The Development of Instruction Media in Accounting Using the Jātaka Story for Blended Learning in the 21st Century

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[Abstract]

This experimental research aimed to develop e-Learning with Jātaka story instruction media in order to achieve the required criteria, to compare the outcome of learning using e-learning with the Jātaka story with the criteria 80, to compare pre- and post-learning outcomes, to study the useful moral teachings from e-Learning with the Jātaka story, and to analyze what the learners gained from learning using the Jātaka story. The sample group was 75 students from the Culinary Arts and Technology Program, Rangsit University, who registered in Accounting for Non-Accountants,S/2017. The students had self-study with e-Learning using the Jātaka story about the break-even point, and had two tests: pre-test and post-test, and completed the questionnaire. The statistics used for data analysis were mean and t-test. The findings showed that the efficiency of e-Learning with the Jātaka story met the required criteria: 81.60/80.65. The hypothesis testing revealed that the achievement during and after learning using e-Learning with the Jātaka story was 80, without the difference between

the two tests. The top three moral teachings the learners implemented were: Mistake wrong for right; Land on your feet, and Gratitude, respectively. From learning with e-Learning using the Jātaka story, the first three benefits the learners gained were the use of information technology (96.00%), morals and ethics (90.67%), and creativity and imagination (86.67%).

Key words: Blended Learning, Jātaka Story, E-learning

Introduction

In the 21st century, learners are learning by themselves while teachers design the learning and facilitate the learners. International agencies cooperate to conduct the research to determine the learning framework for the 21st century and agree that three key skills must be developed in the new generation: life and career skill, learning and innovation skill, and information, media, and technology skill, through the integration of all skills in various subject areas (Makaramanee, 2014: 3). At present, the advancement of technology plays an important role in teaching and learning development, particularly instruction media that has been developed using technologies such as slide on computer, visual media, video, e-Learning, and electronic media which allow the learners to learn by themselves by using computers or other convenient devices. Media developers discover that those media are qualified to meet the criteria and enhance the learning achievement to reach a good level, for example, the research of Adisorn Khowsa-Ard (2017), Daoartha Weerapan (2015), Phairn Meesri and Auyporn Meesri (2015), Surachat Artsub *et al*. (2015), and Atchara Jettabut and Maream Nillapum (2013). In other countries, numerous studies about the efficiency of electronic books concluded that the students who used electronic books had reading competency beyond their grade level, and had better comprehension development when reading electronic books compared to paper books (Kelly, 2011; Marrone, 2015). Furthermore, blended learning and the use of tales was developed by Taweesak Chindanurak (2016), Navarat Waichompu and Chairat Jussapalo (2017), Khwansuda Thongsuwan *et al*. (2017),

and Piyanan Pannim (2016). Findings showed that the learners had good outcomes and their achievement was higher.

Therefore, the researcher developed the instruction media to resolve the learning problem for students. With 20 years' experience in teaching accounting in university, it was obvious to the researcher that some learners lacked desire, effort, attention, and had no extra research which corresponded with the *Iddhipada* four: *Chanda* or intention, *Viriya* or effort, *Citta* or thought/consciousness, and *Vimamsa* or investigation/experiment (Ministry of Education: http://www.moe.go.th). Moreover, there are five aspects of outcome standards, according to the Ministry of Education regarding the bachelor's degree standard, which comprise morals and ethics, knowledge, intelligent skills, interpersonal relationships and responsibility skills, and numerical analysis, communication and the use of information and technology skills. Morals and ethics are the most important components of creating justice in society, based on Buddhism (Khetjoi, 2017: 167). With this problem, the researcher developed *Mittavinduka Jataka*: Mistake wrong for right, and *Manicora Jataka*: The King's evil plan as the e-Learning Jātaka story instruction media for the accounting class, on the break-even point topic, to deliver the Buddha's teaching about the *Iddhipada* four to the learners.

