



Developing and Evaluating a Digital Interactive Method Book for Teaching and Learning Recorder Based on Malaysian Folksongs

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While many educational institutions introducing technology based over traditional approaches, some academics who teach recorder are still anxious about the content and method that can be incorporated into the mode of digital interactive teaching and learning. Currently there is no complete digital method book that is designed based on the Malaysian context available for teaching recorder. This research intends to investigate how to incorporate Malaysian folk songs into a digital form utilizing multimedia and an interactive approach. The aim of this research is to synthesize the available sources, to design and to evaluate the appropriateness of a digital interactive method book for teaching and learning recorder that will be based on Malaysian folk songs. The digital interactive method book will be developed in a software form that can be installed onto a computer, stored in 'cloud' system and can be accessed online. This research also summarizes the impression of students' and woodwind instrument expert through a survey tool which was administered through a questionnaire to selected primary school students enrolled in music classes to measure their perceptions and attitudes towards the developed digital interactive method book. The result of student and woodwind instrument expert feedback is that the developed digital method book is suitable as self-learning material and provides strong support for the understanding of concepts in learning the recorder. The developed digital interactive product can be potentially disseminated throughout Malaysia music education system and especially in primary schools.

Key words: *Multimedia, Application, Recorder, Interactive, Digital Method Book, Self-Learning, Instructional Design.*



Introduction

The effectiveness of the teaching and learning process requires increasing investigation because a 21st Century world is requiring more complex higher levels of student thinking. In this era, innovations in technology have resulted in new trends of learning environments and introduced more modern concepts of learning. From traditional hard copied or printed book learning, technology has transformed our education positively and brought us to the concept of digital interactive learning. Consequently, the approach of using digital interactive learning will directly help students better understand the content of the lesson presented in face to face interaction. Academics at all levels continue to review critically how to use technology in the classroom. Incorporating interactive features enables two-way communication between students and digital tools to create an active and meaningful learning environment (Nasrifan & Saidon, 2017). Using technology in the teaching-learning process and engaging with digital interactive modes that are constantly evolving, is important to assist beginners learners of the recorder with blended instructional content of the physical book and the digital interactive approach.

Background of the study

Music educators worldwide seek methods that countenance for self-discovery learning and hence cultivate creativity. According to Hasnizam (2013), the new era of computer operating systems had a significant impact on the use of computers for creative applications. Equivalent to the current rapid spread of the usage and invention of information and communication technologies, the method of use of newfangled technologies in the context of education has varied. The constantly developing technology offers instructors and students various choices on teaching approaches. Likewise, applications for music learning are increasing at an amazing speed, and shifting the techniques people use to teach, learn, and create music (Rainie & Wellman, 2012; Waldron, 2013; Gerçeker, 2018). This change has been instigated by a range of different views and approaches in education. Similarly, a digital method book is an educational practice developed to assist and accelerate students' learning.

A method book is a kind of textbook that offers support to students by addressing certain difficulties or techniques pertinent to learning a particular instrument. For instance, someone can start to learn to play clarinet by purchasing a method book for beginners which might illustrate the theory/technique using simple, familiar songs and demonstrates how they can be played. The included series of exercises offer a suitable structure for an aspiring musician's practice time.



Independent learning through a digital method book, unlike the conventional printed learning method book, enables students to learn theoretical knowledge on their own and involves extra active connection in music making as well as improved pride and passion for their music learning. In general, learning through a digital method book requires students to learn the subject from the material recorded in an electronic environment. The model is used according to the concept of interchange between interactive instruction and activities.

Problem statement

Currently, learners of the recorder instrument are challenged with long sequences of ‘page-turning’ content contained in a standard method book. At this point, this ‘outdated’ mode of delivery seems unable to promote adequate engagement, choices, relevance, contact and context to facilitate effective and successful learning. One of the inventive ways out for this concern is the implementation of a digital interactive learning mode in which various types of delivery modes are combined (Allen, Seaman, & Garrett, 2007; Ghaffari, 2018). Learning via interactive digital method books will allow students to learn to play recorder as a whole and allows teachers to deliver lessons more easily and in a more interesting and effective manner, as students will be able to understand the lessons to a higher degree, more meaningful and educational activities can be run independently as part of the classroom interaction. Therefore, sourcing and designing interactive digital interactive learning with the combination of various components multimedia elements such as sound, video, text, graphics and animation seems required to bring back the fun aspect of learning to play recorder.

