Developing and Testing a Self-Learned Interactive Multimedia Courseware for Music Aural Lesson

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Abstract

As multimedia teaching and learning technologies become more extensively advocated and employed in higher education, researcher attempt to comprehend the suitability of such technologies on student self learning material. This paper presents a research study that was conducted to develop and test a self-learned interactive multimedia courseware of Music Aural lesson. This discussion focuses upon the appropriateness of selected content, instructional design and technical aspect that been incorporated into authoring software with interactivity option and admirable audio video support. A variety of media techniques including text, sound, pictures, video clips and animation were utilized to present the content of Music Aural lesson in an interactive and effective design. It also enclosed activities that students can embark on interactively to strengthen and test their self learning. The data was collected through a survey and feedback to bring forth students' perceptions and attitudes regarding the suitability of this learning aid. Results of the study showed that the developed Music Aural courseware was suitable as a self-learning material and provided strong support to the understanding of concepts in the Music Aural learning.

Keyword: Multimedia, Courseware, Interactive, Aural

1. Introduction

The use of multimedia technology allows knowledge to be presented in more attractive, convincing and effectively. Ng and Komiya (2000) stated that, an interactive multimedia proved to be efficient in establishing and maintaining the information for a long period and it can be achieved again faster than traditional teaching methods. Computer has ability to improve the effectiveness of student learning and facilitate teaching with the manipulation of text, color, animation, graphics, video and sound (Tang Keow & Kanesan, 2006). According to Jamalludin and Zaidatun (2003), the use of multimedia can be a positive and effective medium of communication as text; audio, video and animated colors can be displayed on a

screen simultaneously. Teaching and learning system that applies the elements of hypermedia such as animation, sound, graphics, hypertext, and color will be more attractive (Maimun, Abdullah, Melor, Shah Nazim, Noriah & Tajul Arifin, 2011).

2. Background of the Study

Computer assisted in teaching and learning materials was starting to get the attention of lecturers and students in Sultan Idris Education University (UPSI). Similarly, the educators in Music Education program make an effort to develop interactive multimedia educational software that can improve the students' understanding in music with more interesting, efficient and effective manner. Aural and sight singing courses in Music Education program is viewed as the most basic requirements before progressing to higher level. This course focuses on the mastery of skills, specifically listening to intervals, melodies, triads, chord, cadence, rhythm and sight singing melodies in various keys, meter and note values. Therefore, these skills need to be complied with an effective and easy method of learning in line with students' ability to achieve the necessary level of skills. Aural skills involving natural human's voice as the 'instrument'. Evaluation or interpretation of 'singing well' in the context of music refers to the aptitude of singing with proper pitch, rhythm and tempo, hence with correct techniques. Thus, this study aims to examine the contents contained in the Aural courses that can be translated into a form of interactive multimedia courseware that to be used as teaching material, or is more important as the students' self-learning tool.

3. Problem Statement

Despite of all Music Education students be capable to sing, however in sight singing and aural skills is not as simple as expected. Teachers who conduct classes with various ability levels know that much proficiency are required for students to successfully master the aural skill. Often neglected are the skills that students must have to interrelate musically with their hearing and singing. This situation will have an impact on the effectiveness of their future career as music educator, especially involving singing activities. Irregularities that occurred are likely due to several factors. Approaches, methods and practices of teaching in the classroom that solely to use a combination of piano and lecturers, have to some extent affected the improvement of students' skills and thereby reducing their interest. The literature exposes a gap in the use of technology and sound instructional approach in current teaching and learning practices (Salmon, 2000; Willis 2000). Based on this gap, the aural training lesson that is more emphasis on reading and singing through interactive multimedia technology should be carefully planned for ensuring future music teachers equipped with good singing skills. A number of researchers have written about the necessity for quality criterions to certify the academic reliability of technology based programs (Benson, 2003; DeBard and Guidera, 2000; Salmon, 2000). Palloff and Pratt (2001) mentioned that the accessibility of well-structured, effectively applied, and proficiently conveyed teaching material is crucial in order to fulfil the unique needs of current adult learners. Furthermore, the importance of raised attentiveness on listening and aural skills that incorporated with interactive multimedia technology will be able to formulate creative development in other parts of music program, such as composition and music performance.

This study is one step in serving to construct a comprehensive base of music theoretical knowledge learnt by hands-on experiences. This research aims to develop and test an interactive multimedia courseware for teaching and learning Aural as a material for independent study at the Faculty of Music and Performing Arts, UPSI. This study has also

received the response and feedback from students and music education experts into consideration of the suitabality of the courseware as self learning tool. Specifically, this study leads to answer to these questions:

  i. What is the content at lecturers and students need to put in an Aural interactive multimedia courseware?

  ii. What is the design of self-learned Aural interactive multimedia courseware?