The design of the instruction media mentioned above was to simplify the application of learning patterns to convey the meaning via images and sounds, instead of letters. Image is the visualized material, which is best perceived by human senses compared with other senses: by ears, tongue, nose, and body. Humans memorize 10% of the story from reading and 20% from listening, whereas they remember 30% from vision. Moreover, humans remember 50% of the story from listening and vision at the same time (Dale, 1969: 107, cited in Phaophan *et al*., 2001: 59). This was consistent with students' learning behavior; most of them disliked reading, but enjoyed watching and listening. This was the beginning of the new design of electronic instruction media for use in the subjects that required analysis-thinking skills such as accounting, an important specific subject area to the business sector, in order to obtain performance and financial status. Besides, a government agency, the Ministry of Commerce, requires the submission of financial statements once a year so people concerned

with business, especially the business owners, should have fundamental knowledge of accounting. Thus, the bachelor's degree curriculum of other programs, apart from the Faculty of Business Administration or the Faculty of Accounting, regulated accounting as a compulsory course in the curriculum. For instance, the College of Tourism and Hospitality, Culinary Arts and Technology, Rangsit University, required all students to study accounting in order to formulate the capability of being an entrepreneur to respond to the government policy that promotes entrepreneurship. From the first stage, the entrepreneur should have basic knowledge of business, and accountancy was one of the necessities, particularly the break-even point analysis which should be done prior to the business forming to minimize the risk of loss. Thus, this was the background of the course known as Accounting for Non-Accountants.

It is not easy for the teacher to teach accounting to students who have no interest and no basic knowledge of business, but are being forced to learn due to the curriculum. Thus, the researcher developed e-learning instruction media for the learners to learn by themselves together with the conventional lecture method and experiential learning, practicing in the real situation, where the learners can apply their cooking experience to create new learning. This is called blended learning which consists of: 1) the use of a program to analyze the break-even point; 2) self-learning from e-Learning using the Jātaka story that is filled with morals and ethics; 3) conventional teaching with lectures and interaction with learners, and 4) experiential learning. Blended learning is the method which applies information technology to instructional management as it allows the learners to apply self-learning at any time. However, instructional management in the classroom has a number of advantages. Further, blended instructional management using this technology is in line with education in the 21st century and appropriate to the circumstances. As the learners are not accountants, the use of the program to analyze the break-even point is useful to the learners and teachers. It enhances the efficiency of teaching and learning and creates learning patterns and a suitable learning environment for accounting. Importantly, in short, it is practical.

It is consistent with the third goal of the National Educational Plan

2017-2036 stating, "Educational institutions of all levels can organize activities and learning processes based on the curriculum with quality and standards". In addition, the strategy of teaching and learning in the 21st century is forming a quality society with digital technology, developing manpower to be ready for the economic era and digital society, building trust in the use of digital technology, and accelerating the economy with digital technology. Furthermore, the guidelines for Thai educational reform state, "Build the entrepreneur who has competitiveness, self-learning, and knowledge application". Besides, the roles of teachers have been set as, "Students apply knowledge to practice", while the learners' skills have been set as, "Understand and able to utilize information and communication technology".

Research Objectives

1. To develop e-Learning using the Jātaka story to become efficient and to meet the required criteria.

2. To compare the outcomes of learning using e-Learning with the Jātaka story on the break-even point topic with the criteria of 80.

3. To compare the learning outcomes before and after using e-Learning with the Jātaka story.

4. To study moral teaching from e-Learning with the Jātaka story that the learners are able to apply to their daily lives.

5. To examine what the learners have gained from learning using e-Learning with the Jātaka story.

Research Hypotheses:

1. Learning achievement using e-Learning with the Jātaka story is 80.

2. Learning achievement levels during and after learning using e-Learning with the Jātaka story are not different.

Research Methodology

This study applied the experimental research method. The research plan aimed to compare the result of treatment by using the experimental unit to achieve the objective of the research: to find the efficiency of e-Learning using the Jātaka story instruction media on the break-even point topic. Pre- and post-tests were planned to compare the achievement of the learners who learned with animated cartoons. The research methodology was as follows:

1. Population and sample group

The population was the two groups of students (75 students in total) who registered in Accounting for Non-Accountants in S/2017. All of the population were from the sample group called "experimental group". Most of them were second year students who had low, fair, and good learning outcomes.

