

Designing Online Interactive Application of Learning Music Theory in Blended Learning Mode

Mohd. Nizam Hj. Nasrifan, Zaharul Lailiddin Hj. Saidon

Abstract: *Online teaching and learning technologies become widely advocated and employed in higher education, researcher attempts to understand the suitability of such technologies in student learning. This paper presents a research study conducted in blended learning mode to design interactive online application of learning Music Theory. This discussion focuses on the appropriateness of selected content, instructional design, and technical aspect incorporated into authoring software with an option for interactivity and admirable support for audio video. In an interactive and effective design, a variety of media techniques including text, sound, pictures, video clips and animation were used to present the content of the Music Theory lesson. It included three development phases using the ADDIE instructional design model which can begin interactively to reinforce and test the self-learning of students. This study also involved the procedure of integrating the online interactive application of learning Music Theory with UPSI MyGuru2 system as a material for blended learning mode. The data were collected through a survey and feedback to provide perceptions and attitudes about the suitability of this learning aid to students. Results of the study showed that the developed application of Music Theory for mixed learning courseware was suitable as a material of self-learning and strongly supported the understanding of concepts in music theory.*

Keyword: *Multimedia, Application, Music Theory, Interactive, Blended Learning, Online Learning, Instructional Design.*

I. INTRODUCTION

This article is an effort to describe and document methods for the development of new online mixed learning mode for Music Theory interactive course material and creative education. It provides a framework for the content of the course design and modularization. With the advancement of technology and communication today, learning activities are no longer limited in a lecture room. In accordance with technology changes, teaching and learning approach also evolve in its own way which is more creative and innovative in term of the delivering knowledge. The using of appropriate technology and multimedia has given value-added and improve the interactive learning environment with the more effective learning process. Through this approach, students can access information or learning materials online at any time.

Revised Manuscript Received on April 07, 2019.

Mohd. Nizam Hj. Nasrifan, Associate Professor, Music Department, Faculty of music and Performing Arts, Sultan Idris Education University (UPSI), Malaysia

Zaharul Lailiddin Hj. Saidon, Associate Professor, Music Department, Faculty of music and Performing Arts, Sultan Idris Education University (UPSI), Malaysia

"Blended learning" is suitable for use because of lacking in conventional learning. Mixed learning can improve potential and interest of students. Ministry of Education gives encouragement to use various learning strategies that can be utilized. Blended learning can be more effective and broaden the learning strategies. According to Harding (2010), blended learning is an approach that intervenes conventional face-to-face learning.

II. BLENDED LEARNING IN MUSIC EDUCATION

Online learning terms and e-learning or mixed learning are often used interchangeably. Referring to Garrison (2011), e-learning embodies a paradigm shift from the ideal of autonomy and the manufacture of prepackaged study materials characteristic of mainstream distance education. It represents a distinct branch of education with its roots in computer conferences and collaborative constructivist learning approaches "(p. 2). Similarly, Garrison claimed, "blended learning integrates independence (asynchronous online communication) with interaction (connectivity) that overcomes time and space constraints in a manner that emulates higher education values" (p.3).

Educators in the Music Education program always strive to develop interactive multimedia educational software with a more interesting, efficient and effective way to improve students' understanding of music (Nasrifan & Saidon, 2017). Blended and online learning approaches offer different opportunities for engagement and interaction, information delivery, and representation of music concepts in different ways. This will help students connect, deconstruct, and reconstruct knowledge in music education in their processes. Recent music learners need multiple cognitive opportunities to connect theory and practice by "engaging in attention, acting, reflecting, criticizing, adapting, and articulating" (Laurillard, 2000, p. 136). The challenge is that many music education academics do not have the ability to transform their face-to-face courses into a program that enables students to gain content knowledge through interaction, engagement, collaboration, and critical thinking.

Most of the current meanings for mixed courses point out that this learning approach offers potential for enhancing content delivery, social interaction, reflection, higher order thinking, and higher education problem solving (Norberg et al., 2011). Additionally, Dziuban and Moskal (2013) suggest that "mixed learning has become an evolving, responsive, and dynamic process that is organic in many respects, defying all attempts at universal definition" (p.4).

