

# The Development of Interactive Book With Music and Activities to Promote Community-Based Learning for Undergraduate Students

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Received: March 29, 2020 Accepted: April 21, 2020 Online Published: April 30, 2020

doi:10.5539/res.v12n2p46

URL: <https://doi.org/10.5539/res.v12n2p46>

## Abstract

This research was aimed to develop and evaluate the quality of interactive book with music activities to promote community-based learning for undergraduate students and to examine the needs, the learning achievement and the satisfaction of the sampling group. In this study, the sampling group consisted of 30 fourth-year students from the Department of Educational Communications and Technology, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi in the first semester of the academic year 2019. They were purposively chosen out of those who participated in at least one activity per semester and enrolled in the ETM 361 Presentation Skills 2 course and were willing to participate in this research. The statistical methods in this study were mean score, standard deviation and t-test. The developed interactive book contained 6 parts as follows: 1) community-based learning; 2) community under the bridge zone 1; 3) community behind Suan Thonburirom; 4) community Moo 3 Bangmod; 5) community in Klong Toei; 6) community in Bang Chan, Petchaburi. The research findings showed that the sampling group expressed the highest level of needs ( $\bar{x} = 4.55$ , S.D. = 0.57). The quality of the book as evaluated by the panel of experts showed that the quality of the contents was at a very good level ( $\bar{x} = 4.74$ , S.D. = 0.32) and the quality of the media presentation was at a good level ( $\bar{x} = 4.50$ , S.D. = 0.51). The learning achievement test of the sampling group showed that their average post-test score was higher than their average pre-test score with statistical significance at the .05 level (t-test = 10.94). The sampling group expressed the highest level of satisfaction ( $\bar{x} = 4.72$ , S.D. = 0.46). These findings confirmed the research hypotheses. It can be concluded that the interactive book with music and activities to promote community-based learning for undergraduate students was of good quality and could be distributed for further use.

**Keywords:** development, interactive book, music, community-based learning, learning achievement

## 1. Background and Significance

Nowadays there are many approaches to learning. They change according to the era. There are many learning theories which have gained a large attention from educators such as constructivism which is closely similar to the 21st century instruction. It is believed that learning takes place when learners can construct their bodies of knowledge out of their previous knowledge or new knowledge. Based on this new theory, many classrooms have changed in order that this new instruction approach can be applied in the 21st century classrooms where teachers play more roles in learning and teaching. Similar instructional theories include collaborative learning, project-based learning and community-based learning (Paisan Suwannoi, 2016).

Textbooks are important in classrooms because they help learners get new bodies of knowledge and learn moral codes inside the textbooks to adapt to their social life. Every society in every era require a good citizen so that the society can advance. Therefore, it is important to develop textbooks to meet the needs of each era in accordance with the national curriculum of each national and economic development plan (Rangrong Jiamwajak, 2018).

QR codes are a kind of bar code which can be found in advertisements, newspapers, magazines, banners and name cards. Each QR code contains messages and details which can be read on smart phones and cameras via applications. QR Code (Quick Response Code) is a kind of 2D bar code with hidden messages to keep information such as product name, price, contact information and web address. This kind of bar code was developed in 1994 by Denso-Wave which is a subsidiary of Toyota Company Japan. It was registered with the name "QR Code" in Japan and worldwide. The aim was to make QR Code quickly accessible to everybody. It is popular among smart phones with camera functionality and

applications (Anucha Seechang, 2012).

Music is an important part of humankind in every society. Music is a kind of culture and it can develop emotion and feeling for listeners. It has potentials to help learners learn and remember the contents better. Music is similar to a bridge which can link learners to knowledge. Children are happy when they listen to music in the classroom because it is easier to learn through music. It is still a good method for instruction. It creates a good environment for students to learn both emotion and language. Music helps listeners to learn and express their ideas as well (Sarinee Suwannapan, 2010).