One group post-test only design was used in his research. Only one experimental group was in the research and tested after the experiment. The experiment chart was as follows:

E-group   = Experimental Group

X   = Treatment

O_1 = Pre-test Observation

O_2 = Post-test Observation

E-group $\boxed{O_1 \quad O_2}$

2. Variables

The variables consisted of:

2.1 Independent variable: e-Learning with the Jātaka story

2.2 Dependent variable: learners' achievement

3. Research tools and location

- Research tools were:

3.1 e-Learning Jātaka story learning plan for the experimental group

3.2 e-Learning Jātaka story on the break-even point topic which was developed by the researcher

3.3 Program for break-even point analysis

3.4 Achievement tests: test during learning, and post-learning test

3.4.1 Test during learning was an LMS objective test

3.4.2 Post-learning test was a subjective test

3.5 Questionnaire

- Location was room 2-404 and 2-506, Prasittirat Building, Rangsit University

4. Data collection

4.1 Self-learning using e-Learning Jātaka story, completed test in LMS and recorded score on Excel

4.2 Objective test and program for break-even point analysis. Score on the test

5. Statistics

The statistical analysis used in the research consisted of:

5.1 Basic statistics: mean which the abnormal data were deleted

5.2 Calculating the efficiency of lessons using the formula E_1/E_2, percentage test scores both during learning and post-learning. This was the efficiency of the result (Promwong,C.2013: 10) as shown in the following formula:

Meaning:

$$E_1 = \frac{\left[\frac{\sum x}{N}\right]}{A} \times 100$$

$$E_2 = \frac{\left[\frac{\sum F}{N}\right]}{B} \times 100$$

E_1 efficiency of e-learning with the Jātaka story from during-learning exercises
E_2 efficiency of e-learning with the Jātaka story tested 2 weeks after learning
$\sum x$ total score of the exercises tested during learning
$\sum F$ total score of the exercises tested after learning
A total score of the exercises during learning
B total score of the exercises after learning
N number of learners

To find the efficiency of the instruction media it was expected that the learner would achieve the learning objective, so the mean percentage score the learner should earn from doing the exercise was set, and also determined for the test during and after the exercise respectively, conducted at an interval of two weeks. In general, the minimized score was set with the standard criteria of 80/80; this was considered as the efficient instruction media. The first 80 number referred to the score from the exercise during learning, which should not be lower than 80. The second 80 number was the score from the exercise after learning, which should also not be lower than 80.

5.3 The difference between the mean score of the experimental group and the 80 of the criteria and the mean score from doing the exercise during and after learning was calculated using a dependent t-test, as it was the comparison of the two means, to show whether it was different or not. Both mean values were measured from the related sample groups and were calculated twice from the exercise during and after learning with the same sample group. The formula of the dependent t-test was:

$$t = \frac{\sum D}{\sqrt{\frac{N \sum D^2 - \left(\sum D\right)^2}{N-1}}}$$

t   referred to   t-test value

    N   referred to   number of learners in the experimental group
    ∑D   referred to   total of the learners' differences of scores
    ∑D²   referred to   logarithm of the total of the learners'
differences of scores

Research Results

1. Efficiency of e-learning with the Jātaka story

1.1 The researcher tested the effectiveness of e-Learning with the Jātaka story on the break-even point topic by allowing the learners to learn by themselves, and conducting two tests: during and after learning. Results showed that the efficiency of e-Learning with the Jātaka story met the criteria: the mean score during learning was 81.61 and after learning was 80.65. It was considered that the lesson was efficient, as shown in Table 1.

1.2 The comparison between the mean scores during and after learning and the criteria of 80 showed that the scores during and after learning were higher than the criteria of 80, by 1.160 and 0.650 respectively. The maximum and minimum scores of the exercise during learning were 100 and 45 respectively. The maximum and minimum scores of the examination after learning were 99.95 and 47.80 respectively, as shown in Table 2.

2. Hypothesis testing results

2.1 The result of learning using e-Learning with the Jātaka story was equal to the criteria of 80. The research findings agreed with the hypothesis. In Table 3, it was found that at the 0.05 significance level, the mean score of the exercise during learning was equal to the criteria of 80 at a 0.458 significance level while for the exercise after learning it was equal to the criteria of 80 at a 0.670 significance level.

2.2 The results during and after learning using the Jātaka story for e-Learning were not different. The research findings agreed with the hypothesis. In Table 4, it was found that at the 0.05 significance level, the

mean scores during learning and after learning were not different since the p-values were equal, at 0.805. Therefore, it was assumed that the learning results during and after learning were not different.

