

Applying the Web-Based Instruction in Musical Education

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Abstract. *There are many discussions about the expectation that computer-based technologies would deeply change the education, and a lot of theories about how the web-based instruction should be used. Particularly in the musical field, the technology in addition to the musical production has been helping the increase of music inclusion through the years. This paper analyses the viability of musical instruction using Internet, still little investigated by the researches.*

To analyze these questions, two preliminary researches with students and teachers, as well as an experiment were done; both with the Vocal Preparation course, taught through the AulaNet learning environment were done. The declarations and interviews of the students and teachers were analyzed to identify the recurrent declarations related to the use of the web-based instruction applied on musical education.

Potential limitations and features of the use of Internet on music instruction, as well as their reflections on learning outcomes, are investigated. According to the presented limitations and to the researches results, there is a clear indication that the web-based instruction is accepted as a complementary method to the musical instruction. The ideal balance would consist in using web methods to improve the traditional activities in the classroom. The online courses and educational software still can be used in a complementary way, but they do not totally replace the traditional method yet.

Keywords. *Web-based Instruction, Musical Education, Groupware, Collaboration, AulaNet.*

1. Introduction

The relationship between computer and art was a natural consequence of a sequence of technological advances [Taylor, 1998]. In the beginning, musicians had to use a big computer to generate their compositions. Actually, software help composers to generate and hear their creation pieces on their personal computers, players can practice together through the Web using a microphone and a web cam, and learners easily find an infinity of informations from all the world about music in general. The use of the computer in the musical activity presents possibilities of creation, caption and transformation of sonorous events [Ficheman *et al.*, 2004].

The musical production added to the technology has been increasing the musical diffusion through the years. This is the consequence of the new instruments and new ways to generate and produce sounds [Corrêa & Lopes, 2004]. In Brazil, we can mention the researches developed at the Laboratório de Computação e Música (LC&M) of the Federal University of Rio Grande do Sul (UFRGS): STI (System for Intervals Training), STR (System for Rhythm Training), SETMUS (System Specialized of Musical Theory), and SEVEM (Voice Separator in Polyphonic Musical Executions) [Fritsch & Viccari, 1995], [Fritsch, 1996], [Wulfhorst, 1997] and [Flores, 2000] and at the Núcleo de Aprendizagem Trabalho e Entretenimento (NATE) of the Laboratório de Sistemas Integráveis of the Polytechnical School of the University of São Paulo (USP): the EduMusical Portal [Ficheman *et al.*, 2004].

The central objective of this paper is to analyze possibilities of the application of Web-based Instruction (WBI) to Musical Education. The specific objectives of the paper are: i) to identify important characteristics of collaborative environments for Musical Education and ii) to find out the problems that may appear when applying the WBI to Musical Education. To investigate these questions, we have taken two preliminary researches with music learners and teachers, and applied an online course of Vocal Preparation as a case-study. The declarations and testimonials of the course participants were analyzed to identify those related to the use of WBI in the Musical Education.

In Section 2, we present the AulaNet environment. In Section 3, the preliminary courses are detailed and in Section 4 the case-study is presented and its results, discussed. Section 5 concludes the paper.

2. The AulaNet Environment

The AulaNet is a groupware environment to the creation, application and management of courses about various themes given through the Internet, and has been developed since 1997 by the Laboratório de Engenharia de Software

(LES) of the Catholic University of Rio de Janeiro (PUC-Rio). It gives support to collaborative group of learners, that uses resources like forum, chat and messages exchange. The environment includes notification, coordination, assessment and participation companion tools to promote the interaction between teachers and learners [Gerosa *et al.*, 2001].

The AulaNet offers the typical LMS (Learning Management System) functionality: support to the course creation and maintenance, to the participation and to the administration of learners. But with the differential that it had been planned like an environment to promote the collaboration, that is the collaborative work of two or more person, in order to achieve better results than the sum of the individual results of each one working alone. Collaborating, the group members complement their knowledge and abilities, identifying faster the inconsistencies in the group ideas [Mitchell *et al.*, 2004].

Since it is a environment for collaboration, the AulaNet can be used in courses that have collaboration as a characteristic, like in Musical Education. A musician never plays alone, so, it is necessary that a music learner keep in touch with others at least in some steps of her learning. Hence, the AulaNet was chosen as environment to be used in the case-study presented in Section 4.

3. The Preliminary Courses on the Preliminary Investigations

To analyze the receptivity that music learners and teachers have to the application of the WBI in Musical Education, and to investigate questions related to this application, we applied two preliminary courses. In this section, we present the results of interviews with music learners and, then, the results of interviews with music teachers.