Community-Based Learning or CBL is a kind of learning which is based on a problem of a community to stimulate learners to think and analyze the problem. This kind of learning begins with a hypothesis or assumption from the community so that learners can analyze and solve the problem and combine different kinds of knowledge. CBL will give outcome which comes from their understanding of the problem and their analytical thinking. Theoretically, CBL is a technique which allows learners to engage with the contents on their own, to face the difficulty and to practice different thinking skills such as critical thinking, analytical thinking, synthetic thinking and creative thinking. The main features of CBL is that learners must be the center of the learning. Therefore, learners should be grouped into smaller teams and teachers will become their facilitators and give guidance to them (Report on University and Community/Society, 2014). In this research, CBL was applied in the ETM 361 Presentation Skills 2 course in the first semester of the academic year 2019. Students participated in activities which took place in communities around the campus as part of the mission of the university (KMUTT). This project was part of "Social Lab" which consisted of many activities which took place in communities where lecturers, students and local people collaborated to build up their knowledge and to use technology to solve their problems such as how to make more products or how to run a community enterprise or social enterprise as well as how to raise awareness of environment and resources (KMUTT, 2014).

According to the following relevant research studies: the use of Thai textbook Pasa Patee in relation to the First Mission, namely, Promotion and Support of Human Capital in the 12th Plan to Develop National Economy and Society by Rangrong Jiamwijak (2018); the use of music to promote pronunciation, vocabulary and grammar of English language for Grade 5 students by Sarinee Suwannapan and Pajongkarn Puwipadawat (2010); the development of song kit to teach English for Grade 4 students at Grubyaiwongkusolkitt Pittayakom School, Ratchaburi Province by Tippawan Pancharoen (2005); the use of music activities to promote pronunciation, vocabulary and grammar of English language for vocational students at Aksorn Pattaya Technical College by Sakuntala Tongchuea (2017); it was found that there was no research study into the use of interactive book with music and activities to promote community-based learning for undergraduate students. Therefore, the researchers would like to conduct a research study into the development of interactive book with music and activities as a project for undergraduate students in learning teaching and mass communications at King Mongkut's University of Technology Thonburi.

## **2. Objectives**

This research study into the development of interactive book with music activities to promote community-based learning for undergraduate students was aimed to do the following:

- a. To examine the needs of students regarding the development of interactive book with music activities to promote community-based learning for undergraduate students
- b. To develop and evaluate the quality of interactive book with music activities to promote community-based learning for undergraduate students
- c. To examine the learning achievement of the students who used the interactive book with music activities to promote community-based learning for undergraduate students
- d. To examine the satisfaction of the students towards the interactive book with music activities to promote community-based learning for undergraduate students

## **3. Research Hypotheses**

The research hypotheses of this research study into the development of interactive book with music activities to promote community-based learning for undergraduate students were as follows:

- a. The sampling group would express a high level of needs regarding the development of interactive book with music activities to promote community-based learning for undergraduate students.
- b. The quality of the interactive book with music activities to promote community-based learning for undergraduate students would be at a good level.

c. The learning achievement of the students who used the interactive book with music activities to promote community-based learning for undergraduate students would show higher average post-test score with statistical significance at the .05 level.

d. The students would express a high level of satisfaction towards the interactive book with music activities to promote community-based learning for undergraduate students.

#### **4. Expected Outcomes**

The expected outcomes of this research study into the development of interactive book with music activities to promote community-based learning for undergraduate students were as follows:

a. This interactive book with music activities to promote community-based learning for undergraduate students would be distributed to students, related organizations and the general public.

b. The knowledge from this research study would be used as guideline for collaborating with communities and future social development.

#### **5. Research Scope**

The research scope of this research study into the development of interactive book with music activities to promote community-based learning for undergraduate students was as follows:

##### *5.1 Population and Sampling Group*

The population in this study was 90 fourth-year students from the Department of Educational Communications and Technology, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi in the first semester of the academic year 2019. The sampling group in this study consisted of 30 fourth-year students from the Department of Educational Communications and Technology, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi in the first semester of the academic year 2019. They were purposively chosen out of those who participated in at least one activity per semester and enrolled in the ETM 361 Presentation Skills 2 course and were willing to participate in this research.

