The Study of the Effect of Instructional Management by Using Online Lessons Together with Cooperative Learning using Storytelling through Digital Media with Urban Network

Boonyalak Tumnanchit*

Faculty of Humanities and Social Sciences, Suan Dusit University, Bangkok, 10300 Thailand

Article info

Abstract

This study compared the achievement of Knowledge Management in Information Organization subject between pretest and posttest by using online lessons together with cooperative learning using storytelling through digital media, and to compare teamwork ability between pretest and posttest after online lessons together with cooperative learning using storytelling through digital media. The participants included 24 students of Library and Information Science program, Suan Dusit University who enrolled in the Knowledge Management in Information Technology Organization subject during Semester 2, year 2020. The research was integrated throughout the semester. The research tools implemented were learning achievement test using KR-20 Reliability of Kuder-Richardson equal .95 and teamwork skill test using α – Coefficient reliability of Cronbach equal .916. The statistic used to analyze the data was the calculation of development score from learning achievement test both the pretest and posttest. The researcher calculated the development score according to development criteria of Kanjanawasee (2013) to compare mean score and teamwork ability of the students before and after study with percentage, average and standard deviation. The results showed the following:

1. Learning achievement score of students after study is higher than before study.
2. Teamwork skill of students after study is higher than before study.

From the results, it was found that learning with online lessons together with cooperative learning using storytelling through digital media enhance the learning achievement and teamwork skill. It can be used with learning management in every year of every university by applying it to the content of each subject. Some teaching style needs to be adjusted to fit the student's learning experience, so the cooperative learning must be applied accordingly.

The Study of the Effect of Instructional Management by using Online Lessons together with Cooperative Learning using Storytelling through Digital Media with Urban Network

* Corresponding Author
e-mail: boonyalak_tum@dusit.ac.th

Introduction

Office of the Higher Education Commission stated in Higher Education Development Plan Issue 12 (2017-2021) that in order to promote the country's stability, prosperity and sustainability, there is a need to enrich the existing resource to strengthen the development process in the middle and long term. The main focus should be on the development of "people" to be prepared for the changes in the 21st century. Utmost in importance is learning skills and building external conditions that support development of people by applying Sufficiency Economy Philosophy of His Majesty King Bhumibol Adulyadej The Great in both a systematic and instructional method to help make Thai society immune to the changes in the future. Especially the first strategy such as the development of program, learning process and measurement, and evaluation. The higher education institutes must improve the students and professional competency following the requirements of university and the organizations to enrich the quality of knowledge and skills similar to how other countries set OECD – PISA as an universal program. (Office of the Education Council, 2017) Therefore, the objectives of this study are: 1) to compare before and after learning achievement of Knowledge Management in Information Organization subject by using online lessons with cooperative learning using storytelling through digital media; 2) to compare teamwork competency between before and after online lessons with cooperative learning using storytelling through digital media.

For the problem of study, it was found that students were affected by the philosophy of learning management in the global level of Lifelong Learning, Continuous Learning and Student-centered Learning, Therefor, Learning Together (LT) educate students for good human relations through learning together by using electronic devices to access learning media and innovation in the Thailand 4.0 era and focuses on students working as a team to use local learning source and university's potential as well as creating teamwork learning network. Learning reformation is done by students, teachers, learning approach, curriculum, administrative. Learning environment and learning management especially librarian and information officer are the profession that require people to be eager to learn and always up to date with the current situation. They should be friendly and work as team by using information technology to integrate knowledge and manage information resources in Office of Academic Resources or library.

Online lesson was mostly used for presentation and had complete online lesson management system, but many problems were still found. The first problem noted from research was that most online lessons were just continuous lecture which students can just click pass without having to read anything. From observation of the online students, it was found that when they opened an online lesson, they tended to only search for what interested them without really trying to understand the content or they just scrolled by really quickly. It prevented students from receiving expected knowledge. The second problem was that most of online lesson creator tended to focus on comprehension of the content and finding quality of tools more than students' learning. Therefore, most of online lesson creators tended to present the content in order. Even though there was some interaction, but it couldn't guarantee that students truly learned (Manmanee, 2014).