Lack of Malaysian method books in the form of digitally interactive material for learning recorder in Malaysia which incorporate Malaysian folk songs is the main impetus for this research. All these methodologies accent the importance of the use of the native traditional folksongs as the starting point in music education. The justification of using Malaysian tunes and melody is because they are the traditional folksongs of the ‘native tongue’ and the ‘known language’ of the beginner student. Therefore, the student more readily relates to them. An example might be the well-known Malaysian folksong Anak Itik Tok Wi, Lompat Si Katak Lompat, Enjit-Enjit Semut etc.

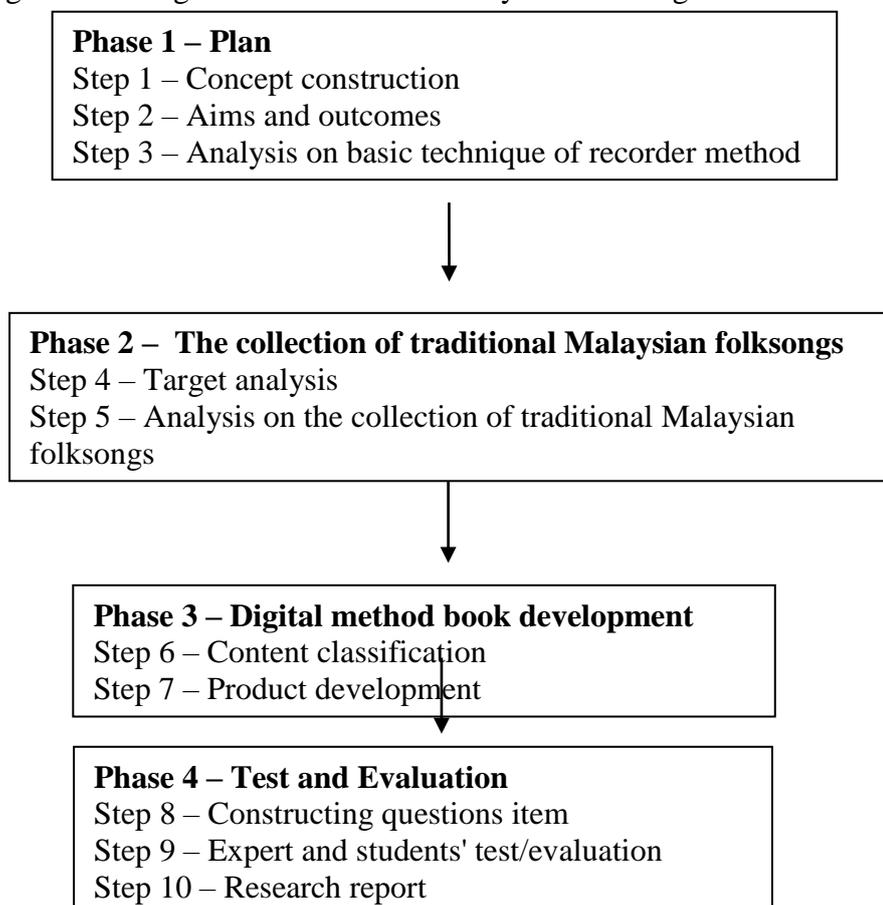
At this time there is no Malaysian specific text or method book to teach early recorder students, especially in the digital form that brings together an established and proven cognitive and development method coupled to traditional folksongs. This research was inspired by the need for this kind of learning material development and the possibility to create a product that will serve the Malaysian learner more accurately than texts that were written based on other cultures. A basic digital interactive method book for teaching and learning recorder, utilizing the famous Malay tunes, is intended to become the approach to educate beginner students in Malaysia to the music of their own culture and heritage.

Based on the identified problems, the aim of the study is to develop and evaluate a Digital Interactive Method Book for Teaching and Learning Recorder based on Malaysian Folksongs that can be implemented in Primary school for beginners. The research questions addressed in this study are:

1. What is the content that needs to be put into a digital interactive method book for teaching and learning recorder for the beginner?
2. What is the required design for the Digital Interactive Method Book for Teaching and Learning Recorder based on Malaysian Folksongs?
3. What is the expert's evaluation on suitability of the developed digital interactive method book?
4. How do students perceive their experiences with the use of the Digital Interactive Method Book for Teaching and Learning Recorder based on Malaysian Folksongs?

The procedures for this study will be divided into four phases, each specifically structured to address the two research questions. The overall research process is as designed below in Figure 1:

Figure 1. Sequence of developing and evaluating digital interactive method book for teaching and learning recorder based on Malaysian folksongs



The four phases above are elaborated in detail below. Each segment is fragmented into numerous components and each component list guides the developer throughout the process.