Designing Online Interactive Application of Learning Music Theory in Blended Learning Mode

It can be defined as the purposeful combination of face-to-face and online learning involvement over the use of digital technologies (Figure 1) for the purpose of designing music course for mixed learning mode.

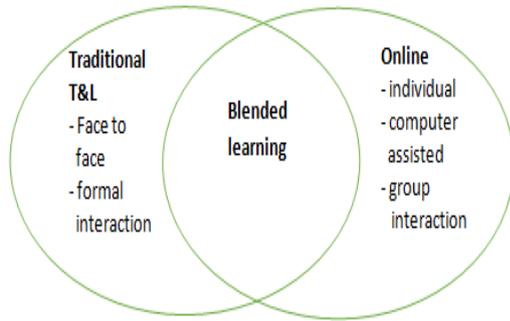


Fig. 1 Blended learning combination

In the field of music education, blended learning is mostly used in teaching and learning to give rich experience to both students and teachers. Teachers will have more opportunity to communicate with their students to fulfil the lacking knowledge by giving them online sources. The student can acquire effectively after the class by merging the previously obtained information in the classroom. This mode of learning can be perceived as a model that allows students to learn their own theoretical knowledge at home and practice what they have learned at school (Zownorega, 2013). Added Bergman and Sams (2012), blended learning enables students to learn the subject that the instructor is supposed to teach in the classroom, from the material that the instructor records in the electronic environment, and during out-of-class hours.

Using new technologies in music education opens up a wide range of possibilities, both reinforcing existing methodologies and allowing additional specific activities related to research, creation, transformation and sound classification (Delalande, 2004). The educator plays the role of guide for teaching and learning music in mixed learning mode. Compared to face to face education, the student is more active. The other beneficial aspects of this model for music students are (i) Students have online course materials control, (ii) Students can stop the lesson every time they want, (iii) students be able to repeatedly endure the lesson within different timeframes and, (iv) Students can discuss the subject in more detail and understand it better.

Lines (2005) outlined the main characteristics of blended learning for music education:

- i. Students have the combination of the two approaches in learning where they be able to use the traditional mode of classroom teaching which allow them acquire personal interaction with instructor and their classmates; and can access the ICT supported teaching learning. This mainly be determined by the nature of the content and objectives being targeted for the music theory lesson. The course designer or lecturers will decide on the appropriate topic to be included.
- ii. Educators are well competent with both the teaching and learning modes. It is crucial to have instructors that are very vibrant, techno savvy and fully trained to work efficiently traditional classroom setting and ICT assisted format.

- iii. Students have literacy in using new technology. Nowadays all professions request proficiency in ICT so that blended learning can help them to exploit presented technologies to absorb benefit.
- iv. Students acquire extensive experience with new perspectives of the course content delivery their content knowledge is enhanced and balanced. Blended approach in music learning provides multi dimension which offers student opportunity to communicate and share their opinions with the use of threaded discussion or forum session.

III. DESIGNING AND DEVELOPMENT OF INTERACTIVE MULTIMEDIA APPLICATION OF LEARNING MUSIC THEORY IN BLENDED LEARNING MODE

In designing multimedia application for music education, Sastre et al (2013) stressed that: "The teacher acts as a guide that through their education facilitates learning and supports the students. Technology is a way to help exploring our knowledge and is a very important tool for information searching and activity creation. We should move towards a connectivity - centered approach by incorporating these new technologies, and this means that the learning process has not only an individual dimension, but also a social one. Education involves learning together and being able to contribute to knowledge building. The teacher is a designer of learning spaces and technology plays an intermediate role in knowledge building and social interaction". (p.3)

Designing and programming interactive multimedia project involve distinctive procedures, scheduling and techniques. The ADDIE (Analysis, Design, Development, Implementation, and Evaluation) instructional system design modelled the development of Interactive Online Application of Music Theory for Blended Learning Mode (Ryder, 2012). It provides a description and reference to a project of instructional design.