Online learning is not an option but the survival of Thai education, and it completely became the new normal of Thai Education. From recent statistic in April, COVID-19 had temporarily closed many schools. At the same time, the rate of Globish classroom increased to 35% from March. It was at 125% compared to the same time last year. The amount of new students also reached 207%. It means that more than 500 One-on-One classes have been created per day since April 2020, and it keeps going. (TECHSAUCE, 2020).

Storytelling through digital media is telling a short story with digital media such as picture, sound and video. The story must contain an emotional component by the teller. Telling a story through digital media is not only an art for the expression of language, but it is the presentation of self, family and society. It can be a true or made-up story, but telling a story through digital media must clearly make the specific characteristic interesting. (Songkram, 2011) Therefor, applying storytelling through digital media to learning will benefit students better.

The above reason inspired researchers to conduct the research topic: The Study of the Effect of Instructional Management by using Online Lessons together with Cooperative Learning using Storytelling through Digital Media to study the learning achievement and teamwork ability of Library and Information Science Students. The study was undertaken to develop teamwork ability of students both online and offline, to increase learning achievement and enhance the efficiency of student's teamwork skill.

Research hypothesis

1. Learning achievement score of students who studied online learning together with cooperative learning using storytelling through digital media in Knowledge Management in Information Organization subject after study is higher than before study.

2. Self-learning skill of students who studied online learning together with cooperative learning using storytelling through digital media in Knowledge Management in Information Organization subject after study is higher than before study.

Statement of the problem

Online lessons are mostly about presenting data and there is a complete managing system for online learning, but there are still problems which are: 1) from prior research, online lessons are mostly the data presenting. Students can just click through without really reading the content. From observing students who study online, it was found that when students open the online content, they don't really read seriously. They only focus on what they find interesting or just scroll quickly. It stops students from gaining knowledge in the expected amount; and 2) online learning creators mostly focused on covering all the content of the program and finding the efficiency of the tools than the learners, therefore they tend to present the content in order form, even though there was some interaction, there is no guarantee that learners truly gain knowledge. (Manmanee, 2014)

Due to the COVID-19, the learnings activities had to be conducted online including storytelling. It was found that students had problems with storytelling through digital media and lacked cooperation in online class. It decreased the efficiency of their presentation. The overall learning effectiveness of Knowledge Management in Information Organization subject was decreased. From the said reason, the researcher decided to do the research on the effect of instructional management by using online lessons together with cooperative learning using storytelling through digital media on learning achievement and teamwork skill of students of Library and Information Science program to improve the student's teamwork skill. The study focuses on intervening technique of cooperative learning, developing cooperation in teamwork both offline and online to increase learning achievement and teamwork skill of students.

Objectives

1. To compare the learning achievement of Knowledge Management in Information Organization subject before and after study by using online lessons together with cooperative learning using storytelling through digital media.

2. To compare teamwork skill between pretest and posttest by using online lessons together with cooperative learning using storytelling through digital media.

Literature review

1. Concept of online learning

Nowadays, computer technology and the internet are involved in learning management in learning activity, learning achievement evaluation and student's participation. The process changes the role of the teacher from the one who passes on the knowledge to the designer of the pattern of learning. The research showed that applying online learning technology, whether it is internet or online network can promote the social network and develop communication and participation between learner and teacher. It also improves the learning efficiency for students (Barbour & Plough, 2009). Laohajaratsang (2002) stated that e-Leaning means studying content or media for teaching or training by using alphabet, slide mixed with animation, video and sound, and using web technology to broadcast the content and course management system to manage the teaching. Many researchers have said the same about online learning, and it's in line with the goal of learner or organization and what they are aiming for. Moreover, Thaiedunet (2008) stated that there are many similar words to e-learning like distant learning, Computer-Based Training (CBT) and online learning. They all use the computer network or electronic media to broadcast content. They can have at least one media and the pattern of teaching can be in the form of one-way teaching or interactive teaching. Thaiedunet (2008) stated that e-Learning is the learning process through Information and Communication Technology (ICT) and other electronic media that has the objective to lower the restriction of time and location between learner and teacher, and allows the learner to study according to their need and necessity throughout their life. From the said meaning, it can be concluded that e-learning is the systematic form of study with a clear objective or goal of study. It includes knowledge transfer, presentation and learning activity.

