Συνέδρια της Ελληνικής Επιστημονικής Ένωσης Τεχνολογιών Πληροφορίας & Επικοινωνιών στην Εκπαίδευση

Τόμ. 1 (2014)

7ο Πανελλήνιο Συνέδριο Διδακτικής της Πληροφορικής

Development of online music courses using A-Tutor

Eythimios Syntixakis, Kaliopi Kalouta

Development of online music courses using A-Tutor

Eythimios Syntixakis[1] & Kaliopi Kalouta[1]
pepemakis@hotmail.com, kelly_kalouta@hotmail.com
[1] Msc in Informatics and Multimedia TEI of Crete

Abstract

As e-learning evolves and expands, it can address different domains of education. Music is an essential aspect of educating an individual, but when implemented in an e-learning system, it inherits certain challenges of distance and impersonality. In this study we create a music course using existing context from the 5th grade Music Course of the Greek public school curriculum. The course is hosted on an online learning management system, A-Tutor, which provides social network capabilities. Also, we implemented some interactive material to further increase the engagement of the participants.

Key-Words: E-learning, A-Tutor, Music

Introduction

Children of today are more comfortable with computers and technology in general. Using a learning management system (LMS), an instructor can easily create courses that the students will follow online. But if the lesson's subject become more complex and is based not only in textual analysis the creation is getting difficult.

Music is based on sound and the representation is semiotic rather than textual using a score and notes to indicate the melody of a song. The students get into an unknown semiotic language that has representative sounds for each symbol. In the course of music the sound is essential. But during an e-course were the teacher has no immediate contact with the student the examples and sounds must be in their place to prevent any confusion or explain a part of the theory. Also the teacher and students have to have a way of communicating for additional information, questions and thoughts about the lessons.

Our current effort is based on these premises and seeks to develop an online music course with rich content and social basis in order to achieve high efficiency distant education. To achieve our scenario we utilize an LMS platform called A-Tutor (Gay & et.al, 2014, Bath, Smith, & Steel, 2010) and add our content made by several authoring tools such as Reload, iSpringer Presentation, Hot Potatoes, etc.

In the next section we will refer to our motivation and theoretical basis. In Section 3 we will introduce the philosophy and design behind our idea and in section 4 the implementation of our system. Finally, in section 5 we discuss our results and work to be done.

Theoretical framework and motivation

Music is an essential part of a child's education. As National Association for Music Education refers "Perhaps the basic reason that every child must have an education in music is that music is a part of the fabric of our society […]. And the value of music in shaping individual abilities and character are evident" (National Association for Music Education, 2007).

Π. Αναστασιάδης, Ν. Ζαράνης, Β. Οικονομίδης & Μ. Καλογιαννάκης, (Επιμ.), *Πρακτικά 7ου Πανελλήνιου Συνεδρίου «Διδακτική της Πληροφορικής»*. Πανεπιστήμιο Κρήτης, Ρέθυμνο, 3-5 Οκτωβρίου 2014.

The motivation behind the creation of online music courses was not only its importance on the student's education, but also the challenge of implementing such an interactive and multimedia rich content into a LMS. The course's content is based on the Greek e-book "Music for 5th Grade" which is hosted in the Greek government's e-school site.

The theory of learning in which we have relied is radical constructivism. "What is radical constructivism? It is an unconventional approach to the problem of knowledge and knowing. It starts from the assumption that knowledge, no matter how it is defined, is in the heads of the persons, and that the thinking subject has no alternative but to construct what he or she knows on the basis of his or her experience." (Von Glasersfeld, 1996)

By engaging into an interactive environment, the student can use the freshly acquired theoretical knowledge which familiarizes him with what he learn better than just memorizing plain information. Also we enriched the presentations with audio clips not only because music demanded audio but also to give a narrative style into our content.

Development of online music courses using A-Tutor

The objectives that guided us through designing and planning the online music course was the student to acquire:

- The knowledge of sound basic features
- The ability to identify the notes on the score
- Basic music knowledge

Design and planning

Based on those objectives and the course material from "Music for 5th Grade" book we designed slides presentations, texts, quizzes, test as well as a novel interactive java applet that works as a glockenspiel and familiarizes the students with the note names, note position of the score and the note sound.