Multimedia Builder (MMB)

The online interactive course material design for Music Theory learning in blended learning mode is developed using an authoring tool called Multimedia Builder 4.9 (MMB). This authoring tool is used as it ability to organize all of the multimedia elements in line with learning theory, pedagogical approach, multimedia, interactive and interface principles. MMB offer an employed support for design and development procedures:

- ✓ MMB create autorun menus, multimedia apps, games, or for online blended learning material without spending months learning complex programming languages.
- ✓ Create multimedia applications with graphic, text, sounds, Audio, Video, Audio or Mixed-mode CD's, support and more.
- ✓ MMB creates small stand-alone exe applications that can be merged with online learning platform (MyGuru).

- ✓ MMB has a modern interface with the advanced features of high-end graphics software, such as multiple document interface, multiple Undo/Redo, selections, grouping, nested grouping, context-sensitive menus, checking, file distribution.
- ✓ Build a multimedia interactive project by creating one or more pages. On each page in an interactive production you can combine text, buttons, graphics, hot spots, video and other actions.



Fig. 2 Example of feature using Multimedia Builder 4.9

Development process

The process is defined in the diagram below:

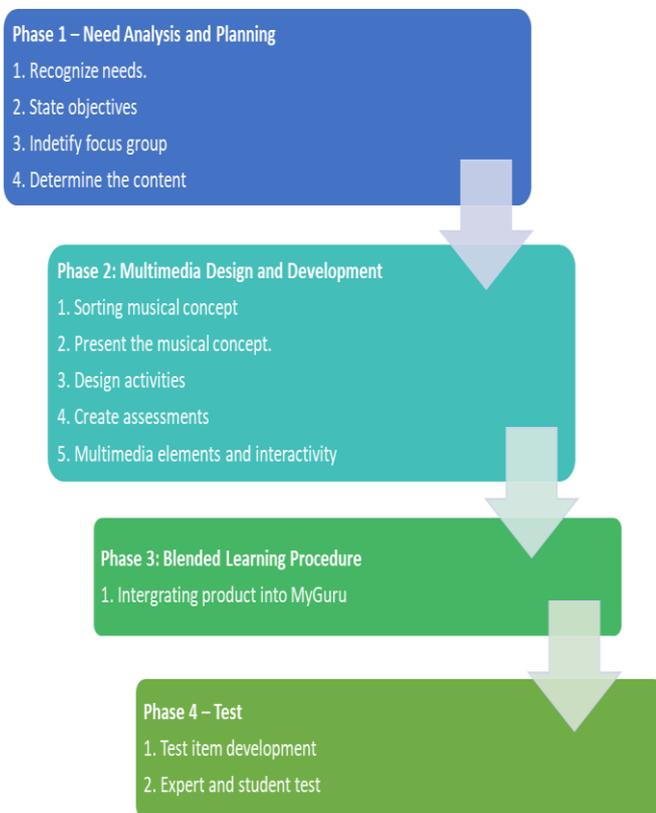


Fig. 3 Sequence development of online interactive application of Learning Music Theory in blended learning mode

The above four phases are detailed below. Each segment is divided into numerous components and each list of components guides the developer throughout the process.

Phase 1: Need analysis

Phase 1 highlights the learner's educational needs. These learning outcomes are used to identify the content that directs us to identify what students need to learn (learning objective) and then plan to incorporate the expectations of the students.

1. Recognize needs.
 - ✓ Reason to build the interactive multimedia blended learning mode.
 - ✓ The outcome
 - ✓ The users
2. Determine learning outcomes.
 - ✓ The students’ knowledge, understanding, or skills gain after using the interactive multimedia blended learning material.
 - ✓ Strategy to allow students to utilize the material and how would this online material adequate into the teaching curriculum.
3. Determine the content

The content determination of the needs that to be incorporated into the online interactive application of Learning Music Theory in this blended learning mode has been done by examining several sources from:

- i. Books related to Basic Theory of Music.
- ii. Course framework, Instructional design and syllabus of teaching and learning AMC1013 Theory of Music performed at the Faculty of Music and UPSI Presentation Arts
- iii. The content of teaching and learning music theory performed at the Music Department of IPG Campus Ilmu Khas, Kuala Lumpur
- iv. Modules for teaching and learning music theory in Distance Learning (PJJ) conducted at UPSI and OUM.