Sutthirat (2013) noted that every learning technique shares similar learning process which are preparation, teaching, group project, examination, conclusion and evaluation. This article explains the Cooperative Learning process as follows:

1) Preparation process

The activities in preparation process included teacher suggesting teamwork skill and organizing students into 4 groups with 4 people each. Teachers should suggest the rules, roles and responsibilities to group members, explain the objective of the lesson, joint activities and provide necessary skills for working in a group project.

2) Group activity process

Students will work in group. Each student will have their own role and duty. In this process, teacher will teach students some techniques for activity.

3) Examination and testing process

This process is where students will be examined whether or not they have completed their duties and how well they have done. This process focuses on examining individual and group work. In some cases, students have to fix what they didn't complete and then take the test.

4) Lesson summary process and group work evaluation

Teachers and students will summarize the lesson together. Teacher should explain more if students don't understand any part. Teachers and students will evaluate the group work together and consider what is the highlight of the work and what needs improvement.

From the qualification of e-learning, it is used with learning in so many levels and ways. Laohajaratsang (2002) separates the application of e-learning into 3 types as follows.

1) Supplementary

It is the type where e-learning is not the main media in teaching. Beside from online content, learner still can learn the same content from other media such as handout, video etc. By using e-learning in this type, it means that teacher only want to find a new option to access content for learner to increase the experience and knowledge.

2) Complementary

In this type, e-learning is used as a complement to other kind of teaching such as from lecturing in classroom, teacher also designs content to be accessible through e-learning. In Thailand, if any institution wants to ask for the budget to apply e-learning

to normal teaching, they should set the objective to use it as complement more than just supplementary. Such as the teacher must let the student learn from e-learning for certain objective to make it suitable for students in Thailand who still need guidance from teacher and most of them still lack the cultivation to seek for knowledge.

2. Comprehensive Replacement

To use e-learning to replace the lecture in classroom, the learner must learn everything online. Nowadays, most of e-learning has been developed to be used as main media to replace the teacher for distant learning with the concept that multi-media can help to broadcast knowledge completely similar to a teacher.

This research studies about using online learning as main media because learner and teacher are ready for online learning by using Microsoft Team to broadcast picture and sound between learner and teacher in real time. The lessons are recorded by WBSC of Suan Dusit University. It is necessary to do so because the university is closed due to Covid-19 causing students and teacher to adapt to the situation.

3. Storytelling through digital media

Microsoft (2010) proposed process of storytelling through digital media as follows:

1) Brainstorming

2) Data collection and following the planned idea

3) Select topic and develop according to plan

4) Exchange information on the internet

5) Division of duties

6) Operation

7) Create Storyboard

8) Build foundation of storytelling through digital media

9) Create story, revise and fix

10) Check for information related to language and culture

11) Ensure that the language and sound story

12) Present the story in front of classroom or website and YouTube

13) Evaluate the story by using a scoring rubric

In this research, the researcher designed online learning management together with cooperative learning by using storytelling through digital media with 5 processes as follow.

1) Online learning preparation

2) Group activity where students prepare story together

3) Storytelling activity by students

4) Work examination and online learning evaluation

5) Lesson Summary

4. Teamwork

Teamwork allows students to work together as a group to exchange data and experience by using information in doing activity with variety of people. It will cause them to plan together, work together, accept other opinions, solve problems together until they achieve the shared goal. Development of teamwork and teamwork ability requires the following processes. (McCann, 2007)

1) Understanding process of the team

2) Team establishing, brain storming, norm setting and operation

3) Communication skill

4) Goal setting

5) Team identity development

6) Exchange of vision, mission and value

7) Understanding the role of members

8) Discovering member's individual skill

9) Setting appropriate outcome

10) Negotiation

11) Decision making

12) Proposal and receiving result

Table 1 One - Group Pretest- Posttest Design Experimental Design

Group	Pretest	Test	Posttest
E	T_1	X	T_2

X means online learning using online lesson with cooperative learning using storytelling through digital media

