

# A Musical Note: An Audio Gaming Aid for Listening to Traditional Thai Alto Xylophones

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In modern times, Thai musical study gets serious after secondary school where it is compulsory for students to learn both theory and practice. Playing Thai musical instruments has always been a privilege for musicians. They are taught to respect the instruments. Ranat ek or “Thai Alto” xylophone is a lead Thai percussion instrument. Learning to play alto xylophone can be difficult initially, especially when remembering the tone of notes. This research has the following objectives: 1) To develop a game that promotes listening to traditional Thai music via the sound of Thai xylophones, among first year college students; 2) To determine that experience; 3) To know the satisfaction of students towards the game. The sample group is students in Year 1, in Wat Bangbon school. The students are from three classes, 84 students in total. The research tools are questionnaires on the experience of listening to traditional Thai music. The researcher developed the tools. The result reveals that the efficiency of the system is, overall, high at = 4.43 and S.D. = 0.83. Further, the satisfaction level of users towards the system is, overall, high at = 4.42 and S.D. = 0.21.

**Key words:** *Educational games, Traditional Thai music, Thai alto xylophone.*

## Introduction

Every culture has its own musical taste. It might be influenced by its own tradition or adopted from other nations. Thailand preserves its tradition well since ancient times, yet musical taste

has been altering from era to era. One apparent signifier of Thai identity is “Thai music and songs”, passed from generation to generation. In the early days, people who wished to learn Thai music had to dedicate themselves to practice day and night at the professional music teachers’ house. Learning Thai music was equally to learning knowledge in other fields. Students would stay at teachers’ houses and traded work for the learning of musical skills. The tuition was a one-on-one style, to be able to learn all fundamental musical skills (Begg, Dewhurst & Macleod, 2005, Chou, Hou, Yu, Lee, Wu, Yang, & Liao, 2012, Curzon, 2013).

Just because something is already working, does not mean it cannot be improved. Libraries are excellent example of an institution that adapts over time (Jomsri, 2014). They have improved to become digital libraries. The same is true of theories of Thai music which are often written in physical books. As the world develops, the technological trend also improves. When books are no longer a source of information, information tends to shift towards digitisation. The same is true for musical lessons that can be implemented using technology.

Hence, to understand the authentic taste of traditional Thai music, especially music played on Thai instruments, was all up to experience and habits of listening (Tavelpiyakun, 2007). The result was that not everything can be taught, but it can be practised according to individuals’ likes (Mahing, 2007).

Presently, learning Thai music is undoubtedly different from the early days where theories are emphasised more, and not practice. This depletes the enthusiasm of students who wish to actually play music, instead of learning history and theories of music. The researcher, hereby, proposes in this study to improve the learning style of Thai traditional music, by introducing a game to help listening to Thai traditional music, via the sound of a xylophone. The reason that the xylophone is chosen here is that it is the lead instrument in the Thai musical band.

### **Research Objective**

1. To design and develop a music rhythm video game, to assist listening to traditional Thai music, using the sound of a Thai alto xylophone.
2. To study student satisfaction after learning with the game.

### **Related Works**

Listening to music is another form of joy and entertainment for people. It helps to encourage emotional states, brings more interests, and balance persons’ well-being (Mandanici, Altieri, Pretto, Munaro, Canazza & Menegatti, 2018). Music can also be used to recognise listeners’ emotions and behaviours. Although there are many researches on Western music there are still few studies on Thai music (Sangnark, Lertwatechakul & Benjangkaprasert, 2018). At



present, traditional Thai music lessons, especially for high school students, focus on remembering musical notes, mugging up things too much. This makes Thai musical class uninteresting. With its traditional style, it is inevitable that students would tend to think that it is obsolete.

As to traditional Thai musical lessons, it is wise to implement information and technology, to act as media to aid the learning curve. There has been a precedent of using a computer program to help with singing technique (Chuijorho, 2013). The lessons developed have an excellent quality, and learners using those lessons have apparently improved by scores.

The greater problem with computer programs is that students have no fun in using them, and have no interaction with teachers and other students. Presently, there is no research to develop an application to help the learning of traditional Thai music. There are only similar games for entertainment, like Thapster and Guitar Hero, where players just have to press the buttons in accordance to the note blocks that come down.