3. Moral teaching from e-Learning with the Jātaka story that learners applied to their daily lives

The researcher questioned 75 learners who learned through e-Learning with the Jātaka story about the moral teaching contained in the material to determine how much they were able to apply it. The results from Tables 5 and 6 illustrated that moral teachings that the learners applied the most, in descending order, were Mistake wrong for right: beating parent (61.33%), Land on your feet (52.00%), Gratitude: by visiting parent (46.67%), Telling a lie and blaming the innocent to claim his wife (45.33%), Moral person will be safe by sanctity (42.67%), and King's sin from framing others (36.00%). The mean was 4.5467, 4.3333, 4.3067, 4.2400, 4.2400, and 4.2133 respectively. The total mean of all aspects was 4.3133, which was in the highest level.

4. Examine what the learners had learned from e-Learning with the Jātaka story

The results in Table 7 showed that what the learners had learned from e-Learning with the Jātaka story, in descending order, were the use of information technology in learning (96.00%), morals and ethics (90.67%), creativity and imagination (86.67%), Buddhism (80.00%), perspicuity (80.00), and enjoyment (78.67%). On the contrary, what the learners had not gained, in descending order, were enjoyment (21.33%), perspicuity (20%), Buddhism (20%), creativity and imagination (13.33%), morals and ethics (9.33%), and the use of information technology (4.00%).

Conclusion

This experimental research aimed to develop e-Learning using the Jātaka story in Accounting for Non-Accountants to insert thoughts and moral teaching into the lessons so the learners would be able to apply the lessons to their daily lives. The objectives of the research were to de-

velop e-Learning using the Jātaka story to be efficient as required by the criteria, to compare the outcomes of learning using e-Learning with the Jātaka story to the criteria of 80, to compare the learning outcomes of during learning and post-learning using e-Learning with the Jātaka story, to study moral teaching from e-Learning with the Jātaka story that the learners applied, and to examine what the learners had learned from it.

The sample group was 75 students from the Culinary Arts and Technology Program, Rangsit University, who registered in Accounting for Non-Accountants, S/2017. The students had self-study with e-Learning using the Jātaka story about the break-even point, and had two tests: a test during learning and a post-learning test, and completed the questionnaire. The statistics used for data analysis were mean and t-test. The findings showed that the efficiency of e-Learning with the Jātaka story met the required criteria: 81.60/80.65. The hypothesis testing revealed that the outcomes during and after learning using e-learning with the Jātaka story were 80 and did not show any difference. The top moral teachings the learners applied were Mistake wrong for right, Land on your feet, Gratitude by visiting parents, Telling a lie and blaming the innocent to claim his wife, Moral person will be safe by sanctity, and King's sin from framing others. The aspects the learners had learned from learning by e-Learning with the Jātaka story, in descending order, were the use of information technology (96.00%), morals and ethics (90.67%), creativity and imagination (86.67%), Buddhism (80.00%), perspicuity (80.00), and enjoyment (78.67%).

Discussion

From the above findings, the researcher considered that there were factors assisting e-Learning with the Jātaka story on the break-even point topic to become efficient. Firstly, the learners had a chance to learn by themselves at convenient times; when they were ready and had concentration, until they understood the lesson. If they did not clearly understand, they were able to repeat the lesson. Secondly, learning with e-Learning from the Jātaka story had a test that interacted with the learners. Moreover, there was a test in LMS from which the learners would

immediately receive scores and correct answers after completing the test. Learning via e-Learning from the Jātaka story contained interesting content since the researcher gradually inserted academic knowledge into the Jātaka. Thus, the learners would understand the items, analysis, and calculation. The results during and after learning using the Jātaka story for e-learning were not different, showing that there was retention in learning. These findings were consistent with the research of Tweesak Chindanurak (2016), Navarat Waichompu and Chairat Jussapalo (2017), Khwansuda Thongsuwan *et al*. (2017), and Piyanan Pannim (2016) who concluded that blended learning assists learners to have good learning outcomes and better achievement.