Research findings

Developing a digital interactive method book is a creative process. The developer selected a visual design model that considered the goals, context, visual approach, communication functions, and principles of psychological instructional events to deliver decisions about the book's concept, individual graphics, and layout (Clark & Lyons, 2011). Clark and Lyons added, since the electronic book is an extremely visual medium, the foremost design concern was to attract students' attention toward information while disregarding interferences and avoiding the activation of inappropriate prior knowledge

Table 1: Selected Topics and Unit Distribution

Unit	Topics
Unit 1	Introduction to Recorder
Unit 2	History of Recorder
Unit 3	Range and Types of Recorder
Unit 4	Parts of Recorder
Unit 5	Holding position and Posture
Unit 6	Breath and Tonguing Technique
Unit 7	Fingering Chart
Unit 8	Fingering System and Exercise
Unit 9	Major and Minor Scale
Unit 10	Play Along (Malaysian Folksongs)

Sub-topics have been formulated based on the identified main units. For each sub-topic, specific learning outcomes to be achieved by the end of the designed digital interactive multimedia method book are outlined. Based on the particulars of the units and learning outcomes outlined, consequently, a digital interactive method book for teaching and learning recorder based on Malaysian folksongs has been developed. This digital book integrates interactive structures to support two-way communication between students and relevant digital tools to construct a dynamic and meaningful learning setting. Subsequently from the main menu interface, the education process continues by defining the objectives that are to be accomplished by the user after each unit of learning and the subsequent interactive activities and exercises.

Figure 2. Example of Unit 4 – Parts of Recorder

BELAJAR REKORDER

Bagian Rekoder

Rekoder tergolong dalam kumpulan alat muzik tiup kayu (woodwind). Alat muzik ini mengandungi bahagian penutup atau pemipit (mouthpiece) yang dipasangkan ke laras selinder yang mengandungi tujuh lubang; enam di hadapan dan satu di belakang. Selinder yang terakhir mengandungi dua lubang berkembar di hadapan. Kadang-kala selinder ketiga ini bercantum bersama selinder kedua.

Bahagian yang paling penting dari segi penghasilan bunyi ialah bahagian kepala rekoder yang mengandungi penutup atau pemipit seperti yang ditunjukkan dalam Rajah di bawah..

- Bahagian A dipanggil fipple
- Bahagian B adalah laluan angin
- Bahagian C digelar labium atau ramp, iaitu bahagian yang mengeluarkan bunyi sulan



Kedudukan jari dalam permainan rekoder

BAHAGIAN-BAHAGIAN REKORDER

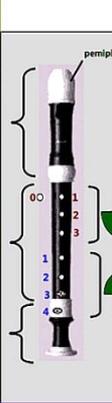
laluhan angin / labium atau ramp

blok atau fipple

Bahagian kepala

Bahagian badan

Bahagian kaki



PERLETAKAN JARI PADA LUBANG-LUBANG REKORDER

TANGAN KIRI



TANGAN KANAN



Figure 3. Example of Unit7 – Fingering Chart

PENJARIAN REKORDER

Not E'

Ibu jari tangan kiri menutup hanya separuh lubang belakang. Jari telunjuk, hantu dan manis menutup lubang 1, 2 dan 3 bahagian atas. Jari telunjuk dan jari hantu tangan kiri menutup lubang 1 dan 2 bahagian bawah.



Not F'

Ketiga-tiga jari kiri menutup kesemua lubang bahagian atas. Ibu jari tangan kiri menutup separuh lubang belakang. Jari telunjuk dan jari manis tangan kiri menutup lubang 1 dan 3 bahagian bawah.



Not F#'

Jari tangan kiri sama seperti kedudukan not F#'. Jari hantu tangan kanan menutup lubang kedua bahagian bawah.



Not G'

Ketiga-tiga jari tangan kiri menutup lubang 1, 2 dan 3 bahagian atas. Ibu jari tangan kiri menutup separuh lubang di belakang.



Figure 4. Example of interactive learning activity

BELAJAR REKORDER

Skel C Major & A minor Natural
Not-not yang terlihat dalam skel C major juga terdapat dalam skel A minor (natural)

C D E F G A B C'

Skel minor terbagi kepada 2 lajitu:

a. Skel A minor natural

b. Skel A minor harmonik

Skel A minor harmonik dimainkan dengan menalakkan not yang ke-7 iaitu not G sebanyak satu semiton. Oleh itu, dalam skel A minor (harmonik) terdapat satu not syap iaitu G# seperti yang ditunjukkan di bawah

Not-not yang terlihat dalam skel C major juga terdapat dalam skel A minor (natural)

6

Figure 5. Example of interactive exercise

PENJARIAN REKORDER

Not B

Kita akan memulakan tiupan not pertama iaitu Not B. Rajah di bawah menunjukkan ibu jari tangan kiri menutup lubang bahagian helikang hadan rekoder, manakala jari telunjuk menutup lubang pertama dari atas. Ibu jari tangan kanan menyokong kedudukan rekoder, manakala jari-jari tangan kanan tidak menutup lubang untuk penjarian tangan kanan.