It is apparent that presently, there is no development of an application to aid the learning of traditional Thai music. Hence, this research is crucial, as the initiation of other similar research that may emerge. There are numerous lessons which implement games to aid the learning process as discussed further.

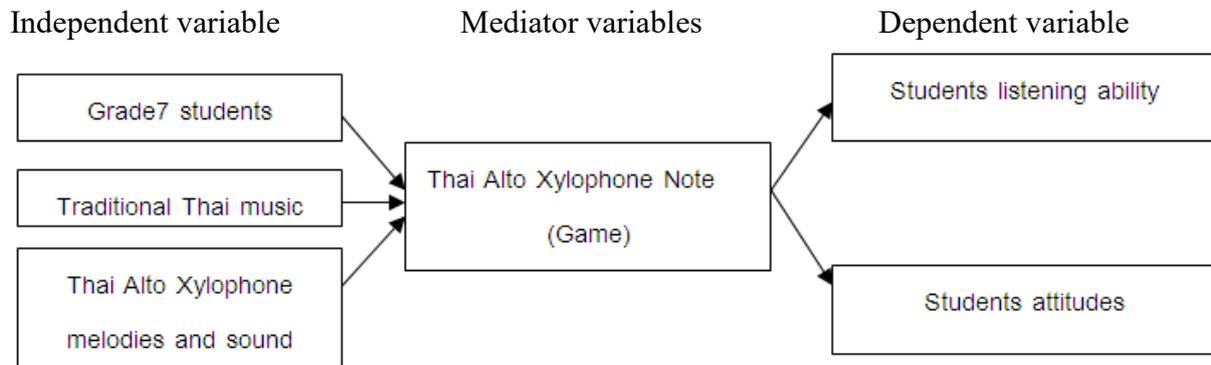
A card game used to engage children in group activities to improve their friendships, Treehouse Dreams, is another effective group game that helps the learning process. The game introduces participants to environmental study, and draw outs information for research (To, Fan, Kildunne, Zhang, Kaufman & Hammer, 2016).

Another example is Virtual Hooping (Music & Murray-Smith, R. 2010). The research proposes the method of using mobile phone applications for fitness and rehabilitation, by training hula-hooping movements. Features like accelerometer, gyroscope and magnetometer sensor readings are quite commonly found in smartphones, making it feasible for anybody with a smartphone.

PoetryLab is an iOS game, in which players can alter a virtual tape machine and learn techniques to solve sound poetry puzzles. The gameplay lets the players learn about poetry and record media in audio form. Players playing PoetryLab are made to listen to and interact with recorded speech in a new way, as they learn the poets of Montreal (Arawjo, Mitchell & Camlot, 2014).

## Research Framework

**Figure 1.** The conceptual model for learning Traditional Thai music with Thai Alto Xylophone Note:



Accordingly, Fig. 1, the conceptual model of this study, shows that the main target of this study is grade 7 students, in Bangkok secondary school. Additionally, the objective of this study is the traditional Thai music listening ability of students, that can be measured by their game scores in each game level. Another outcome that can be obtained is interesting students in music lessons. They learn by playing this game. Thus, the stimulus in this experiment is the music rhythm video game, “Thai Alto Xylophone Note” (Persson & Nouri, 2018, Rashid, Salleh & Noor, 2018).

To obtain the objective mentioned in the research framework above, the suitable research methodology is planned and managed. The details of this research method follow, below.

## Research Methodology

### *Experimental Design*

In this study, an experiment was conducted on grade 7 students, in Bangkok secondary school. This experiment aims to evaluate the learners’ attitudes, toward listening to traditional Thai music via the sound of Thai alto xylophone in a game.

This game was designed as a music rhythm video game (Nouwen, Schepers, Mouws, Slegers, Kosten & Duysburgh, 2016) called Thai Alto Xylophone Note. The game is in a casual style. It lets the player press S, D, F, J, K, L letters on the keyboard to control the direction of note blocks that fall down. The experiment is designed to help every traditional Thai music learner focus on remembering musical notes and impact of the game. The contents in the game are separated into two parts; the simple music and the complicated music. The simple music is for students who have experience of traditional Thai music as follows: 1) Kangkaw Kin

Kluay; 2) Lao Sieng Tien; 3) Soi Son tad; 4) Tep Banterng; and 5) Lao Duang Deun. The complicated music is for the students who have not had experiences as follows 1) Cheun Chumnum Krum Don Tri; 2) Khun Plup Pla; 3) Cheen Kluy; 4) Ta Lee Kee Pud; and 5) R Here.

