interactivité augmentée, et de l'amélioration des performances. Globalement, les résultats initiaux indiquent que la mise en œuvre des nouveaux médias à l'intérieur de l'organisation particulière de l'éducation crée une dynamique qui nécessite d'autres interprétations. La première question qui doit être abordée est de savoir si les moyens technologiques peuvent substituer le processus éducatif. La correspondance entre les besoins des participants et des applications disponibles est une autre affaire qui doit être reconnue. En conséquence, l'utilisation des applications existantes nécessite une réflexion critique quant à la sélection des moyens appropriés d'expression (c'est à dire des exercices techniques sont mieux démontrés par vidéo) tandis que le manque potentiel d'applications exige des décisions stratégiques afin de surmonter cette carence.

1. Introduction

Online learning communities are defined as groups of individuals that share experiences, learn together, and engage in regular interaction though discussion and knowledge sharing activities relevant to their domain. People participate in online learning communities in order to achieve a shared learning objective through social networking and computer-mediated communication (Lave & Wenger, 1991). These learning objectives may be introduced by either the tutors or may arise out of discussions between participants that mirror their personal interests. With the present study we attempt to investigate the impact of information technologies (IT) within a Greek music school. Particularly, we utilize Mahara[1] as the main platform of the online learning community and allow tutors and students to build their profiles and interact. Consequently, we evaluate the educational processes as these can be mediated by the use of digital artifacts such as blogs, e-portfolios, forums, audio and video in a social networking environment.

Given that learning process is not just the sum of information but rather a social emerging phenomenon, characterized by social interaction that produces new knowledge, blogs, forums, subgroups serve as means for reflective opportunities. Furthermore, despite that online communities are categorized in several types (e.g. task-based, knowledge-based, practice-based), in real world, as in our case study, communities display hybrid characteristics.

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[1] http://mahara.org/

2. Background and related work

2.1. Learning Theories

Many researchers have suggested that the social phenomenon of community may be of great assistance regarding the progress of online learning (e.g., Bonk & Wisher, 2000; Palloff & Pratt, 1999; Rovai, 2002). Other researchers also highlighting the role of social interaction in the construction of knowledge (Dewey, 1934; Kafai & Resnick, 1996), argue that collaborative learning results in increased motivation (Slavin, 1990), promotes learning achievement (Maxwell, 1998) and ameliorates the perception of skill development, including satisfaction (Benbunan-Fich, 1997).

In reality, there is a great number of theorists that have suggested that social constructivism constitutes the most accepted theoretical framework that can be manifest in learning mediated through technologies (Kanuka & Andersen 1998). Putting it simply, social constructivism premises that the link between actions and situations is achieved through meaning negotiation, where participants direct their efforts as to encompass intersubjectivity and/or shared meanings (Barwise and Perry, 1983; Roschelle, 1992; Vygotsky, 1978).

The rapid evolution of information and communication technology has given rise to a learning theory, known as connectivism, according to which knowledge occurs through forming and creating meaningful networks. The theory premises that knowledge is developed through networks that reside outside of ourselves as opposed to the more traditional views where learning is conceptualized as an internal and individualistic activity. This perspective provided the theoretical basis of our analysis, firstly because it focuses on the interaction between participants and technology and secondly because it allows us to better understands the network's interactions, its context and how information flow and knowledge are produced (Siemens, 2004).

In particular, we attempt to regulate all the informational flow that participants create as they develop networks for supporting self teaching. Every participant is interconnected through similar discipline networks and thus he creates informational flow to the community that in turn benefits the organization and the participants. For example, students in a musical school may create music channels in YouTube, listen to web radio, communicate to other musicians in other schools and may participate in communities such as 'Drummer world' or 'Jumping fish'. The participation in our community will give rise to an interconnection which is aspired to transfer information, knowledge, and experience to all participants and the organization as an entity, every time a relative issue is addressed.