Phase 2: Multimedia design of the content development

In term of designing the content development into interactive multimedia mode, Sastre et. al (2013) stressed that:

"The fundamental idea of incorporating new technologies into music education is to make the most of the work done during class time, taking past experiences as a starting point to create new spaces that will facilitate the creative use of technology. It should be clear that in their lessons, technology must be integrated into daily practices by the teachers. This integration must enable sound to be explored and experimented, and should not be an element that breaks with practices that enrich our students". (p.3)

Phase 2 involves the process of recognizing and presenting a concept in an attractive approach that supports learning for the learners.

1. Identify musical concept.
 - ✓ Music concepts that are essential, important, or common for students to understand.
 - ✓ The communal misunderstandings for each of the concepts

Generally, future music educators are required to have



Designing Online Interactive Application of Learning Music Theory in Blended Learning Mode

adequate music skills and knowledge to prepare them to implement the Music Education Curriculum effectively. Consequently, the developer has identified several topics that focus on the mastery of musical concept such as identifying type as well as the value of music note, interval, melody, triad, cord, cadence and rhythm.

The foundation in music learning is the introduction to the theoretical and musical aspects that cover the notation and music language. It also involves drilling various rhythmic and melodic patterns in various tones, meters and note values. Mastery of the fundamentals of music theory is seen as the necessary skills and needs that can be achieved by providing effective and easy-to-use learning methods. Basic masterpiece of music theory should be applied at an early stage of learning so that its development is in line with the ability of the student to reach the required level of skill before graduation. Based on the justification and analysis of requirements that have been referred to through the various sources as mentioned above, the content units and musical concepts set for incorporation into the interactive instructional design for learning Music Theory in a blended learning mode is listed in the table below.

Table. 1 Units and Topic

UNIT	TOPIC
UNIT 1	Note
UNIT 2	Pic
UNIT 3	Chromatic sign
UNIT 4	Interval
UNIT 5	Triad
UNIT 6	Chord and Cadence
UNIT 7	Sight singing



Fig. 4 Example of the front page for Unit 1

2. Present the musical concept.

- ✓ Present the musical concept using technology to create meaningful learning
- ✓ Identify the existence resources that explicitly address the educational challenge in presenting the musical concept in a similar design.

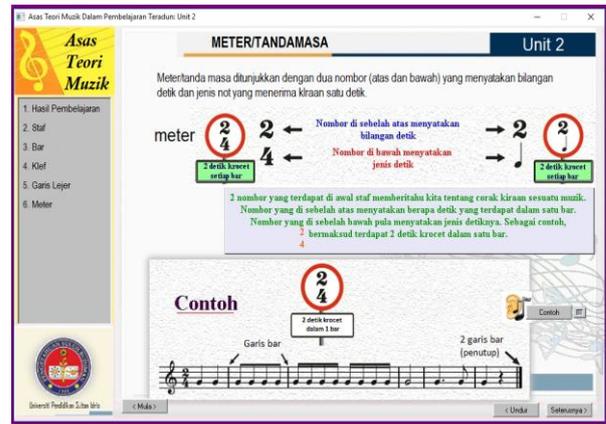


Fig. 5 Example of presenting the musical concept

3. Design activities to engage the student and encourage them.

- ✓ Present the knowledge with multimedia (graphic, text, animation, sound) to engage students' interest.
- ✓ Using interactive example of the musical concept to assist students to relate with the context.