##### *5.2 Expert Panels*

The experts were purposively chosen out of those who were qualified and willing to participate in the research project. There were many panels of experts and each panel consisted of 3 experts as follows: 1) experts in the contents who had at least a Bachelor's degree and knowledge of interactive book with music and activities to promote community-based learning for undergraduate students with at least 2 years of working experience; 2) experts in media presentation who had at least a Bachelor's degree and knowledge of media development with at least 2 years of working experience to evaluate the quality of the interactive book with music and activities to promote community-based learning for undergraduate students; 3) experts in measurement and evaluation to examine the IOC value of the learning achievement test and questionnaires who had at least a Bachelor's degree in measurement and evaluation with at least 2 years of working experience to evaluate the quality of the interactive book with music activities to promote community-based learning for undergraduate students.

#### **6. Research Tools**

a. Questionnaire on the needs of the sampling group regarding the development of interactive book with music activities to promote community-based learning for undergraduate students

b. The interactive book with music activities to promote community-based learning for undergraduate students

c. Quality evaluation forms regarding the contents and the media presentation of the interactive book with music activities to promote community-based learning for undergraduate students

d. Learning achievement test for the interactive book with music activities to promote community-based learning for undergraduate students

e. Questionnaire on the satisfaction of the sampling group towards the interactive book with music activities to promote community-based learning for undergraduate students

#### **7. Data Analysis**

In this research study, the following statistical methods were used: mean score, standard deviation and learning achievement test results (Boontam Kitpreedaborisut, 2006).

## 8. Research Findings

### 8.1 Findings From the Needs Survey

The needs of 30 students regarding the development of interactive book with music activities to promote community-based learning for undergraduate students are shown in Table 1.

Table 1. Shows the needs of the sampling group

Item	Data Analysis		
	$\bar{x}$	S.D.	Level of needs
1. The need for the interactive book with music and activities to promote community-based learning for undergraduate students	4.43	0.63	High
<b>2. The need for contents and format of the interactive book with music</b>			
2.1 The contents of the interactive book with music	4.60	0.56	The highest
2.2 Color tones	4.22	0.83	High
2.3 Graphics	4.85	0.36	The highest
2.4 Sounds	4.48	0.55	High
2.5 Images to accompany music	4.70	0.47	The highest
<b>Total Average</b>	<b>4.55</b>	<b>0.57</b>	<b>The highest</b>

According to Table 1, the sampling group expressed the highest level of needs regarding the development of interactive book with music activities to promote community-based learning for undergraduate students ( $\bar{x} = 4.55$ , S.D. = 0.57). This confirmed the research hypothesis. The researchers used this information to develop the interactive book.

### 8.2 Findings From the Development of Interactive Book With Music and Activities to Promote Community-Based Learning for Undergraduate Students

The interactive book with music activities to promote community-based learning for undergraduate students was A5 in size and contained 6 parts of contents as follows: 1) community-based learning; 2) community under the bridge zone 1; 3) community behind Suan Thonburirom; 4) community Moo 3 Bangmod; 5) community in Klong Toei; 6) community in Bang Chan, Petchaburi. The sampling group learned from these contents before they participated in activities so that their engagement would be more successful and effective.

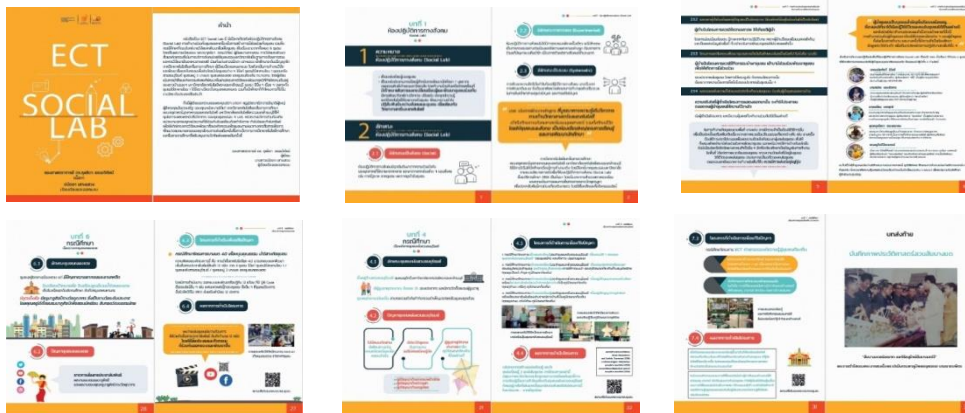


Figure 1. Shows the interactive book with music activities to promote community-based learning for undergraduate students