Each lesson of the course with have a set of slides in a presentation form in which the student will study the theory. The presentation will also provide sound examples as well as text to voice preferences. When the presentation reaches the end the student will gain access to the second part of the lesson which will be the interactive application. There the student can familiarize with the concepts that where presented on the theory for as long as it is required to get comfortable with them, with simple games that enhance engagement and commitment. Lastly there will be a set of quizzes and test to evaluate the knowledge gained from the lesson, and by have a decent grade on the tests, the student will gain access to the next lesson to continue his studies.

Based on the constructivism theory we wanted the students to interact not only with the system, but with each other as well. To gain different points of view on the same subject by socializing in the learning management system about it. Therefore we included a social network on our design to give the users the ability to exchange information and opinions.
Finally, the music lessons as all the e-courses have to be reusable and modular, thus our lessons were structured under the SCORM 1.2 standard.

Implementation

The implementation of the concept described above is separated into three autonomous parts. Building the environment to host the music course, creating the course material and also to develop the pilot example application.

Building the environment

The learning management system that was chosen to host our course was A-Tutor. A-Tutor provides a user friendly environment and many modules to support and expand its capabilities. It supports SCORM 1.2 packages and has a social network embedded on the system. In this social network each student has the opportunity to add friends make groups of interest and exchange opinions. In Figure 1 the user is on his network home page. The contacts of the student are demonstrated on the left and under the division of contacts there are the groups that the user has joined. Each user can create or join groups and add photos to his profile.

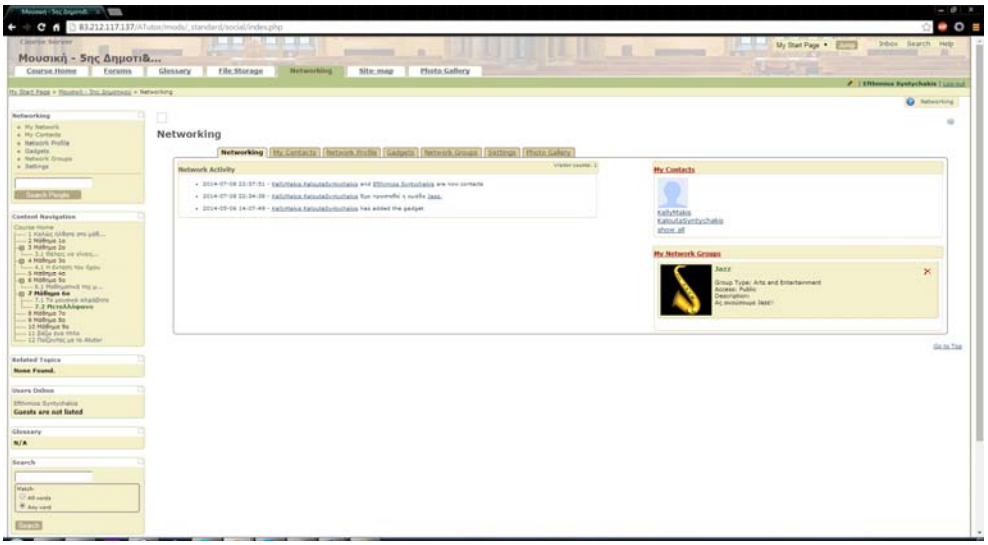

Figure 1 - Students Network and groups

Creating the content

The content of the lessons consists of a slides presentation, quizzes and test about the theory. We used Hot Potatoes to create the tests as well as the tool that A-Tutor provides to develop quizzes and tests online in QTI 1.2.1 format which enabled us to put a strict order in the lessons structure. The student had to watch the slides first, then do the tests and/or quizzes and then gain access to the interactive application. As you can see in Figure 2 there are audio icons next to the textual context of the slide. When clicked, those icons, initiate a voice sample that reads the text, or a sound sample in order to give an example to the user. The presentations where created in Microsoft Powerpoint and then packed using the iSpring Presenter into SCORM 1.2 packages in order to import them into our system.

Although the process was straight forward we encountered a problem while importing the scorm package into the system. A-Tutor did not seem to support the package. We created content online using the tools provided by the LMS and we exported and downloaded the content into a local machine. Using Reload we inspected the manifest of the exported presentation and compared it with the exported A-Tutor content, we found the mismatch into the metadata which we included into our SCORM and fixed the problem. The presentation was uploaded normally into the system.