This experiment consists of four steps. In the first step, students determine the experience of traditional Thai music. Second, the game is introduced to them in a computer lab. Third, questionnaires are given to the students for the inquiry of satisfaction after using the application. Lastly, data are analysed to show their satisfaction with learning traditional Thai music, through the game.

### ***Participants***

To determine the objectives of this research, 84 participants are sampled. All of them are grade seven students, consisting of 43 boys and 41 girls, with the average age of 13 years.

### ***Materials***

There are three materials necessary for this experiment: a Thai Alto Xylophone Note game application, a questionnaire determining the experience of traditional Thai music, and a questionnaire on satisfaction with the game. Each component is described below.

### ***Thai Alto Xylophone Note Game Application***

The objective of the game is to help with listening to Thai traditional music, via the sound of a Thai alto xylophone. The design and development of this game is a digital game that consists of various elements which are feedback, rewarding, use of popular music, free choice of songs, playing together, recording, sharing performance, and free play (Nouwen, Schepers, Mouws, Slegers, Kosten & Duysburgh 2016). Details of these elements are elaborated in Table 1.

**Table 1:** Game elements in the Thai Alto Xylophone Note

<b>Conceptual element</b>	<b>Game mechanism</b>	<b>Students gain</b>
<b>Rewarding and Points</b>	The game includes a rewarding system, to motivate the students to play and practice their skill.	Students engage with and enjoy the game with rewards.
<b>Use of popular music</b>	The game includes Thai Alto Xylophone Note and traditional Thai songs suitable for student's music experiences	Students are interested and enjoy the game with their favourite music
<b>Free choice of songs</b>	Students can choose their preferred music.	Students are interested in the game with music they love.
<b>Recording</b>	The score is recorded automatically.	Students can see their score and develop their skill.
<b>Sharing knowledge</b>	Students can exchange knowledge and learning with their classmates.	The students' relationships' with their classmate are closer.

### **Contents in the Game are as Follows**

**Part 1:** Simple music (Have no experience) Kangkaw Kin Kluay, Lao Sieng Tien, Soi Son tad Tep Banterng, Lao Duang Deun

**Part 2:** Complicated music (Have experience) Cheun Chumnum Krum Don Tri, Khun Plup Pla, Cheen Kluy, Ta Lee Kee Pud, R Here

### ***Student Satisfaction Questionnaire***

Since the game is developed for students' self-learning, the attraction of the game must be measured using the satisfaction index for students. The satisfaction score is a Likert scale with five levels, ranging from 1 to 5. The meaning of each score is listed below, for analysis of student satisfaction (Uiphanit, Bhattarakosol, Suanpong & Iamsupasit, 2019).

- 1.00 – 1.80 = strongly disagree
- 1.81 – 2.60 = disagree
- 2.61 – 3.40 = neither agree nor disagree
- 3.41 – 4.20 = agree
- 4.21 – 5.00 = strongly agree

## Findings

1. The Result of Designing and Developing a Music Rhythm Video Game to Help Listening to Traditional Thai Music Using the Sound of a Thai Alto Xylophone.