T_1	means	pretest
T_2	means	posttest
E	means	experimental group

Conceptual framework

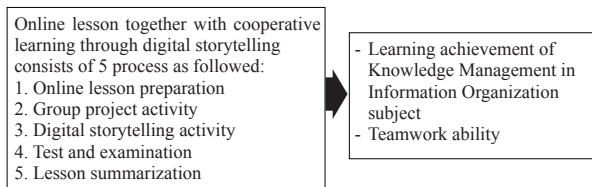| Online lesson together with cooperative learning through digital storytelling consists of 5 process as followed: 1. Online lesson preparation 2. Group project activity 3. Digital storytelling activity 4. Test and examination 5. Lesson summarization | → | - Learning achievement of Knowledge Management in Information Organization subject - Teamwork ability |

Figure 1 Conceptual framework

Research methodology

Demographic of this study is 24 undergraduates' students of 1 classroom from Library and Information Science Program, Suan Dusit University who enrolled for Knowledge Management in Information Organization subject, with subject code 1633418, 2nd semester, academic year 2020.

Research tools and quality testing

1. Research tools

Research tools consisted of

1.1 Teaching plan by online lessons together with cooperative learning using storytelling through digital media of Knowledge Management in Information Organization subject.

1.2 Learning achievement test

1.3 Teamwork skill test

2. Tools making and development

2.1 Management in Information Organization subject teaching plan

2.1.1 Primary study on principle, theory and related research, as well as analyzing the subject description of Knowledge Management in Information Organization subject as a guideline for creating the teaching plan.

2.1.2 Planned the teaching plan for Management in Information Organization subject that covers and follows the research objectives about online lessons together with cooperative learning using storytelling through digital media. The teaching consists of 8 plans, 15 times with 4 hours each including pretest and protest.

2.1.3 Set the objectives of activities in online lesson together with cooperative learning using storytelling through digital media to help learners with low learning achievement level, to understand the differences of each person and to change the teamwork behavior. Instructional management by using online lessons together with cooperative learning using storytelling through digital media consists of 6 steps which are: 1) preparation, 2) content preparation, 3) storytelling, 4) presentation test, 5) group activity through digital media, and 6) summarize and experience presentation.

2.1.4 Quality testing for teaching plan by having the teaching plan reviewed by 3 experts to test the reliability and the use of language. The average was $3.59 - 4.85$ which means the teaching plan is appropriate.

The Study of the Effect of Instructional Management by using Online Lessons together with Cooperative Learning using Storytelling through Digital Media with Urban Network

Tumnanchit

2.1.5 Revised and improved the teaching plan and test it with students who are not the sample group to find defects.

2.2 Created learning achievement test for Management in Information Organization subject

2.2.1 Created learning achievement test that cover the content and learning objectives. Researchers created 5 multiple-choice test containing 60 questions for 30 points.

2.2.2 Had the test reviewed by 5 peer reviewers (appendix A) to examine the reliability, questions, choices and the use of language to improve and select the questions that are appropriate. The IOC was between 0.8-1.00 and pass all the criterions.

2.2.3 Tried the revised test on 30 students who were not the sample group but had similar qualifications with the sample group and used the results to improve the test.

2.2.4 Graded the learning achievement test. 1 point for correct answer and 0 point for incorrect answer. After that, analyzed the results to find difficulty index (p) and discrimination index (r). Then, selected the question that had a difficulty index between .20 - .80 and discrimination index more than .20. There were 65 qualified questions and 60 were selected for 30 points learning achievement test. The test covered the content and learning objectives. The difficulty index was .23 - .75. The discrimination was .20 - .60.

2.2.5 Tried the test on 30 first year students who have never studied in this subject before with the same qualification with the sample group and calculated to find the reliability of the result by using KR-20 of Kuder – Richardson. The found reliability score was .95.