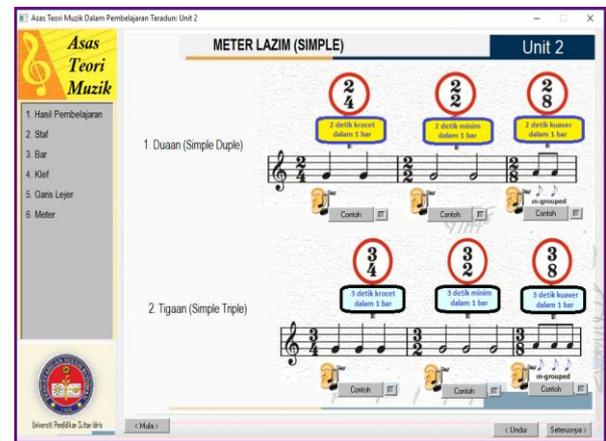


Fig. 6 Example of the learning activity

4. Create assessments to evaluate students' knowledge.

- ✓ Identify the level of students' understanding of the learned musical concept
- ✓ Evaluate the module effectiveness

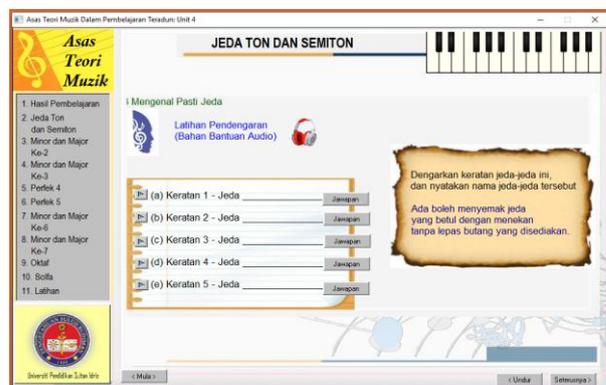


Fig. 7 Example activity of the learning assessment

Phase continues with defining the process from choosing the multimedia element to storyboarding designs.

a. Setting content and learning outcome

The content expert sets student learning outcomes and learning goals in the mixed learning mode for each unit of online interactive music theory learning applications. The content expert similarly supports to design the assessments section in order to certify students' learning effectiveness.

Sub-topics were formulated on the basis of key topics identified. Specific learning outcomes to be achieved by the end of the self-directed interactive multimedia learning courseware were outlined for each sub-topic. The following tables show how topics, subtopics and learning outcomes are distributed.

Table. 2 Sub-topics and Learning Outcomes

Topic	Sub-topic	Learning Outcomes
Unit 1: Note	1. Note - semibreve - minim - crochet - quaver - semiquaver 2. Not value 3. Rest sign 4. Beat 5. Rhythm	1. Identify types of note and value 2. Application of types of note and value into activities 3. Rewrite rhythm 4. Clapping beat
Unit 2: Pic	1. Stave 2. Bar 3. Clef 4. Ledger line 5. Meter	1. Identifying pic on stave based on the clef 2. Naming the types of bar and the application 3. Identifying types of clef and function 4. Naming pic on ledger line 5. Identifying function and the concept of meter
Unit 3: Chromatic Sign	1. Chromatic sign 2. Enharmonic note 3. Stem 4. Grouping note 5. Grouping rest	1. Naming the types of chromatic sign 2. Application of chromatic sign 3. Enharmonic notes and their function 4. Writing notes with the correct stem 5. Identify the method of note grouping and rest
Unit 4: 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