1.1. The Starting Screen is Used to Start the Game. Students Must Tap the Start Button to Start the Game.

**Figure 1.** The starting screen is used to start the game.



1.2. Students Press S, D, F, J, K, L Buttons on the Keyboard to Direct Music Note Blocks that Fall Down.

**Figure 2.** The keyboard controls.



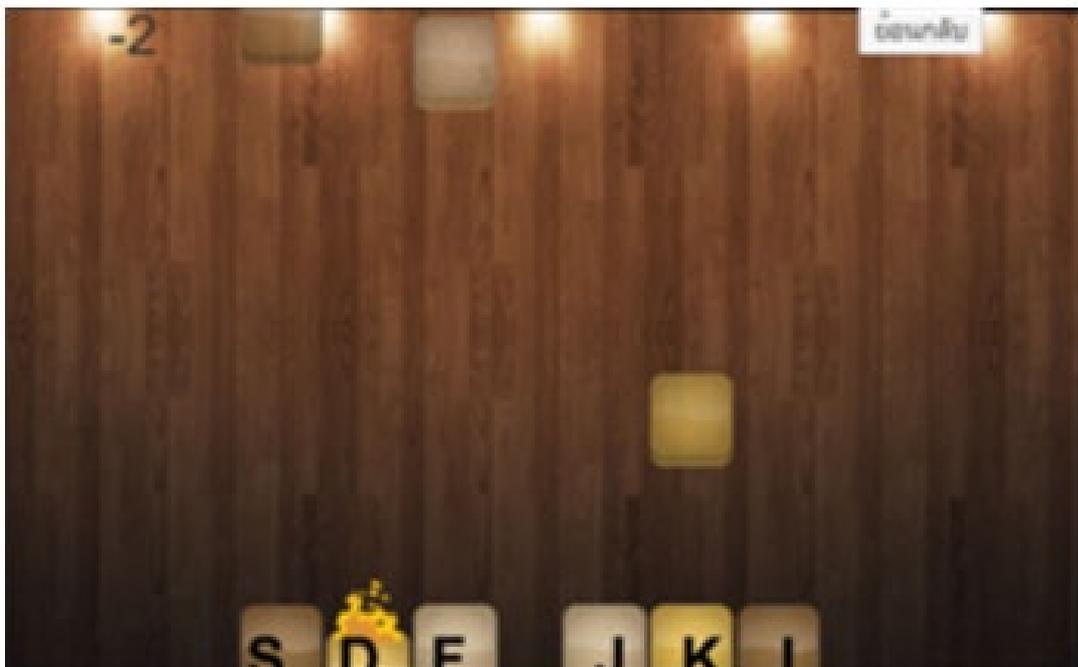
### 1.3. Display of the Difficulty Level; Simple Music on the Left Hand Side and Complicated Music on the Right Hand Side

**Figure 3.** Display of the difficulty level



1.4. Students Must Press the Button To Direct Music Blocks that Fall Down to the Letter Block. If Players Direct the Music Block in the Correct Direction, they Will Gain a Point. If Players Direct the Music Block Incorrectly, they Will Lose a Point.

**Figure 4.** The button to control the direction of music blocks.



1.5. At the end of the stage, the game will summarise points on the screen.

**Figure 5.** At the end of the stage, the game will summarise points on the screen.



2. The result is studying student satisfaction after learning with the game.

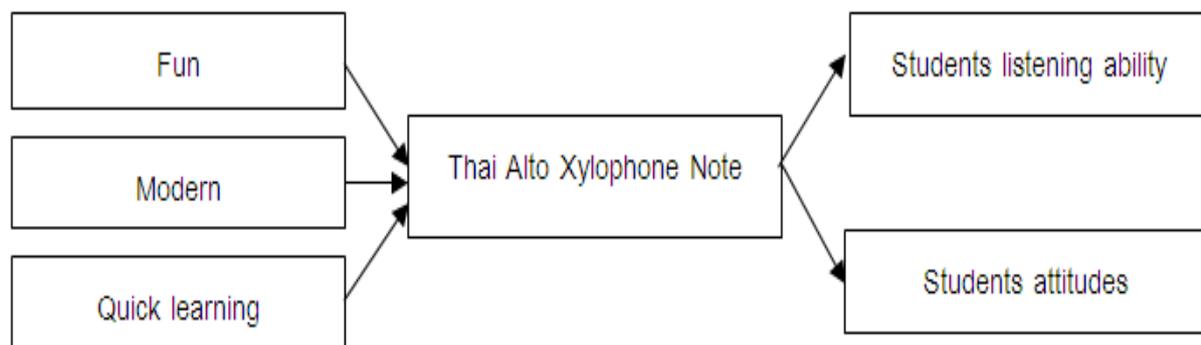
**Table 2** Student satisfaction after learning with the “Thai Alto Xylophone Note”