What's more, the specific music school has already entered the virtual space, in terms of a Facebook page, an official website and YouTube groups' presentations. This transformation expands the physical space, and accelerates the flow of information. Given that the music education is not considered as a solitarian activity but rather collaborative and social, we propose that the expansion of educational process to virtual environments may offer the appropriate ground for adding value to educational practices as we incorporate pedagogical methods of collaborative knowledge, reflection and augmented interaction.

2.2. Learning, collaboration and reflection in arts and music

This new approach to learning requires a consequential shift in the attitude towards the students and the nature of educational programs per se. When it comes to music education, a considerable amount of studies have stressed the importance of a new learning paradigm that would involve open-ended discovery and encourage

unique, personal responses, as opposed to predetermined objectives and right or wrong answers (e.g. ArtsConnection, 1996; Eisner, 1994; Gardner, 1973).

Indeed, several researchers have introduced the term art integration (Fowler, 1996; Goldberg, 1997) in an attempt to explain how teaching about, with, or through the arts can be accomplished. Given that social interaction is inherent to music practice, an appropriate educational model fosters, along with the basic learning, the development of communication skills. Furthermore, in the National Standards for Arts Education considerable attention has been given to the issues of verbal response, discussion, analysis, and reflection as the most important aspects of producing and experiencing arts. The theoretical idea behind these established guidelines can be traced back to the work of Dewey (1934), according to whom the role of teachers is realized through the unveil of the existing artistic capacities, abilities and aptitudes that potentially lie within the student by forming the best conditions for learning to take place.

In the education literature, it has been suggested that learning is optimal when formal and informal learning is combined. The distinction between these terms is not associated with the formality of learning, but rather with the direction of who controls the learning objectives and goals. So, in a formal learning environment, the goals and the objectives are set by the teacher and the organization, while informal learning means that learning is "achieved in a similar way to everyday learning outside an institution" (Jorgensen, 1997). Transferring the above to the music learning environment, formal and informal situations are further associated to what called 'strong' and 'weak' traditions of learning (Rolf, 1991, cited in Lilliestam, 1996). The majority of teaching institutions are employing 'strong' traditions of learning, in the sense that learning is viewed as part of a larger social structure that regulates the teaching process. Even in the unique environment of music education –unique in the sense that creativity, improvisation and interaction are the primal focus- such as schools, universities and conservatories, formal learning has been the main pedagogical methodology (Nerland, 2007; Zhukov, 2007). Thus, in such institutions music learning is assumed to result from an organized and sequential teaching of music that is initiated from expert teachers in a formal situation. What's more, the adherence to objective measures of performance (i.e. better test scores) is also an aspect that allocates the outcome of the teaching process to the musical aptitude of the student rather than to the teaching abilities of the instructor (Rostvall & West, 2003).

In recent years, there has been an increasing amount of literature on how openness and democracy can be incorporated in modern music classrooms. In the context of a recent discussion, several authors have highlighted the need to alter the existing pedagogical paradigm as to link the informal strategies to the music schools' formal curriculum (e.g., Green, 2008). In the same vein, Folkestad (2006, p. 135) has also mentioned that: 'Formal – informal should not be regarded as a dichotomy, but rather as the two poles of a continuum; in most learning situations, both these aspects of learning are in various degrees present and interacting'. In other terms, the development of non-traditional social learning environments that would foster interactive, non-linear and self-directed learning processes has been recognized as an increasingly important area in the field of online education.

As a consequence, a new type of pedagogy has emerged where the roles of both teachers and students have seriously changed. Collaborative learning refers to methodologies and environments in which learners engage in tasks in which they depend on each other and share experiences through active interaction. It is the educational paradigm that online learning communities and ours as well, are heavily

rooted; in such communities technology is used to help mediate and support group interactions in a collaborative learning context. In more detail, in collaborative learning, students virtually teach one another. They support the instructions of the teacher and through reflective practices evaluate their results and the educational process. So, the learning process becomes shared, externalized and more active as compared to a traditional method that is merely results oriented. Accordingly, the teacher is no longer employing an expert role nor is he demonstrating authoritative attitudes but rather is near the student and to a large extent a learner themselves, adapting a more critical pedagogical role (Green, 2008).