3.1 Music Learners Interviews

We interviewed 180 music learners, through a closed questionnaire of 11 questions. 50% of the learners study at Villa Lobos Music School of Rio de Janeiro, 15% at Musimundi School and 35% are members of the online discussion list "Vocal Preparation".

Given that 89% of the learners are less than 29 years-old, we had in minds that they would be more receptive to technological innovations. However, 72% totally or partially disagreed that learning using a computer could generate good results.

When questioned about the musical learning, 71% do not agree that just by using the computer could generate good results (Figure 3.1). However, 75% of the learners believe that the use of the computer or the Internet could bring benefits to the learning complementary to a established teaching method (Figure 3.2).

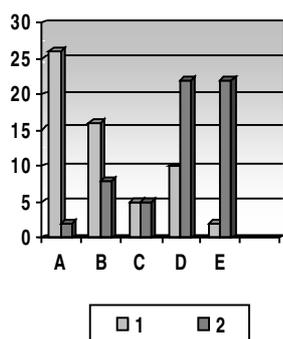


Figure 3.1 – 1 – To the musical education, the exclusive use of methods based in the computer or Internet can bring good results to the learning. 2 - To the musical education, the complementary use of methods based in the computer or Internet could bring good results to the learning. (A – Totally disagree, B – Partially disagree, C – Do not agree or disagree, D – Partially agree, E – Totally agree)

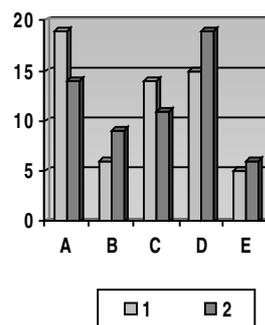


Figure 3.2 – 1. I would like to participate on a music course through a self-study method. 2. I would have enough discipline to participate of a music course through a self-study method. (A – Totally disagree, B – Partially disagree, C – Do not agree or disagree, D – Partially agree, E – Totally agree)

About the desire of participating on a music course taught through the computer or Internet, the result was well-distributed: 33% would like, while 43% would not like, the other 23% did not answer (Figure 3.2). 42% answered that for music learning, the web-based method is not better than the traditional (Figure 3.3). The presence of the music teacher is fundamental to 95% of the learners (Figure 3.4).

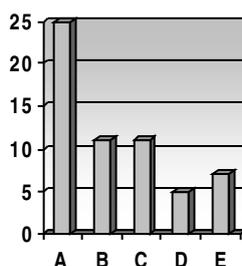


Figure 3.3 – A self-study method based on the computer or Internet is not better than a traditional method for the music learning. (A – Totally disagree, B – Partially disagree, C – Do not agree or disagree, D – Partially agree, E – Totally agree)

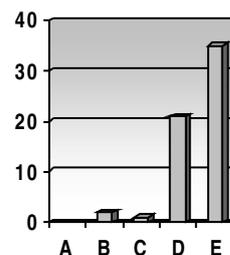


Figure 3.4 – To music learning, the presence of the teacher at the classroom is fundamental. (A – Totally disagree, B – Partially disagree, C – Do not agree or disagree, D – Partially agree, E – Totally agree)

After the analysis of these research results, we can inter that learners demonstrated low receptivity to WBI: only 29% agreed that the use of the computer or Internet could bring good results to education in general. However,

to Musical Education, the majority (75%) agreed that the WBI could be used as a complementary method of teaching. The acceptance of the complementary use of WBI and not total can be explained by the fact that 95% of the learners answered that for the Musical Education, the physical presence of the teacher is fundamental.

3.2 Music Teachers Interviewees

We have interviewed 6 music teachers, 50% from Villa Lobos Music School and 50% from Musimundi School. All the interviewees teach regularly on the schools and also minister private classes at home. In this paper, teachers' names were replaced by pseudonyms.

Although all teachers are somehow familiar with some distance learning method, only half of them have had the opportunity of participating on an online course, and only 33% have had the experience of teaching using this method. However, none interviewees have any experience of Musical Education online.