There were 5 video clips with music and activities to promote community-based learning. These clips could be accessed with QR codes on the book. Each clip included music alongside video media to indicate the atmosphere and identity of these 5 communities as in community under the bridge zone 1, community behind Suan Thonburirom, community Moo 3 Bangmod, community in Klong Toei and community in Bang Chan, Petchaburi. These video clips helped learners understand each community better.

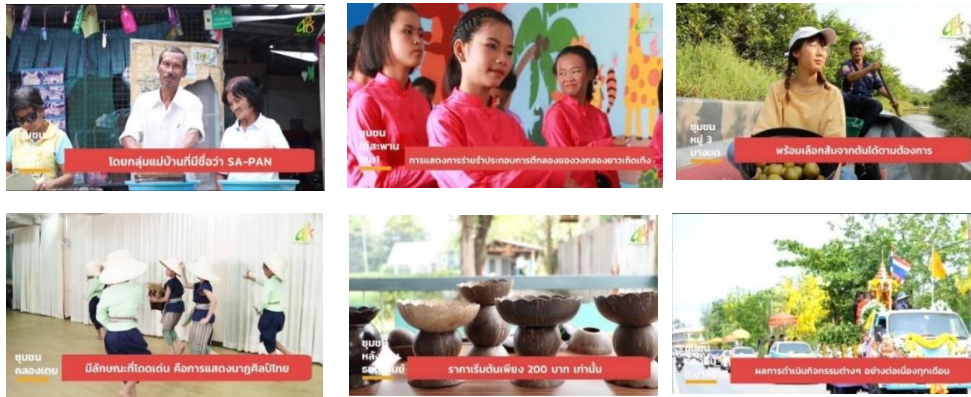


Figure 2. Shows video clips with music and activities to promote community-based learning

Some activities as part of community-based learning included the ECT Project to distribute bodies of knowledge at Bang Chan Community, Petchaburi Province. There were training sessions and learning media as part of short-term course and curriculum at Bang Chan Community, Petchaburi Province.



Figure 3. Shows training sessions of the ECT Project to distribute bodies of knowledge as part of community-based learning

8.3 Findings From the Quality Evaluation of the Interactive Book With Music and Activities to Promote Community-Based Learning for Undergraduate Students

There were 2 kinds of quality to be evaluated by panels of experts: the contents and the media presentation, as shown in Table 2.

Table 2. Shows the Quality Evaluation in Terms of Contents and Media Presentation

Item	$\bar{x}$	S.D.	Level
Contents	4.74	0.32	Very Good
Media Presentation	4.50	0.51	Good

According to Table 2, the quality of the interactive book as evaluated by the panel of experts showed that the quality of the contents was at a very good level ( $\bar{x} = 4.74$ , S.D. = 0.32) and the quality of the media presentation was at a good level ( $\bar{x} = 4.50$ , S.D. = 0.51).

8.4 Findings From the Learning Achievement Test of the Sampling Group After Using the Interactive Book With Music and Activities to Promote Community-Based Learning for Undergraduate Students

The researchers used the information as well as the comments from the quality evaluation by the panels of experts in contents and media presentation to develop the interactive book and used it with the sampling group. The learning achievement test was used with the sampling group before and after using the interactive book with music activities to promote community-based learning for undergraduate students. Their average pre-test and post-test scores were shown in Table 3.