2.3 Teamwork skill test making

2.3.1 The detail and quality testing of the test for teamwork skill on online lessons together with cooperative learning using storytelling through digital media is as follows.

2.3.2 Studied the documents related to teamwork skill test.

2.3.3 Designed conceptual framework of teaching with online lessons together with cooperative learning using storytelling through digital media to improve learning achievement of Knowledge Management in Information Organization subject of students of Suan Dusit University.

2.3.4 Created teamwork skill questionnaire that covered all the behavior that contained 20 questions.

2.3.5 The questionnaire was examined by 3 experts for correction and appropriation, and to examine content validity by finding The Index of Item-Objective Congruence: IOC between question and teamwork skill. The results of quality testing for validity of the questionnaire by finding the IOC between questionnaire and teamwork skill from 3 experts showed that the questions were congruous. The score must be between 0.6-1.0. The questionnaire was examined by adviser after the revision.

2.3.6 After revision, tried the questionnaire on the students who were not the sample group but had similar qualifications with the sample group.

2.3.7 Analyzed the data from teamwork skill questionnaire for validity using Cronbach's alpha coefficient; α. The result was .916.

Data collection

The data collection for this study is as follows:

Data was collected from the sample group for 1 semester in total of 33 hours during the second semester of academic year 2020. Researcher taught through online class via MS-Team. The ethics of the research process has been approved by the related institution. The steps are as follows:

1. Students took pretest to measure the learning achievement and answered 20 questions on the questionnaire about the topic of "How to teach with online lessons together with cooperative learning using story telling through digital media to improve learning achievement of Knowledge Management in Information Organization subject, and to measure teamwork skill before starting lesson."

2. Taught students how to teach with online lessons together with cooperative learning using story telling through digital media for 33 hours and observed their behavior during activity.

3. Students took posttest to measure learning achievement from student's score and answered the questionnaire on the topic of "How to teach with online lessons together with cooperative learning using story telling through digital media to improve learning achievement of Knowledge Management in Information Organization subject, and to measure teamwork skill after lesson."

4. Created manual for teaching with online lessons together with cooperative learning using story telling through digital media. The manual consisted of role of teacher, role of learner, instruction and example

Tumnanchit

The Study of the Effect of Instructional Management by using Online Lessons together with Cooperative Learning using Storytelling through Digital Media with Urban Network

on teaching in lesson 1 and 2. The examples included worksheets, activity and photos.

5. Collected learning achievement and teamwork skill questionnaire.

Data analysis

Data analysis for this study is as follows:

Compared average score of learning achievement test of Knowledge Management in Information Organization subject, then calculated growth score from learning achievement pretest and posttest using growth formula and read the score following the growth criterion of Kanjanawasee (2013) as shown in table 2

Table 2 Growth score criterion comparing development (Kanjanawasee, 2013)

Relative gain score	Growth level
76 – 100	Highest level
51 – 75	High level
26 – 50	Moderate level
0 – 25	Primary level

Comparing average score and teamwork skill of students who took online lesson together with cooperative learning using storytelling through digital media before and after lesson using percentage value, average value and standard deviation.

The growth score formula is (Kanjanawasee, 2013)

$$DS = \frac{Y - X}{F - X}$$

DS (%)   means   percentage of growth

F   means   full score of first-time evaluation and second time evaluation

X   means   score of first-time evaluation

Y   means   score of second time evaluation

From the comparison of pre and post learning achievement score of Knowledge Management in Information Organization subject, the results are as follow:

From the pre-learning achievement score with 60 questions (30 points), the result showed that student's average score was ($\mu = 12.58$, $\sigma = 2.54$). Most of students received 10 points, 6 students received 13 points. 5 students received 5 points, and 5 students received 10 points.

From the post learning achievement score with 60 questions (30 points), the result showed that student's average score was ($\mu = 22.33$, $\sigma = 2.11$). Most of students received 22 points, 5 students received 23 points, 3 students received 20 points, and 3 students received 27 points.

From the above data, it can be concluded that posttest score was higher with the average score of pre test at 12.58 and posttest at 22.33. The analysis of the growth score found that the percentage of growth score was 55.97 which means the high level of growth.