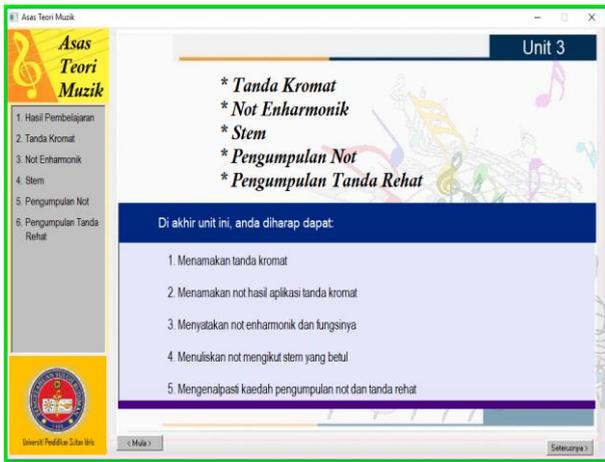


Fig. 8 Example page of the learning outcomes

b. Design graphic

Graphic design involves visual communication, visual design and extensive knowledge of the use of graphic editing software. The designer transforms abstract learning content into a visual language and layout that interlinks with learning outcomes and learning goals. This development involves exactly of contravention with this formalist approach in favor of a creative and pragmatic approach (Elliot, 1995; Gardner, 1983; Green, 2002; Green, 2008) based on the exploitation of musical elements by creating, improvising and, above all, strengthening collaborative creation in line with current trends in contemporary and informal education (Odena, 2005 ; Levy, 2007).

There are three main components that make up a multimedia interactive program effective and meaningful: (i) content, (ii) media and, (iii) interface layout.

1. Content

- ✓ Organize material using attractive style
- ✓ Shape content into evocative pieces of information. For instance, using bullet points
- ✓ Write to ensure that the message is clear

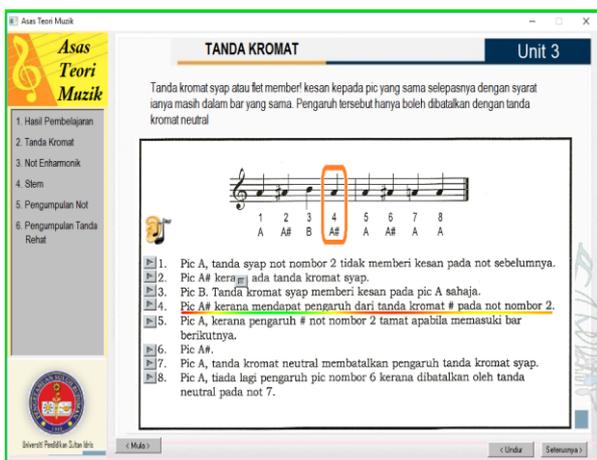


Fig. 9 Example page of the content learning

2. Media

- ✓ Determining the use of visual elements for content communication (graphical language and visual communication)
- ✓ Determine color scheme for the slides or pages to be designed.

- ✓ Create images to support text content visual representation.
- ✓ Construct graphics and sounds that clarify the musical concept.

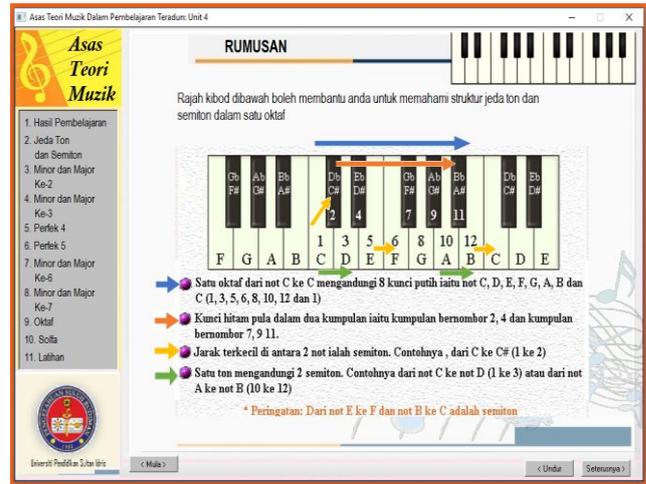


Fig. 10 Example page of the media integration

3. Interface navigation

- ✓ Determine the interactive interactions (button) to connect with each media (e.g., on mouse click, mouse over)

Phase 3: Blended Learning Procedure

Phase 3 involve the procedure of integrating the online interactive application of Learning Music Theory with MyGuru2 as a material for blended learning mode. Research by Sisco, Woodcock, and Eady (2015) found that online e-teaching synchronous platform preferred students over those presented in face-to-face presentations and measured the value of online presentations as well as face-to-face presentations. MyGuru2 is an electronic learning (e-learning) platform that provides a range of teaching and learning process tools and functions. Generally speaking, it allows lecturers to create and upload resources for teaching and learning, and to publicize activities to achieve students. At the same time, teachers are also able to track and monitor students' learning progress.