Table 3. Shows the learning achievement test results of the undergraduate students

Test	N	$\bar{x}$	S	t	df	sig
Pre-test	30	10.76	14.69	10.94	28.00	0.00*
Post-test	30	17.31	8.51			

\* with statistical significance at the .05 level

According to Table 3, the learning achievement test results of the sampling group show that their average pre-test score was 10.76 with standard deviation of 14.69 ( $\bar{x} = 10.76$ , S.D. = 14.69). The average post-test score was 17.31 with standard deviation of 8.51 ( $\bar{x} = 17.31$ , S.D. = 8.51). After the comparison, it was found that after using the interactive book with music activities to promote community-based learning for undergraduate students, the students had higher average post-test score than their pre-test score with statistical significance at the .05 level ( $t$ -test = 10.94).

#### 8.5 Findings From the Satisfaction of the Sampling Group Towards the Interactive Book With Music and Activities to Promote Community-Based Learning for Undergraduate Students

Table 4. Shows the satisfaction of the sampling group

Item	Data Analysis		
	$\bar{x}$	S.D.	Satisfaction Level
1.Contents	4.71	0.47	The highest
2.Language	4.80	0.40	The highest
3.Audio-visual presentation	4.71	0.46	The highest
4.Learning activities according to Community-Based Learning	4.66	0.49	The highest
<b>Total Average</b>	<b>4.72</b>	<b>0.46</b>	The highest

According to Table 4, the sampling group expressed the highest level of satisfaction towards the interactive book with music activities to promote community-based learning for undergraduate students ( $\bar{x} = 4.72$ , S.D. = 0.46).

### 9. Research Discussion

According to the needs survey, the sampling group expressed the highest level of needs for the interactive book with music activities to promote community-based learning for undergraduate students ( $\bar{x} = 4.55$ , S.D. = 0.57) because King Mongkut's University of Technology Thonburi has a policy to support students to participate in active field study called "Social Lab" which is a kind of workshop for the society and local communities in order to exchange their knowledge and to collaborate in a social development. The sampling group needed the media or guideline to help them learn to work with local communities successfully and to benefit the communities. This kind of activities also help students to learn and develop social skills for future careers and this idea is similar to the idea by Vicharn Panich (2014) who says that community-based learning is a kind of instruction which integrates many disciplines so that learners can learn and work from real situations in real communities through the collaboration among teachers, learners and local people. To illustrate, learners can learn about local history, how people earn their living through their food and craft and how people use their local wisdom regarding medicine and health. Learners can learn about these topics outside their classroom. This will meet the demands and the requirements set by the communities, resulting in positive changes and sustainability. This kind of learning is also similar to the idea by Owens and Wang (1996) who say that community-based learning helps learners learn under the real condition of each community. Learners can apply their theories to their real life and work in the community. They can learn how to solve local problems and this will improve them in academic, professional and vocational skills in addition to the personal and social dimensions. Moreover, they will appreciate the value of service and understanding through community-based learning as part of the 21st century education skills including virtues, ethics, responsibility, multicultural understanding, critical thinking and problem-solving through collaboration, teamwork and leadership alongside information technology skills. Learners expressed their needs for books and activities which help them develop themselves and their local communities.

Regarding the quality evaluation, it was found that the quality of the contents was at a very good level ( $\bar{x} = 4.74$ , S.D. = 0.32) because the contents were organized in a suitable order and they fit within the scope of the research study. The activities were also appropriate. Therefore, learners could learn from the interactive book with ease. The quality of the media presentation was at a good level ( $\bar{x} = 4.50$ , S.D. = 0.51) because the graphics and color tones were designed appropriately to convey the meaning and ideas in an interesting manner. The researchers adopted the principles of ADDIE MODEL (Abhichat Anukulwech, 2014) which consist of Analysis, Design, Development, Implementation and Evaluation. Each step was under supervision by the experts in order to verify the quality before using with the sampling group. This approach is similar to the one used by Thanayut Angkitanon (2010) who conducted a research study into Problem-Based Learning and social network learning on the topic of public relations. His research findings showed that the quality of the contests was at a very good level ( $\bar{x} = 4.59$ , S.D. = 0.44).