The usability of the instructional model to guide both the design and evaluation of self-learned Aural interactive multimedia courseware illustrates the dynamic intersections between theory and best practices. As Vogel (2000) explains, "[when] theoretical frameworks inform actions, and actions modify theories so that future actions grow out of what we have learned by experience and reflection, the entire system is energized" (p. 25).

3. Methodology of the Study

The use of multimedia technology has become a necessity in order to develop and expand the field of education. Accordingly, the development of interactive multimedia courseware for Aural skills have been produced by a combination of several elements of multimedia such as text, graphics, audio and animation to assist the process of teaching and learning. ADDIE instructional design model was used as a guide in this learning courseware development. This courseware applied the interactive multimedia Scenario Based Learning approach and uses the constructivism theory to generate students' understanding and thinking. The courseware was developed using Multimedia Builder 4.9 as the authoring platform. In addition, Macromedia Flash MX 2004, Adobe Photoshop CS and Sonar X3 used as the editing software for animation, video and audio. The research procedure as shown below:
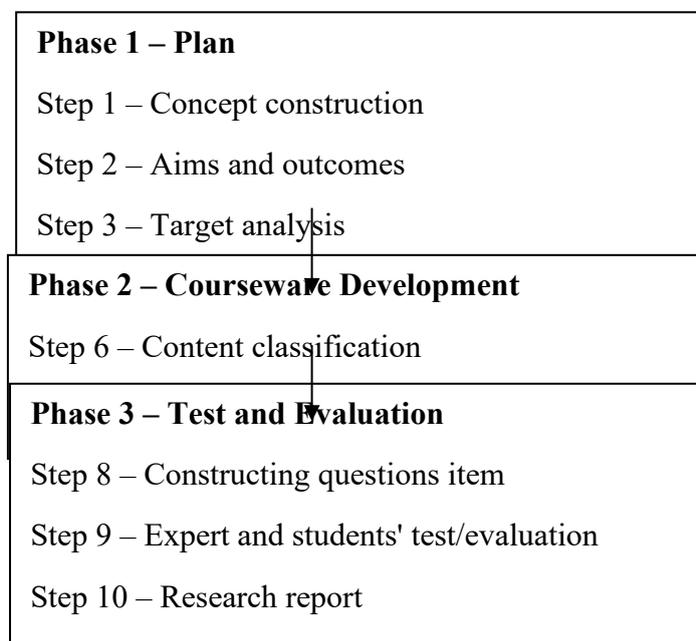
Phase 1 – Plan

Step 1 – Concept construction

Step 2 – Aims and outcomes

Step 3 – Target analysis

Phase 2 – Courseware Development

Step 6 – Content classification

Phase 3 – Test and Evaluation

Step 8 – Constructing questions item

Step 9 – Expert and students' test/evaluation

Step 10 – Research report

Figure 1: Research procedure for developing and testing a self-learned interactive multimedia courseware

4. Research Findings

Generally, pre-service music teachers are required to have skills and knowledge necessary for effectively carry out the music curriculum. Based on needs analysis of the study, researchers

have identified several topics which essential in aural skills such as identifying interval, melody, triad, chord, cadence and rhythm. In addition, inclusion of solfege sight singing also been given priority for the learning content to enhance the singing skills in various keys, meter and note values.

Table 1
Selected Topics and Unit Distribution

Unit	Topics
Unit 1	Meter
Unit 2	Scale
Unit 3	Interval
Unit 4	Triad
Unit 5	Chord
Unit 6	Cadence
Unit 7	Sight Singing

Sub-topics have been formulated based on the identified key topics. For each sub-topic has been outlined specific learning outcomes that to be achieved by the end of the designed self-directed interactive multimedia learning courseware. The following tables show the distribution of topics, subtopics and the learning outcomes.

Table 2
Sub-topics and Learning Outcomes

Topic	Sub-topic	Learning Outcomes
Unit 1: Meter	1. Simple duple 2. Compound duple 3. Simple duple rhythm 4. Compound duple rhythm	1. State the difference between the simple duple and compound duple meter 2. Clapping simple duple and compound duple meter 3. Rewrite rhythm for simple duple and compound duple meter 4. Clapping beat
Unit 2: Scale	1. Introduction to major and harmonic minor 2. Ascending 3. Descending	1. State the difference between major and harmonic minor scale 2. Identify major and harmonic minor scale base on music played 3. Sing major and harmonic minor scale one octave upward and downward. 4. Identify the notes are played in major 5. Identify the tonic pitch of the played melody 6. Identify the key signature of the played melody
Unit 3: Interval	1. Major 2nd 2. Minor 3rd 3. Major 3rd 4. Perfect 4th 5. Perfect 5th	1. Sing Major 2nd, Minor 3rd , Major 3rd, Perfect 4th and Perfect 5th interval. 2. Notate Major 2nd, Minor 3rd , Major 3rd, Perfect 4th and Perfect 5th interval. 3. Sing and rewrite two bars melody of conjunct diatonic scale