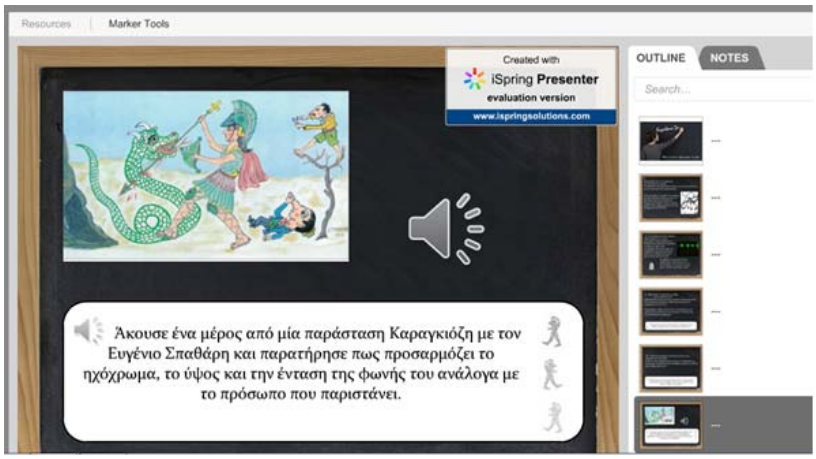

Figure 2 - Lesson's presentation.

Developing the application

The glockenspiel idea was taken from a page of "Music for 5th grade" book in which a glockenspiel was demonstrated with it's of its pedals aligned with the corresponding note on the score. We used Java Processing library to create the interface of the applet and Java's midi library to generate the sounds of the instrument. The score under the glockenspiel demonstrates the corresponding note of each pedal. A note turns red when the user's mouse pointer is over the respective pedal.

The produced applet were uploaded in the same server that hosted our LMS and embedded into the one lesson of our course (see Figure 3). The white caption on the top of the applet instructs "Click on the glockenspiel to hear which note corresponds to each sound." As you can see in the same picture, the mouse is over the second pedal of the glockenspiel and the respective note (in this case Re) has turned into red to indicate the position of the user into the note scale.

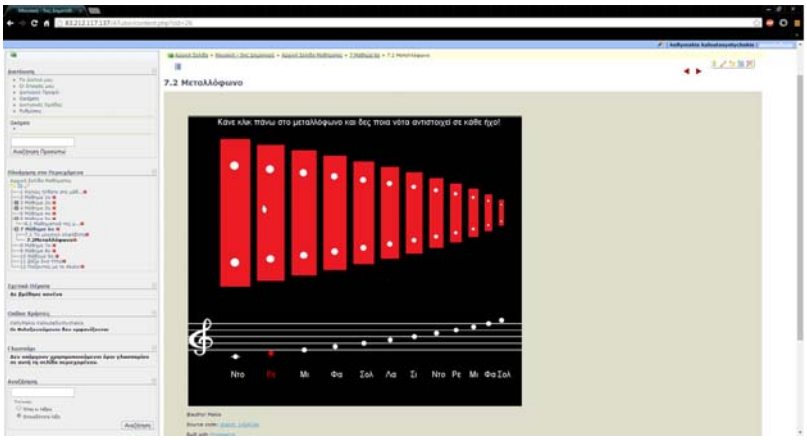

Figure 3 - Glockenspiel embedded as a part of lesson 6.

Results and future work

In this study we present an online music course hosted into a learning management system. The content of the course consisted of presentations, quizzes and interactive applications. In order to develop a constructivism way of teaching, the LMS provided socialization capabilities so the users could exchange opinions and thoughts. Through the interactive application embedded on the site the users could familiarize with the concept of notes and corresponding sounds. Also, the interactive and social aspects that were provided, can increase the user engagement and motivation.

In future work we would like to complete a whole semester of the course and test it in real situation in order to refine, add, reject ideas and develop a more grounded and well-tested opinion about online music courses.

References

Bath, D., Smith, C., & Steel, C. (2010). *A tutor's guide to teaching and learning at UQ*. TEDI Educational Technologies.

Gay, G., & et. al. (2014, July 12). ATutor LCMS: Home: About Us. Retrieved from ATutor LCMS: http://www.atutor.ca/credits.php

National Association for Music Education. (2007). Why Music Education? 2007. Retrieved from http://musiced.nafme.org/files/2012/04/benefits_of_music.pdf

Von Glasersfeld, E. (1996). *Radical Constructivism: A Way of Knowing and Learning*. London: Falmer Press.

Αποστολίδου, Κ., & Ζεπάτου, Χ. (2005). *Μουσική Ε' Δημοτικού*. Αθήνα: Εκδοτικός Οργανισμός Λιβάνη.