MyGuru2 also acts as a portal where lecturers and students can give and receive latest news, forum communication and even chat. MyGuru2 is an e-learning platform enabling lecturers to create and upload learning resources and activities while enabling them to monitor the progress of student learning. It is a portal where students can achieve more than they should have learned from university, personal information, news and other resources that are integrated with the university. Generally, MyGuru2 consists of 4 different components: Subject Information, Assessment, Collaboration / Partnership Tools and Administrative Tools.

The course site in MyGuru2 allows users to access learning tools and information related to the courses that have been selected. Each course will contain its own site and the content is unique and specific between each course.



The Course site is accessible to all users who are registered with the course but have the content displayed depending on accessibility. Registered students can access all the tools in the course, while unregistered students can only view the About Course section.

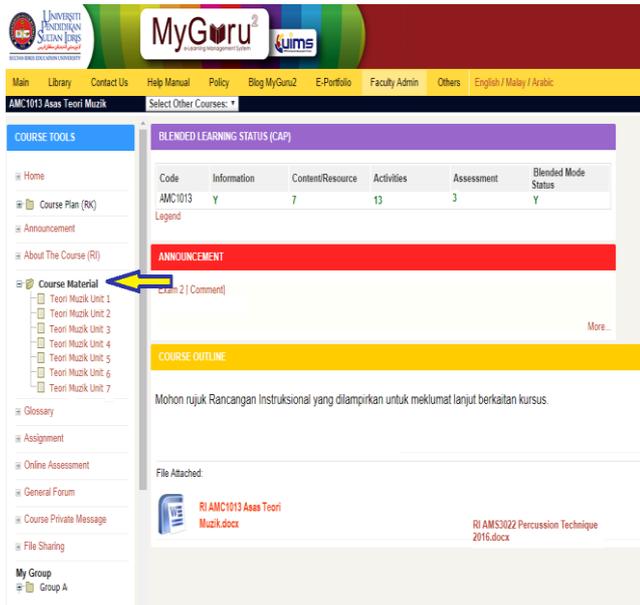


Fig. 11 Merging course material of music theory with MyGuru2

“Course Material” link is one of the ways to upload learning materials in this MyGuru2 system. To add learning content, users need to click on the ADD button and enter the necessary information for the material. After the "Submit" button is pressed, the user needs to go back to "Menu" and interactive instructional materials in MyGuru2 for learning Music Theory in the blending learning mode can be accessed via the "Course Material" link as shown above.

Phase 4: Test and Evaluate

Phase 4 defines the inclusive parts addressed by surveys in certain areas using a rating scale of five Likert points for the areas indicated to measure attitudinal responses: Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree. Course material testing included in the "Course Material" and "Lecture Note" links in MyGuru2 was made using a quantitative approach through a questionnaire. In this study, blended learning involves the combination of teacher and students' Internet and face-to-face physical co-presence. Compared to conventional face-to-face interaction, if properly implemented, it is a promising alternative learning approach. This test sees the perceptions of students and field experts on interactive online instructional designs for learning Music Theory in this blended learning mode from many aspects. Details of the course materials testing are divided into 3 parts:

- i. Part A: Content instructional design interactive Music Theory
- ii. Part B: Instructional Design
- iii. Part C: Technical Requirements

Data collected will determine the usability and interface of the online interactive application of Learning Music

Theory in MyGuru2 as a material for blended learning mode with regard to:

- i. Is the material practical?
- ii. Are there some technical difficulties that hinder with the learning outcome?
- iii. Is the content easy to comprehend?
- iv. Does it carry the difficulty of the information?
- v. Learning effectiveness and attitudes?
- vi. How did the material support the students learn?

The findings from this research study are highlighted in terms of student comments on how self, peer, and teacher evaluation practices and activities could be supported by a blended learning approach and digital technologies.