		4. Sing and rewrite two bars melody of disjunct diatonic scale
Unit 4: Triad	1. Major 2. Minor 3. Diminished 4. Augmented	1. Defining triad 2. Writing, the major and minor triads. 3. Writing, diminished and augmented triads. 4. Identify major and minor triad 5. Identify diminished and augmented triad
Unit 5: Chord	1. Chord I, IV and V in major scale major. 2. Chord i, iv and V in minor scale 3. Chord progression in major. 4. Chord progression in minor.	1. Identify chord I, IV and V in major scale. 2. Identify chord i, iv and V in minor scale. 3. Identify chord progression in major. 4. Identify chord progression in minor.
Unit 6: Cadence	1. Perfect cadence in major and minor. 2. Imperfect cadence in major and minor.	1. Identify perfect cadence in the key of major and minor. 2. Identify imperfect cadence in the key of major and minor.
Unit 7: Sight Singing	1. Concept of moveable and fix 'do' 2. Sight singing - Rhythm 3. Sight singing - Melody 4. Tonic pitch 5. Scale 6. Interval 7. Solfege	1. Read and clap rhythm in simple and compound meter 2. Identify the tonic note of the played melody 3. Sing major and harmonic minor scale - ascending and descending 4. Identify the interval of the played notes 5. Sing using solfege for the melody in major and harmonic minor 6. Sight singing for the melodies given

Based on the details of the topics and learning outcomes outlined, subsequently, a form of Aural self-learned multimedia courseware has been developed. This courseware incorporating interactive features to enable two-way communication between students and computer to create an active and meaningful learning environment. Following the main menu, education process starts by defining the objectives that to be achieved by the user after each units of learning, afterward proceed with the interactive activities and exercises.

Figure 2: Main menu

Figure 3: Example of unit's learning outcome

Figure 4: Example of interactive learning activity

Figure 5: Example of exercise

As multimedia teaching technologies become more widely advocated and employed in higher education, researchers strive to understand the influence of such technologies on student learning. Testing for Aural Interactive Self Learning courseware is made after the courseware developed. Set of questionnaire was designed to calculate selected students' and expert's perception regarding the appropriateness of its use in the learning process. In particular, the test was conducted to verify whether the product congregate with the skills needed as a self learning tool among music students in the Faculty of Music and Performing Arts UPSI.

A total of 60 respondents comprised of 58 students, 1 lecturer who specializes in the field of instructional technology and 1 lecturer who experts in teaching Aural involved in the test and evaluation process. Overall findings related to the use of assisted self-learning courseware for Aural subject among students is overwhelming. This can be seen from the mean score being placed on the 'High' category based on indicator with regard to the suitability of the content Interactive Multimedia Courseware (3.38), Instructional Design (3.34) and Technical Requirements (3.57). Advances in technology enable pedagogical enhancements that some believe can revolutionize traditional methods of teaching and learning (Persin, 2002; Smith & Woody, 2000). The researchers found the experts and students agreed that the courseware produced an alternative to conventional Aural lesson delivered in the face to face classroom. Data also concluded that the users do not need a longer explanation to understand the topic or content, but just need to have additional emphasis to fix with the cognitive, psychomotor and affective domain. The result also indicated that the courseware can provided a good presentation throughout the use of graphics, fonts and visual. This gives an indication that the self-learning courseware be able to hold users' attention on each slide shown.

5. Conclusion

Referring to Jonassen (1996), technology has the competency to incorporate elements of multimedia which inspires and appends concentration to learning as it lets students to employ more than one of their senses concurrently. The use of learning courseware would offer an enormous transform in learning methods and amplify personal enthusiasm with the support of frequent practice and repetition mode. Nevertheless, Mohd Farhan (2006) stated that the effectiveness of a particular courseware not only depend on its contents, but also on its design and concept of the courseware's development. The self learned material developed and

delivered in this research project is digital and software based. This learning material can be viewed as small interactive multimedia elements. Through the use of multimedia courseware, this will help achieve the teaching and learning process as easy for students to understand the topics delivered through well planned and organized process. Researchers can conclude that the development of self-learned courseware has achieved the objectives whilst majority of respondents indicated positive feedback through each item proposed in the evaluation sheet.

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