Latihan penjarian Not B

Untuk memahirkan diri anda dengan penjarian dan teknik tiupan not B, lakukan latihan berikut:

AKTIVITI Latihan

LEFT FINGERS: 1st, 2nd, 3rd, 4th

RIGHT FINGERS: 1st, 2nd, 3rd, 4th

Figure 5. Example of Unit 10 - Play Along (Malaysian Folksongs)

Testing and evaluation phases were conducted after the digital interactive method book developed. A questionnaire set was designed to analyze expert's perceptions regarding the appropriateness of its use in the learning process and to determine how the selected students perceive their experiences with the use of the Digital Interactive Method Book for Teaching and Learning Recorder based on Malaysian Folksongs. In particular, the test was conducted to verify whether the product fulfilment of the skills needed as a self-learning tool among a group of pupils in primary school in Tanjong Malim.

A total of 60 respondents involved 58 pupils, 1 lecturer who specialises in the field of instructional technology and 1 lecturer who is an expert in teaching brass instruments and were involved in the test and evaluation process. The following table shows the findings of the questionnaire regarding the suitability of the developed digital interactive method book for teaching and learning recorder based on Malaysian folksongs from the student's perspective.

Section A: Content. The purpose of the questionnaire in Section A is to determine the content of the digital method book in accordance with the learning outcomes, backgrounds and abilities of the students.

Table 2: Content of developed digital interactive method book

	Criteria	Mean
1.1	Content is directly related to the objectives / learning outcomes	3.22
1.2	Provide all the content or learning experience needed to achieve objectives / learning outcomes	3.84
1.3	Compatible with features (level of ability and maturity) and student experience	3.72
1.4	Relevant to course needs and target groups	3.08
1.5	Latest materials are presented	3.24
1.6	Resolved to small and continuous learning steps	3.24
1.7	Presented in logical order	3.44
	Mean =	3.38

The highest

min is 3.84 showing the complete content by providing all the content or learning experience needed to achieve learning objectives, while the lowest mean 2.88 shows moderate performances in logical sequences of content. However, the overall mean for Section A is 3.38 which is at High compatibility level. Indirectly, the conclusion is that the content of the digital method book was suitable according to the learning outcomes, backgrounds and abilities of the students.

Section B: Instructional Design. The questionnaire related to the instructional design of the developed digital method book was divided into three sections which include the testing of (a) learning outcome, (b) learning activities, and (c) formative evaluation.

Table 3: Learning outcome digital method book

	Criteria	mean
2.1	There are instructional learning objectives for each lesson unit	4.00
2.2	Objectives are written according to the learning hierarchy (Low level to high level)	3.00
2.3	Objectives are clearly and precisely written	4.00
2.4	Objective has the proper verb (measurable and observed)	3.40
2.5	Objective have cognitive, psychomotor and affective domains	2.00
2.6	Objective covers the entire content of the courseware	3.84
	Mean =	3.37

The purpose of this questionnaire is to identify the skills, knowledge or attitudes that must be achieved via the digital method book. Mean 4.00 is shown by item “There are instructional objectives for each lesson unit” and the “Objectives are clearly and accurately written”. However, score of the “Objective items have a cognitive, psychomotor and affective domain” was indicated with a low mean of 2.00. The overall achievement of the evaluation on the learning outcome of the digital method book is 3.37, indicating the suitability at the High level.

Table 4: Learning activities

	Criteria	mean
3.1	Can attract students' attention and motivation	4.00
3.2	Using various methods and media to support self-study (Examples: discussion, simulations, video, Internet materials: e-lectures, youtube, etc.)	3.00
3.3	Students interact with the materials	3.20
3.4	Students interact with other students (face-to-face and / or online)	1.00
3.5	Learning activities run in the order of learning hierarchy	3.80
3.6	Learning activities contain cognitive, psychomotor and affective domains	2.84
3.7	Learning instruction is clear	4.00
3.8	Examples / instructional guides are provided	3.20
3.9	There is a formula for each unit to recall	2.80
3.10	Exercise, test and adequate student feedback (Focus on formative assessment)	3.00
	Mean =	3.08

Testing on the suitability of the methods and media used can give an understand

ing to students, triggering a two-way interaction between students and the product and was important data to be analyzed. Based on the table above, the score related to student criteria interacting with other students (face to face and / or online) is the lowest mean (1.00). This shows that these criteria are not necessarily built into these digital method book. Overall, the designed learning activities achieve mean 3.08 which shows the suitability at the High level. Testing on the criteria of whether the digital book was able to attract students' motivation as well as the instruction is clearly written resulted with the highest mean of 4.00.