IV. CONCLUSION

To teach students in specific areas, additional online educational course material for mixed learning in music education can be developed. These online materials can link knowledge and expertise to the current generation in terms of interdisciplinary learning mode. Overall, the development of first-class interactive multimedia for blended learning needs designers to integrate finest knowledge in education and instructional technology to construct a beneficial and effective online blended learning setting for students. However, Mohd Farhan (2006) stated that the effectiveness of a particular courseware depends not only on its contents, but also on the design and concept of the development of the application. Researchers may conclude that the development of the blended learning application for Music Theory has achieved the goals while the majority of respondents have expressed positive feedback through each item proposed in the evaluation sheet.

ACKNOWLEDGEMENT

This article was based on research project “PENYELIDIKAN KHAS UNIVERSITI BERTERASKAN PENDIDIKAN”, Code: 2016-0135-107-01, Title: *Sourcing, Designing and Evaluating Interactive Online Application of Music Theory for Blended Learning Mode* funded by Research Management Innovation Centre (RMIC) Sultan Idris Education University.

REFERENCES

1. Bergmann, J., & Sams, A. (2012). *In Flip your classroom; Reach every student, in every class, every day (1st.ed.)*. Washington, DC: International Society for Technology Education.
2. Delalande, F. (2004). Musical education in the new technologies age. *Comunicar*, 23, 17-23
3. Dziuban, C. D., & Moskal, P. D. (2013). Blended learning: A dangerous idea? *Internet and Higher Education*, 18, 15–23.
4. Elliott, D. (1995). *Music matters: A new philosophy of music education*, Oxford: Oxford University Press.
5. Farhan, Md. F. (2006). *Pembangunan perisian pembelajaran berpandukan rekabentuk instruksi: Asas pecahan Tahun 3*. 19th Convention on Educational Technology in Malaysia.
6. Gardner, H. (1983). *Multiple intelligences*, Basic Books, Oxford: Oxford University Press.
7. Garrison, D. R. (2011). *E-learning in the 21st century: A framework for research and practice* New York, NY: Routledge.



8. Green, L. (2002). *How popular musicians learn: A way ahead for music education*. London and New York: Ashgate Press
9. Green, L. (2008). *Music, informal learning and the school: A new classroom pedagogy*. London and New York: Ashgate Press.
10. Laurillard, D. (2000). The impact of communications and information technology on higher education. In P. Scott (Ed.), *Higher education reformed* (pp. 133–153). London, UK: Falmer Press.
11. Lévy, P. (2007). *Cyberculture: The culture of digital society*, México: Anthropos
12. Lines, D. (2005). *Music education for the new millennium*, Madrid: Morata
13. Nasrifan, M.N, & Saidon, Z.L. (2017). *International Journal of Academic Research in Business and Social Sciences*, 7(9), 363-371
14. Norberg, A., Dziuban, C. D., & Moskal, P. D. (2011). A time-based blended learning model. *On the Horizon*, 19(3), 207–216.
15. Odena, O. (2005). *Creativity in music education: Theory and perceptions of teachers*, Barcelona: Eufonia
16. Ryder, M. (2012). *Instructional Design Models and Methods*. Retrieved from Instructional Design Central: http://www.instructionaldesigncentral.com/html/IDC_instructionaldesignmodels.htm
17. Sisco, A., Woodcock, S., & Eady, M. (2015). Pre-service perspectives on e-teaching: Assessing e-teaching using the EPEC hierarchy of conditions for e-learning/teaching competence. *Canadian Journal of Learning and Technology*, (41), 3.
18. Sastre, J., Cerdà, J., García, W., Hernández, C.A., Lloret, N., & Murillo, A. (2013). New Technologies for Music Education. Retrieved on July 23, 2017 from https://www.researchgate.net/publication/259900796_New_Technologies_for_Music_Education
19. Zownorega, S. J. (2013). *Effectiveness of flipping the classroom in a honors level, mechanics-based physics class*. Retrieved on July 23rd, 2017 from <http://thekeep.eiu.edu/theses/1155>