No.	Question	Mean	S.D.	Interpreted
1	The game motivates learning towards Traditional Thai music	4.25	0.62	Very good
2	The game provides fun to the lesson	4.45	0.59	Very good
3	The game creates enthusiasm during the lesson	4.12	0.70	Good
4	The game allows quick learning	4.27	0.65	Very good
5	The game allows easy understandability	4.10	0.67	Good
6	The game is easy to use	4.20	0.65	Good
7	The image content is interesting	4.25	0.74	Very good
8	Fonts used are interesting and clear	4.12	0.67	Good
9	Tutorial makes the gameplay understandable well	4.17	0.73	Good
10	Thai music used in the game is appropriate	4.05	0.73	Good
11	The processing of the game is fast	4.14	0.68	Good
12.	The game needs low learning curve	4.19	0.74	Good
13.	The game is modern	4.32	0.64	Very good
14.	There are clear instructions during the gameplay	4.26	0.64	Very good
<b>Total</b>		<b>4.21</b>	<b>0.68</b>	<b>Very good</b>

From Table 2 the result of satisfaction analysis as to the game, to help listening to traditional Thai music via the sound of xylophone, is overall very good, at ( $\bar{X} = 4.21$ ). When each content is analysed, the game makes the lesson fun at ( $\bar{X} = 4.45$ ). The game is modern at ( $\bar{X} = 4.32$ ). The game allows quick learning for the lesson at ( $\bar{X} = 4.27$ ) respectively. Moreover, it is found that the game is easy to use at ( $\bar{X} = 4.20$ ). The game needs low learning curve ( $\bar{X} = 4.19$ ). Tutorial makes the gameplay understandable well at ( $\bar{X} = 4.17$ ). The processing of the game is fast at ( $\bar{X} = 4.14$ ). The game creates enthusiasm during the lesson at ( $\bar{X} = 4.12$ ). Fonts used are interesting and clear at ( $\bar{X} = 4.12$ ) and lastly the game allows easy understandability at ( $\bar{X} = 4.10$ ).

Additionally, the result shows relationships between the improvement of students' music listening ability, and their learning skill, with better problem-solving. The means of these three indicators are, to a high degree, close to each other. In addition, the students' relationships are closer since the game is fun, modern, and quick learning. Thus, Thai Alto Xylophone Note is able to help students to learn while having fun, helping them pay more attention in the lesson (Persson & Nouri, 2018, Rashid, Salleh & Noor, 2018, To, Fan, Kildunne, Zhang, Kaufman & Hammer, 2016, Uiphanit, Bhattarakosol, Suanpong & Iamsupasit, 2019). Consequently, these results are consistent with the collected data, that students have positive attitudes towards learning by games. Fig. 6 demonstrates the relationships among factors mentioned in Table 2.

**Figure 6.** Relationships among factors in Table 2.



## Discussion

According to the literature, the music rhythm video game is suitable for learning traditional Thai music. To achieve the objective of this research, to develop a game to help listening to traditional Thai music via the sound of Thai alto xylophone, a music rhythm video game called “Thai Alto Xylophone Note” was designed, developed and evaluated. A casual and enjoyable style, combining fun and knowledge about traditional Thai music, was designed,

process, to prevent students' stress and boredom. The goal is to make the sample group, students in grade 7, remember traditional Thai music better in a more interesting and entertaining way.

This study demonstrated that digital games can promote Thai traditional music skill, and motivate students towards music subjects in secondary school. It can be concluded that games can be used in traditional Thai music lessons, to enthuse the students in helping to understand the lessons. Moreover, the results from this study can be explained by differences in culture, and students' experience of traditional Thai music. Therefore, when developing a game in this subject in Thailand, implementers should consider for students' specialities and interest.

### **Conclusions**

This research aims to develop a game, to help listening to traditional Thai music via the sound of the Thai alto xylophone, for students who must learn traditional Thai music as an elective course. In the beginning, the research document was applied in this step to determine a suitable game for listening to traditional Thai music. The result showed that the music rhythm video game is their most popular game (Persson & Nouri, 2018, Tazouti, Boulaknadel & Fakhri, 2019). Then, the script of traditional Thai music, via the sound of Thai alto xylophone, was drawn. It was based on the experience of traditional Thai music students, and the game design and implementation was performed. After finishing this development process, 84 students in grade 7 at secondary school tested this game. The result of this study shows that the music rhythm video game "Thai Alto Xylophone Note" is an efficient tool for students to improve their traditional Thai music listening ability, through fun and quick learning.



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