Related to the potentialities of Musical Education using WBI, all teachers agreed that using the method to teach theoretical subjects (musical theory, history of the music, harmony, etc) could be efficient and would like to use on their classes. If teacher and learner use videoconference, all of them agreed that teaching singing and musical instruments would be possible too, but half of them think that the traditional methodology is more efficient one. All teachers agreed that would be impossible to teach practical subjects without audio and video resources. Some testimonials were:

“If the student could learn the theory necessary to study the musical instrument through an online course, it would be great. I could use all my class to practice the musical instrument.” - teacher Eduardo Azeredo

“To learn piano totally using distance education would only be possible if the teacher could see the position of the learner's hands and her posture through the video.” - teacher Eliana Pereira

When asked about the complementary or integral application of WBI to Musical Education, only 16% agreed that this methodology could be the only one, but they also stated that the traditional method is always better, because of the importance of the physical contact. These results were enforced by the following comments:

“The individual study time is always fundamental, but the contact with the others are important too. Imagine a band or an orchestra. The interaction between the members are essential. The function of the music is to group human beings.” - teacher Flavio Martins

“The teacher's figure is still fundamental to the study of music. The teacher will always be an example to the learner to guide her study. The teacher must have the

chance to correct the learner just in time; if the learner practices alone in a wrong way, she can even have a physical problem.” - teacher Claudio Ferreira

“When we correct the learner, the TOUCH, the sensibility, makes all the difference.” - teacher Flavio Medeiros

“The computer has a cold way of promoting and assessing. The touch makes all the difference and promotes the learning.” - teacher Eliana Pereira

However, 100% of the interviewees agreed that using WBI as a complementary method could be efficient and profitable to the learner's productivity, but it demands more discipline by the learners and supervision by the teachers. About discipline and supervision, the considerations were:

“A lot of learners look for musical education as a hobby. The obligation of participating on an online course and be assessed by this method can provoke learner indifference and make them give up.” - teacher Suellen Barros

“WBI demands more discipline. The learner makes his schedule and will not be under supervision as in the traditional method.” - teacher João Carlos

Based on this analysis, we can infer that the teachers demonstrated a high receptivity to WBI: all of them judged beneficial the use of this methodology to learning. All of them agreed that WBI could be used as a complementary method of the Musical Education, because 84% of them judged the physical presence of the teacher fundamental.

To enforce the preliminary results, a case-study has been done, using an online course. The case-study is detailed in next section.

4. The Case-Study: Vocal Preparation Course

This section describes the educational method used on Vocal Preparation Course (VPC), a totally online course. The course was taken through the AulaNet environment, already presented on section 2.

4.1 The Course Creation

The objective of this course is to investigate the application of WBI to Musical Education. This course was offered during the first 2 weeks of May 2005 as a free course. The learners of the course were Groupware researchers, and music students/teachers.

The objective of the case-study is not to effectively teach, but to analyze the potentialities of using this method for Musical Education. For this reason, the course had a short duration (2 weeks) and only 2 topics were discussed.

4.2 Steps of the Course

The course was subdivided into 4 consecutive steps, and in each one of them the learners had to accomplish a set of tasks. The dynamic of each step is described as follows:

On the *Presentation* step, the course was presented to the learners through the reading of a guide, in which we talked about the motivation to take the course and its dynamic. Then learners' subscription, the first activity was to send a message through the AulaNet presenting one to the class.

In the next step, *Study and Discussion of the Topics*, learners worked on the course contents, organized in two topics (Body warm-up and Respiration; Voice warm-up and vocal practice). They worked on one topic per week. The learners were instructed to read the selected contents of the week topic and do more research to participate on an asynchronous seminar, through the AulaNet, where they discussed the topic (Figure 4.1).

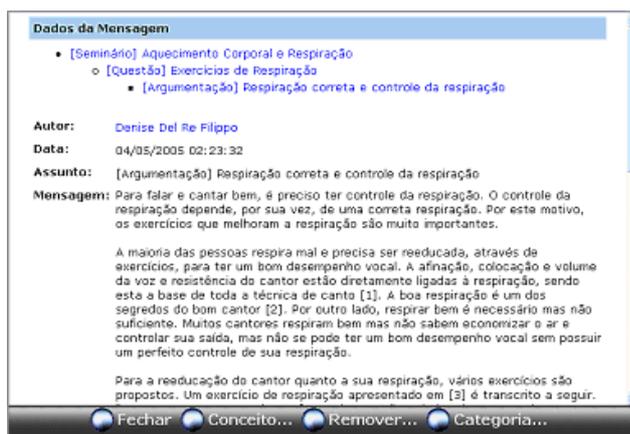


Figure 4.1. A contribution of the service Conference

After the first week of discussion, each learner answered to a test through the AulaNet, comprising questions to the week topic. As part of the study, this test did not take place at the second week. We finished the course doing an individual interview with each learner, focused on registering their impressions and their results, and also on the problems they had.