Reflection is a notion rooted mainly on the work of Schön (1987, 1991) who reckoned the need of formal educational programs to have a specific link between theory and application. The author -in line with the constructivist theory- argued that students need to know why they are learning something, its relevance to their current practice and how it enhances their future learning. In our platform, students are expected to become aware of their thinking process at the time of learning and therefore deepen their own learning insights through tasks and activities (Livingston, 1997).

3. Community design

Many theorists have addressed key factors that need to be taken into consideration when designing online communities for the latter to develop efficiently and maintain their dynamic nature (e.g., Pallof and Pratt, 1999; Biggs, 1989). Despite the differences between the models, the researchers seem to converge that the factors of usability, sociability, social and cultural presence and interaction are the most critical ones. Drawing from the design framework of Brooks and Oliver (2003), we identified as presage factors those that refer to the system, the learning context and the students' characteristics.

For a thorough understanding of the needs of participants in our community we organized face-to-face meetings with students and teachers in order to discuss the expectations and desires from both sides. It has been found that both students and teachers already use technologies, web communities and multimedia.
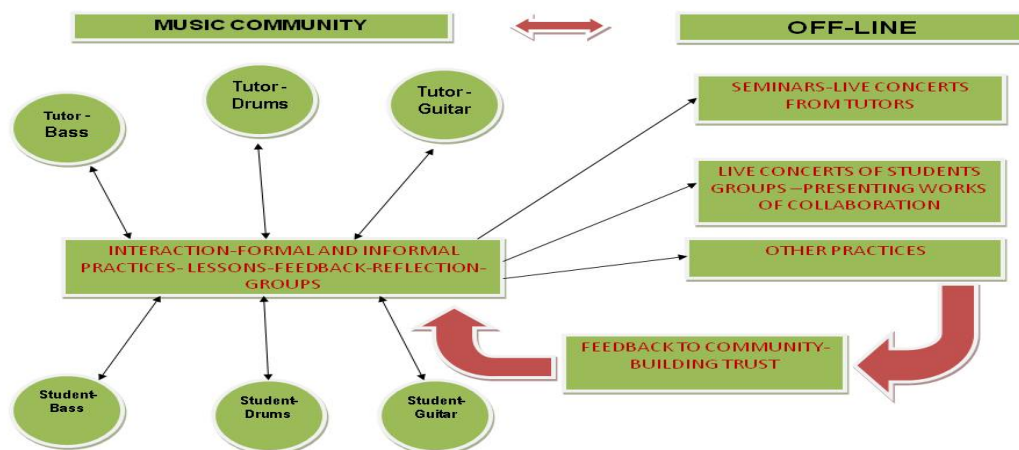

Figure 1. The structure of the community

The development of I.C.T has a great impact on music practices. There has been a vast growth of sites and communities in every aspect of music. For example, Internet is abounded with sites for online lessons (www.musiclessonsonline.co.uk/),

communities for promoting music (www.myspace.com, www.jumpingfish.gr), professional seminars and instructive sessions within musical instruments industries (www.drumchannel.com/, www.vicfirth.com/). In addition universities such as the Berklee college of music (www.berkleemusic.com/welcome/samplecourse) and the Penn state university (www.psu.edu) have developed on line courses for distance learning and have implemented the use of portfolios in the educational process including examples of skills and achievements, as well as reflective blog elements (www.portfolio.psu.edu).