Table 5: Formative test

	Criteria	mean
4.1	Provided after completion of small unit of study	3.00
4.2	The test contains knowledge of low level and high level skills	3.00
4.3	The test is based on the objectives and contents of the lessons in the Unit	3.40
4.4	Examples of answers are provided	4.00
4.5	Test instructions are clear	4.00
	Mean =	3.48

The purpose of self-evaluation (formative) is to evaluate student learning progress. Overall, the data shown above shows the suitability of the High Level (Mean = 3.48) on the developed formative test.

Part C: Technical Requirements. Questionnaires related to the developed Technical Requirements is divided into five 4 sections which include testing for (a) language, (b) text (c) graphics and (d) audio visual.

Table 6: Language

	Criteria	mean
1.1	Writing style is clear and continuous	4.00
1.2	The instructions are clear	4.00
1.3	Regular and commonly used words	3.20
1.4	The word verb is in the form of active nonverbal	3.40
1.5	The verses are short and accurate	3.80
1.6	Paragraphs are simple and not swirling	4.00
1.7	Numbers are used to indicate sequences of steps in a task or process	3.00
1.8	The writing tone is in the form of support and encouragement	3.20
1.9	The terms are used consistently	2.80
1.10	Abbreviation and symbols are clearly defined	3.00
1.11	Spelling and grammar are consistent and precise	4.0
	Mean =	3.49

Table 7: Text

	Criteria	mean
2.1	Clear text	4.00
2.2	Font size 12 for text	4.00
2.3	Font size 18 for headline (bold)	3.20
2.4	Font size 14 for small heading (bold)	3.40
2.5	Use capital letters if the title is less than 4 words	3.80
	Mean =	3.68

Table 8: Visual

	Criteria	mean
3.1	Easy and not crowded	3.40
3.2	Position is appropriate	3.40
3.3	Balance (formal or informal)	3.20
3.4	There is a contrast between the subject with the background	3.40
3.5	Color usage (recommended no more than 4 colors)	3.80
4.1	Audio is clear	4.00
3.6	Color used to emphasis the concept	3.40
4.2	Sound or music effects match	4.00
	Min =	3.43
4.3	Audio sync compatibility with visuals	4.00
4.4	Clear static visual	3.40
4.5	Animation can explain the concept	3.80
4.6	Visual motion (video) can explain the concept	3.00
	Mean =	3.70

Table 9:
Audio

Based on the average scores shown above, the overall evaluation of technical requirements concerning language presentation (3.49), text (3.68), visual (3.43) and audio (3.70) applied in the digital method book is at a high level of relevance. Based on the average scores shown above, the overall evaluation of technical requirements concerning language presentation (3.49), text (3.68), visual (3.43) and audio (3.70) applied in the digital method book is at a high level of relevance.

Generally, findings associated to the usage of a digital interactive method book among schoolchildren is overwhelming. This can be seen from the mean score of 'High' classification based on indicators with regard to the suitability of the Content (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 that both the experts and pupils approved that the digital interactive method book produced an



alternative to conventional recorder lessons. Nonetheless, data also determined that there is a need to have further emphasis to focus on the cognitive, psychomotor and affective domains. The result also specified that the digital interactive method book provided effective arrangement of graphics, fonts and visual throughout the lesson that enhanced users capability to grasp concepts and ensured engagement.

Conclusion

Overall, the results from the findings show that respondents are very interested in this digital interactive method book as they are more attracted to them as a learning tool and enjoy the experience of new learning environments. This proves that educational technology not only assists students with more rapid and easy access to information throughout their education, but also offers them a wider range of learning experience (Sirkemaa, 2001). Learning via an interactive digital method book allows pupils to learn to play recorder as a whole and allows teachers to deliver lessons more easily, and that are more interesting and effective, while pupils are able to understand the lessons because there are more meaningful and educational activities that can be run independently and beyond the classroom interaction. Therefore, sourcing and designing interactive digital interactive learning with the combination of various component multimedia elements such as sound, video, text, graphics and animation is required to bring back the fun aspect of learning to play recorder.

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Biography

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