4.3 What the learners said about the course

To assess the experience they have had on the VPC course, each of the 14 subscribed learners answered an open questionnaire, comprising 10 questions. In this paper, learners' names were replaced by pseudonyms.

The VPC course was the first experience that half of the participants have had with distance learning. Although we had 14 people subscribed on the course, only 5 (35%) really participated on it, 2 researchers and 3 music

students/teachers. The 9 that did not participate alleged lack of time, technical difficulties (50% of the interviewees) and lack of commitment:

"I did not participate on the second week for lack of commitment (I did not feel really committed, it does not have consequences, it does not affect my curriculum, I was not losing money, etc). Besides, I think the discussion was too warm, low participation from the others and everything a bit disorganized – conclusion: I lost my interest on it. And, finally, I did not feel that I've earned something special during the week – for example, I did not learn how to breathe to sing." - Marcelo Pereira

"I did not have time, I think it was a bit complicated to find the things and finally when I understood how they think worked, my agenda got too busy and I almost could not connect these weeks." - Diana Klump

Even with the low participation, the majority (85%) think that the contents of the course are interesting and 33% of them affirmed that this fact affected their participation. About the dynamics used on the course and about the AulaNet structure, the criticisms were the following:

"I had the feeling that I was losing something. The orientations that I have received by e-mail did not inform the schedules in an intuitive way. Suddenly, I received a message saying: 'Tomorrow we have a test'. I felt on 5th grade. I was scared. 'I did not study!'" - Leandro Leme

"Anyway, I think that the low participation of the community and the generality that the themes were discussed were demotivating. I have figured out that the majority had a previous experience and, apparently, banalized the tasks accomplishment." - Isabel Pimentel

About the applicability of the course, 78% judge it as very useful to Musical Education, as long as being used complementary to the traditional method; 8% judged that it does not contribute very much to Musical Education, and 14% did not answer. The experience of participating on the course was classified as Excellent, to 15%; Good, to 42%; Indifferent, to 35% and Disappointing to 8%. Some suggestions and criticisms about the course were:

"To a vocal preparation course, the suggestion would be to use videos showing the exercises and postures, and pictures. This would enrich the course and would motivate the learners. (...) To the learners that are not used to distance learning, the formal dynamics could be demotivating to them. Another point is that, without the obligation of really participating on the course, a lot of people give priority to their other activities. If the participation were higher, the course would be more interesting too." - Diana Faria

"I believe that the public of the course probably contributed to the low frequency. People that find distance courses generally are obstructed by n factors to participate on a traditional course or are looking for deeper information from professionals out of their field. I think that the VPC would be very useful to promote research for beginners with some musical basis, to deepen their knowledge levels and share personal experiences in the music field, since it is interesting to learning." - Isabel Pimentel

The interviewees also criticized the AulaNet environment. Some learners think that the interface is confusing and hard to use. A lot of them needed time to get used to the environment, and did not understand how to access the services through a remote control.

5. Conclusions

There is a clear indication that the WBI is accepted as a complementary method of learning to Musical Education. The ideal balance would be to use online methods to enforce the traditional activities. To learn how to play a musical instrument and singing, the traditional classes, with the presence of the teacher transmitting concepts and the techniques, is essential; the learner has the chance to practice live with the teacher and her colleagues. In addition, the Internet could be used to study the theoretical subjects, to research other contents, to discuss topics with other learners and teachers and even enforce the practice with other musicians from other sites using microphone and video cameras. Online courses and the educational software could be used as a complementary method, but they do not substitute the traditional method.

Another point to consider is that teacher training on how to develop and minister a course using web resources, asks for a basic knowledge of technology and of the proposal method. To plan it, it is necessary to have vision and organization, and besides, it demands the constant supervision by the teacher, who must promote learning and maintain learners' interest on the study. The course content should be prepared carefully, to promote learner awareness and cognition, and to retain her attention. The learner needs to have more discipline and initiative than a conventional course, but the method has advantages regarding motivational questions and schedule flexibility.

To the AulaNet environment, we suggest the incorporation of new services, using audio and video resources, not only to support practical courses on Musical Education, but also to enrich other courses, offering other interaction possibilities. We suggest to investigate, through usability tests, the access method to the AulaNet services (by a pop-up that reminds a remote control) to detect and solve problems.

It is important to say that the potentialities of learning must not be restricted only to the traditional models. This way, new models based on technology should be developed. New researches should be done to deepen, clarify and discuss the ideas proposed in this paper. Novel systems can be constructed in an appropriate way, trying to attend users necessities, using the appropriate technology and considering human-computer interaction theories.

6. Acknowledgments

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