Results

The results of this study are as follows:

Objectives	Results
1. To compare the learning achievement of Knowledge Management in Information Organization subject before and after study by using online lessons together with cooperative learning using storytelling through digital media.	- From comparing learning achievement of students studying Knowledge Management in Information Organization subject before and after taking online lessons together with cooperative learning using storytelling through digital media found that when considering the growth of students before and after lesson, overall, the score increased 32.50%. The average score before lesson was 12.58% and average score after lesson was 22.33. When considering the growth score, it was found that percentage of growth of students was 55.97 which means the growth was in a high level, and the posttest score was higher than pretest in accordance with the hypothesis
2. To compare teamwork skill between pretest and posttest by using online lessons together with cooperative learning using storytelling through digital media.	- From comparing teamwork skill before and after lesson of teaching with online lesson together with cooperative learning using storytelling through digital media found that overall, teamwork skill after lesson was in the highest level and before lesson was in a low level. When considering each aspect, it was found that 18 aspects were in the highest level. Top 3 in descending order as follows: students have respect for each other, students respect each other's decision and student focus on general interest more than personal interest.

Table 3 Comparison of learning achievement of Knowledge Management in Information Organization subject before and after study

No.	Before (30 points)	After (30 points)	difference
1	13	23	10
2	10	20	10
3	17	19	2
4	15	20	5
5	10	18	8
6	12	22	10
7	13	22	9
8	15	24	9
9	11	22	11
10	10	23	13
11	14	21	7
12	13	25	12
13	17	27	10
14	15	27	12
15	13	20	7
16	10	22	12
17	9	27	18
18	13	23	10
19	10	20	10
20	15	23	8
21	14	22	8
22	10	19	9
23	12	24	12
24	11	23	12
μ	12.58	22.33	Growth score = 55.97 %
σ	2.54	2.11	

From Table 3: Comparison of learning achievement of Knowledge Management in Information Organization subject before and after study the results are as follows:

The results from learning achievement pretest with 60 questions (30 points) showed that the average score was (μ = 12.58, σ = 2.54). Most students received 10 points followed by 6 students who received 13 points, 5 students who received 5 points and 5 students who received 10 points.

The results from learning achievement pretest with 60 questions (30 points) showed that the average score was (μ = 22.33, σ = 2.11) Most students received 22 points followed by 5 students who received 23 points, 3 students who received 20 points and 3 students who received 27 points.

From the above data, it can be concluded that students received a higher score after study than before study. The average before study score was 12.58 and the average score after study was 22.33. When comparing the growth score, it was found that the growth of students equal 55.97. It means that the growth level was high.

Discussion

Discussion of this study is as follows:

1. From comparing learning achievement of Knowledge Management in Information Organization subject before and after online lesson together with cooperative learning using storytelling through digital media, it was found that the learning achievement of Knowledge Management in Information Organization after lesson was in accordance with the hypothesis.

It is also found that it was in accordance with the research results of Intarakumhang (2014) that conducted research on student's grade according to the effect of Backward Design through WebQuest in Matthayom Sueksa 4. The results found that 1) students that study with Backward Design through WebQuest had critical thinking ability after class more than before class with statistical significance at .05. 2) Learning achievement of students who study with Backward Design through WebQuest after lesson was higher than before lesson with statistical significance at .05, and in accordance with the research of Faksanoi, Chanruang, and Karnka (2015) on the development of online lessons based on a new team game tournament learning technique based on Bloom's theory. It was found that learning achievement after lesson was higher than before class with statistical significance and satisfaction level at good. The quality of lesson that was examined by experts was at a good level as well. The average score was 4.52. Trying online lesson showed that the technique was practical and in accordance with the research of Thisanon (2016) that did the research on online lesson with cooperative learning using project-based learning through storytelling via digital media for students in Matthayom Sueksa 6. The results found that: 1) The results of the development of online lesson with cooperative learning using project-based learning through storytelling via digital media for students in Matthayom Sueksa 6 was good, and 2) From comparing the learning achievement results of students who study with online lesson with cooperative learning using project-based learning through storytelling via digital media for students in Matthayom Sueksa 6, the result after class was higher than before class with statistical significance at .01. It was in accordance with the research of Pitrik and Mallich (2004) on blended learning approach with student - centered and the effect of Information Technology on students. It was found that: 1) Student centered learning has 3 conceptual conditions which are Realness, Acceptance and Empathic understanding, and 2) Blended learning