The structure of the platform provides a cohesive model for interaction through tools that have been found to be of great importance for promoting collaborative learning, reflection, interaction and structured knowledge modes (Figure 1). Additional services can be applied in order to have synchronous communication and presentation of cultural activities such as live concerts and seminars (see Figure 2). For monitoring participation in the community there will be required registration.
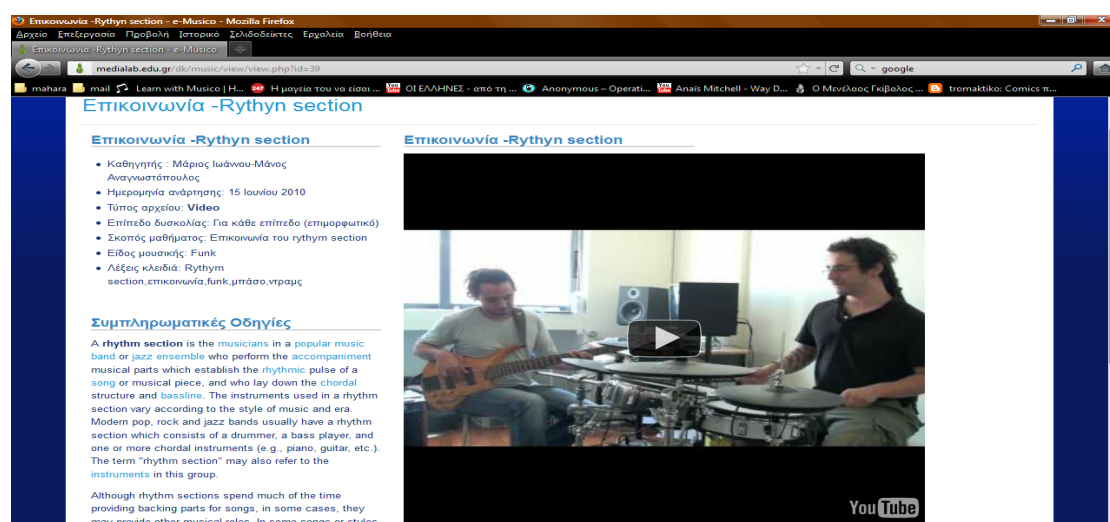

Figure 2. A sample seminar page

The first step for the development of our community was to design simple instructional materials as to test the presentation settings of the platform and understand how we can provide rich information for topics. Moreover, we managed to get an idea of how we can use the tools of the platform for rendering its architecture as a personal space for development (e.g. the profile settings and use of portfolio settings including views, blogs, forums, and feedback).

The purpose and goals of our community are presented in the welcome page of the platform. As we have already stated, the community is built in order to facilitate a virtual space of the traditional organization, implying that the roles of the participants have already been established in the institution. The institution can secure the level and credibility of the teaching staff. Students of the institution are allowed to use the platform only if they have enrolled to the institutions' courses. The duration of membership in the community is determined by the goals and the general operation of the organization. Members' roles are predetermined in the student-teacher basis and that of a visitor which in turn dictates the according rights and obligations. What's more, the role of the members is also designated from the possibilities of the platform. Finally, the administrators of the platform are responsible for handling members' participation and monitoring the platform in terms of following the code of conduct, principles and terms and conditions.

3.1. Site staff – moderators

The teaching staff of the institution participating in the platform is automatically assigned to moderator roles. Teachers monitor the activities and tasks of the platform and give guidelines for students' needs.

Initially, the role of the students of the institution is limited to simple membership. They use the platform for their personal development by employing the portfolios and social networking and also following the curriculum that evolves within the platform. However, students with high participation, and in collaboration with the teachers, may become moderators as well. As far as visitors concerns, they have access only in those pages of the platform that the participants decide to display in public.

3.2. Members' authorities

Teachers are required to state their full name and expertise on the display name setting (e.g. Marios Ioannou-drum tutor); they also create lessons in their portfolios for the students, provide links and media such as mp3, texts, give feedback and create subgroups with other teachers and students (e.g. Rhythmic section in jazz style of the 50's). The way a lesson in presented in the platform has to follow a standardized format. So, when a lesson is uploaded, the teacher has to state his/her name, the purpose of the lesson, to whom it concerns (i.e. level), its relevance and application, and a few key words. Additional information needs to be provided in textual form including any further guidelines, links and resources.