Moral teachings from the Jātaka that the learners applied to daily life, in descending order, were *Mittavinduka Jataka*: Mistake wrong for right by beating parents; *Manicora Jataka*: The King's evil plan. They contained the teachings: Land on your feet, Gratitude by visiting parents, Telling a lie and blaming another to claim his wife, Moral person is safe by sanctity, and King's sin from blaming the innocent person. This was in line with the research of Thosapol Sripum (2014: 67) which stated that moral teaching in the Jataka was fundamental teaching that was useful for daily life. Moreover, it was noticeable that Mistake wrong for right was being used in daily life the most. In the researcher's opinion, this is possibly because the learners have heard the proverb "Mistake wrong for right" since they were young. Further, the content of the Jātaka was exciting and enjoyable. It was consistent with Thai people's characteristics: be grateful and not see wrong for right. In addition, more than 90% of the learners said that what they had learned from learning with the Jātaka story through e-Learning was the use of information technology and also morals and ethics. It was in line with the research of Taweesak Chindanurak (2016: 560) that applied Innovation and Media in Science Teaching and Learning in the 21st century. Similarly, the researcher applied a blended teaching method: technology and the Jātaka with moral teaching. Therefore, the learners learned morals and ethics as well as information technology from this instruction media.

Acknowledgements

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Tables

Table 1 Efficiency of e-Learning instrument media

Items	Efficiency of e-Learning instrument media		Criteria	No. of
	Efficiency of process (E_1) (percentage)	Efficiency of process (E_2) (percentage)		Population
Mean score during learning (E_1)	81.16	-	80	70
Mean score after learning (E_2)	-	80.65	80	70

Table 2 Comparison of mean score of during and after learning and the criteria of 80

Items	No. of Sample	Max	Min	Mean of Total Score	Criteria	Difference	Standard Deviation
				100	80	80	
Exercise during learning (E_1)	70	100	45	81.16	80	1.160	12.982
Test after learning (E_2)	70	9.95	47.80	80.65	80	0.650	12.657

Table 3 Testing the difference between E_1 and E_2 and the criteria of 80 in S/2017

Compare List	Qty.	Difference of Score	Standard Deviation	Test Result		
				t	df	P-Value
E_1 and Criteria of 80	70	1.160	12.982	0.746	69	0.458
E_2 and Criteria of 80	70	0.650	12.657	0.428	69	0.670

*with 0.05 statistical significance

Table 4 Teasing the difference of mean between E_1 and E_2 in S/2017

Compare List	Qty.	Difference of Score	Standard Deviation	Test Result		
				t	df	P-Value
E_1 and E_2	70	0.510	17.170	0.248	69	0.805

*with 0.05 statistical significance

Table 5 Number of learners who applied moral teaching from story Jātaka; e-Learning

Moral Teaching	5 Highest Qty.	5 Highest %	4 High Qty.	4 High %	3 Moderate Qty.	3 Moderate %	2 Low Qty.	2 Low %	1 Lowest Qty.	1 Lowest %
1. King's sin from blaming other	27	36.00	38	50.67	9	12.00	1	1.33	0	0
2. Gratitude by visiting parents	35	46.67	28	37.33	12	16.00	0	0	0	0
3. Telling the lie and blame on the inno-cent person to claim for his wife	34	45.33	29	38.67	10	13.33	0	0	2	2.67
4. Moral person will be safe by sanctity	32	42.67	34	45.33	5	6.67	3	4.00	1	1.33
5. Mistake wrong for right by beat-ing parent	46	61.33	24	32.00	5	6.67	0	0	0	0
6. Land on your feet	39	52.00	25	33.33	8	10.67	3	4.00	0	0

Table 6 Mean of the application of moral teaching to daily life

Moral Teaching	Qty.	Mean	Application Level
1. King's sin from blaming others	75	4.2133	Highest
2. Gratitude by visiting parents	75	4.3067	Highest
3. Telling a lie and blaming the innocent to claim his wife	75	4.2400	Highest
4. Moral person will be safe by sanctity	75	4.2400	Highest

5. Mistake wrong for right by beating parents	75	4.5467	Highest
6. Land on your feet	75	4.3333	Highest
Overall		4.3133	Highest

Table 7 What the learners had learned from e-learning using the Jātaka story

		Learned		Not Learned	
Items	Total	Frequency	Percentage	Frequency	Percentage
1. Morals and ethics	75	68	90.67	7	9.33
2. Enjoyment	75	59	78.67	16	21.33
3. Perspicuity	75	60	80.00	16	20.00
4. Creativity and Imagination	75	65	86.67	10	13.33
5. Buddhism	75	60	80.00	16	20.00
6. Using information technology for learning	75	72	96.00	3	4.00