approach with student – centered helped improve student's potential. It helped with the learning participation, the tendency to learn, success and self-esteem, motivate discovery, interaction between teacher and student and increasing ability to discover learning process. It was in accordance with the research results of Shawnz and Jun (2012), the research explained – learning using the method called Trail Shuttle to support learning process of teachers and students in Singapore. The results found that m – learning using Trail Shuttle can support learning beyond the classroom which comparing with learning in the classroom, the students can have real-time interaction in a real location and the teacher can get real-time response from students. The learning achievement of Knowledge Management in Information Organization subject was also in accordance with learning theory of Skinner (1950) noting that behavior modification can be made only by physical technology and biotechnology, but it still needs behavior technology which means liberty and pride. The true goal of education is encouraging people to be themselves, taking responsibility for their action and have freedom and pride as a way to be themselves.

However, from observing student's behavior during the learning activity for student to practice teamwork skill through online lesson together with cooperative learning using storytelling through digital media, the activity allowed students to search for data and make presentation as a group from online resource that the group were interested in, such as e-book, website and from learning in subgroup under the supervision of teacher and through online lesson. It gave students the opportunity to solve problems, tell a story with systematic critical thinking and have opinions in the subgroup. It helped student's find conclusions quicker. It also helped the learning process in small group with the teacher motivating students to share opinion, suggestion and debate to create knowledge sharing for future study. The teacher might suggest recourses and let students study simulated experience for students to have intellectual development, improve teamwork skill and gain higher learning achievement than before lesson.

2. From comparing teamwork skill before and after online lesson together with cooperative learning using storytelling through digital media, it was found that teamwork skill of students who took online lesson with cooperative learning using storytelling through digital media after lesson was higher than before class in accordance with the research hypothesis. It showed

that students developed teamwork skill by taking online lesson with cooperative learning using storytelling through digital media because it was the lesson that focused on students working together through online lesson, covered all objectives and had various online resources for students to access anywhere and anytime.

When considering the research result, it is in accordance with the social network concept of Kongpila (2017) about the result of cooperation, communication, social context, technology, sharing, relationship and using tools to create content that affects the ability to work as a team before and after online lesson with cooperative learning using storytelling through digital media in accordance with the principle about teamwork skill of Tumnanchit (2019). Tumnanchit stated that working as a team is the behavior that showed the determination to work with other people, the feeling of being a part of team including the ability to create harmony in organization and maintain bond between people in the team. Behavior of the group affects the group structure, communication, leadership, decision, conflict, the use of power including relationship with other group to support behavior modification to be accepted in the group that will lead to group member follow the group's norm and change for the better. It is in accordance with the research of Thisanon (2016) about the effects of using online lessons with cooperative learning using project-based learning through digital storytelling for Matthayom Sueksa 6. The results found that learning achievement of Matthayom Sueksa after class was higher than before class with statistical significance at .01. It is in accordance with research result of Dana (2007) that applied teamwork in law course. The result found that student's grade improved including the relationship with friends and teachers. They had better attitude toward the subject and class. It was also in accordance with the research of Poonwiwatchaiyakan (2013) about the effect of working process and teamwork on the work efficiency of practitioner level employee (Silom Area). The results found that teamwork and working system affected the work efficiency in the aspect of open discussion (Beta = 0.170) and in the aspect of monitoring and evaluation (Beta = 0.330) affected the work efficiency of practitioner level employee (Silom Area) with statistical significance at .05

Suggestions

1. There should be the comparison of process of online learning management together with cooperative

learning using storytelling through digital media and learning style that is a mixture of normal learning and online learning with different types of students.

2. There should be study on the result of applying online learning together with cooperative learning using storytelling through digital media on flipped learning method.