3.3. Students

Students have to declare their real name, level of education, and the subject of their studies e.g. piano studies. As follows, this provides the base for networking in terms of interest and educational level. For example, a first-year piano student may seek advice not only from teachers but also from a student with similar interest and/or higher level. Furthermore, the students follow the curriculum that is presented in the platform but at the same time are free to give feedback and express their personal interests by creating forums, blogs, views, subgroups etc.

4. Results - Evaluation

For an online community to be qualified as effective a variety of factors have been documented as important; sociability and usability are the main ones. Sociability refers to the way the members of the community interact with each other via technology, while usability is concerned with how users interact with technology itself (Preece, 2001). Indeed, given that interaction is especially important in all educational communities, and that cognitive presence (i.e. interaction with content), social presence (i.e. interaction among students) and teaching presence (i.e. interaction with teachers) have been reckoned as essential to communities of inquiry (Garrison & Cleveland-Innes, 2005), it makes sense that the factors of sociability and usability are considered the axes around the success of a community. As follows, for the evaluation of this online community we adopt the framework proposed by Preece (2001) according to which the success of an online community is determined by the notions of sociability, in terms of communities' purposes, its people and the policies and usability, in terms of dialog and social interaction support, information design, navigation and access. A schematic representation of several criteria that can be used to assess the effectiveness of our community is presented in Table 1.

Table 1. Community assessment criteria

Sociability		
Purpose • Message types • Number of messages • Quality of contribution	**Members** • Number of participants • Demographics • Roles • Members' experience	**Policy** • Policies effectiveness
Usability		
Dialog and social support • Time needed to learn and perform certain actions (create views, groups, blogs, messages etc), • Number of errors occurred in performing these actions • User's satisfaction (Likert-type scale)	**Information design** • Time needed to acquire information (e.g. help for uploading a video) • Access in the information without errors • User's satisfaction (Likert-type scale)	**Navigation/Accessibility** • Time needed to learn to navigate • Easy navigation • Number of errors • User's satisfaction • Access to software components • Time needed to download-upload

To sum up, our community will be evaluated according to the above quantitative criteria in combination with self-evaluation measures. In other words, due to the uniqueness of the teaching arts, the research methodology applied in this study cannot be directed towards either quantitative or qualitative approaches but instead a mixed method approach where those two are combined were considered appropriate. This approach has been widely implemented in studying communities of practice since quantitative designs are difficult to explore the nature of social realities developed through interacting between self and others (Denscombe, 2008; Verrastro & Leglar, 1992).

5. Conclusions

This work focused on the design of an on line community for music education. Taking into account the constructivism and connectivism theories of learning, we attempted to combine the formal and informal practices that occur in the educational process. Thus, emphasizing on reflection, collaboration and social networking, we created the virtual space for interaction and resources exchange among teachers and students of an art educational organization.

As a result, we identify as critical factors for the design the issues of sociability and usability. At the starting process of the implementation, the goal and the potential of the platform have been established and recognized by all participants. Several modifications have been made in order to meet the needs and the expectations of the members. Furthermore, we address issues of technology use such as video and audio recordings as critical for the platform. In addition, at this stage, face to face meetings and training in the platform's features have been arranged. It should be noted, though, that this process is ongoing and further results are to be expected. For example, at the next stage, we will monitor the performance of the members in comparison to those who did not take part in the platform, in terms of grades, teachers' and self evaluations.

In a nutshell, the use of the platform gives a variety of possibilities for educational and cultural activities. A plethora of resources can be summarized by creating a library of information. Using additional services of synchronous communication and streaming, we can broadcast seminars and live concerts and give on line lessons (e.g. from experts in the field). For future implications, it is worth investigating whether the philosophy of this network can be expanded to other art educational organizations exchanging experiences and practices regarding educational and professional matters linking teaching with real world practices.

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Links
http://mahara.org/
www.musiclessonsonline.co.uk
www.myspace.com,
www.jumpingfish.gr
www.drumchannel.com
www.vicfirth.com/
www.berkleemusic.com/welcome/samplecourse
www.psu.edu
www.portfolio.psu.edu