The findings from the learning achievement tests with the sampling group after using the interactive book with music activities to promote community-based learning for undergraduate students showed that their average pre-test score was 10.76 with standard deviation of 14.69 ( $\bar{x} = 10.76$ , S.D. = 14.69). The average post-test score was 17.31 with standard

deviation of 8.51 ( $\bar{x} = 17.31$ , S.D. = 8.51). After the comparison, it was found that after using the interactive book with music activities to promote community-based learning for undergraduate students, the students had higher average post-test score than their pre-test score with statistical significance at the .05 level ( $t$ -test = 10.94). This was because the interactive book helped them understand the contents. The researchers intended to make their learning authentic and this approach is similar to the one by Steinke and Fitch (2007) who identify two kinds of learning achievement: 1) knowledge and understanding (such as critical thinking and intellectual development) and 2) learner characteristics (such as collaboration, citizenship and ethical development). The findings from this research are also similar to the research study by Monta Udomlert (2018) who conducted a research study into integrated learning through community-based learning in order to improve the health of senior people in a community through local wisdom by nursing students from Boromarajonani College of Nursing Uttaradit. The findings from such research showed that the average post-test score was higher with statistical significance at the .01 level. Furthermore, the findings from this research were similar to a research study by Siripat Mueangkaew (2018) who developed an E-Book about language and culture of a neighboring country (China) for first-year students at Bansomdejchaopraya Rajabhat University in that the students had higher average post-test score after using the E-Book about language and culture of a neighboring country (China) with statistical significance at the .05 level.

Regarding the satisfaction towards the interactive book with music activities to promote community-based learning for undergraduate students, it was found that the sampling group expressed the highest level ( $\bar{x} = 4.71$ , S.D. = 0.46). It confirmed the research hypothesis because the sampling group was asked about the needs before the development of the interactive book with music and activities to promote community-based learning for undergraduate students. Moreover, the contents and the media presentation were reviewed by the panels of experts. This is similar to a research study by Wipada Kunawikatikul (2015) in that a good instruction must change to fit learners and there should be many kinds of learning alongside technology. It is also similar to a research study by Sriwan Chutsuriyawong (2016) who adopted the community-based learning approach to enhance critical thinking and creative problem solving abilities for elementary school students in that learners expressed a high level of satisfaction towards the community-based learning. It is also similar to a research study by Jariya Boonprom and Penthip Chotikasupa (2010) who developed video clips to promote the community behind Suan Thonburirom through social online network in that the sampling group expressed a high level of satisfaction towards the video clips. That was because they developed their video clips in 3 steps as in 1) pre-production, 2) production and 3) post-production. They analyzed and planned their project carefully to make it succeed. Therefore, their video clips were of high quality and could satisfy the sampling group.

To sum up, the findings from the development of the interactive book with music activities to promote community-based learning for undergraduate students showed that the sampling group expressed the highest level of needs. The quality evaluation by the panels of experts showed that the quality of the contents was at a very good level and the quality of the media presentation was at a good level. The learning achievement test results showed that their average post-test score was higher with statistical significance at the .05 level. The sampling group expressed the highest level of satisfaction towards the interactive book. Therefore, the interactive book could be used effectively.

## 10. Suggestions

### 10.1 Suggestions From Research Findings

1. The interactive book with music activities to promote community-based learning for undergraduate students could be used in courses related to presentation skills and special activities.
2. The interactive book with music activities to promote community-based learning for undergraduate students could be used as a case study for the development of interactive books to promote other kinds of active learning such as collaborative learning.

### 10.2 Suggestions for Further Research

1. There should be a study into the use of media and activities to promote learning through in-depth interviews with learners and local people.
2. There should be a factor analysis study of community-based learning for undergraduate students in comparison with graduate students as a way to manage learning in the future.

## Acknowledgments

The researchers would like to thank the funding granted by the Department of Educational Communications and Technology, Faculty of Industrial Education and Technology, and King Mongkut's Graduate Diamond Scholarship for this research.

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