3. There should be the study on applying online learning management together with cooperative learning using storytelling through digital media to develop the ability of self-Learning, problem solving skill and Emotional Quotient (EQ) development.

4. From the results that showed that learning management by using online lessons together with cooperative learning using storytelling through digital media increased learning achievement and teamwork skill of students. Therefore, it can be applied with learning management of higher education in every university and every year by adapting activity to follow the content of each subject because some approach needs to be adjusted to be appropriate with student's experience and principle of cooperative learning need to be applied to ensure learning is appropriate.

Acknowledgment

References

Barbour, M., & Plough, C. (2009). Helping to make online learning less isolating. *Techtrends, 53*(4), 57.

Dana, W. (2007). Implementing Team-Base Edition Learning in and Introduction to Law Course. *Journal of Legal Studies Education, 24*(1), 59-108.

Faksanoi, S., Chanruang, J., & Karnka, S. (2015) Development of Online Lessons Based on a New Cooperative Learning Technique Based on Bloom's Theory. In *The Eleventh National Conference on Computing and Information Technology,* NCCIT2015, 412-417.

Intarakumhang, N. (2014). *Student's Grade according to the Effect of Backward Design trough WebQuest on critical Thinking and Learning Achievement in Information and Communication Subject of Matthayom Sueksa 4 Students (Master's thesis)*. Maha Sarakham: Mahasarakham University.

Kanjanawasee, S. (2013). *Classical Test Theory* (7th ed.). Bangkok: Chulalongkorn University.

Kongpila, K. (2017). *Components of Using Social Media in Teaching and Learning.* Retrieved from https://www.gotoknow.org/posts/599442

Laohajaratsang T. (2002). *Designing e-Learning: Principle of website designing and creating for learning.* Chiang Mai: Chiang Mai University.

Manmanee, S. (2014). *Finding an appropriate format for Online Presentation.* Phitsanulok: Pibulsongkram Rajabhat University.

McCann, D. (2007). *Team learning.* Retrieved from http://www.tms.com.au/tms12-2c.html

Microsoft. (2010). *Tell a story, become a lifelong learner.* Retrieved from http://www.learning-v.jp/dst/images/microsoft.pdf

Office of the Education Council. (2017). *Higher Education Development Plan Issue 12 (2017 - 2021).* Bangkok: Bureau of Policy and Strategy, Office of the Permanent Secretary, Ministry of Education.

Pitrik, R. D. and Mallich, K. (2004). *Effect of Person-Centered Attitudes on Professional and Social Competence in a Blended Learning Pradigm.* Retrieved from http://www.ifets.info/journals/17.pdf

Poonwiwatchaiyakan, K. (2013). *The effect of working process and teamwork on the work efficiency of practitioner level employee (Silom area).* Master of Business Administration. Bangkok: Bangkok University

Shawnz, N. & Jun M. (2012). Location Based mobile learning in Singapore Schools. *International e-Learning Conference 2012.* (IEC2012), 49-53.

Skinner, B. F. (1950). Are theories of learning necessary?. *Psychological Review, 57*(4), 193-216.

Songkram, N. (2011). *Development of Project-based learning and cooperate based learning to create innovational knowledge for bachelor of education students in public higher education institutions.* Bangkok: Office of the Higher Education Commission.

Sutthirat, C. (2013). *New style of learning management.* Nonthaburi: Sahamitr printing & publishing company limited.

TECHSAUCE. (2020). *Globish Growth statistic 4 new learning styles, New normal for education.* Retrieved from https://techsauce.co/pr-news/globish-edtech-covid-19-social-distancing-new-normal

Thaiedunet. (2008). *What is e-learning.* Retrieved from http://www.thaiedunet.com/ten_ content/what_elearn.html

Thisanon, N. (2016). *Effects of Using Online Lessons with Cooperative Learning using Project-based Learning through Digital Storytelling for Matthayom Sueksa (Master's thesis).* Bangkok: Ramkhamhaeng University.

Tumnanchit, B. (2019). *Developing Teaching and Learning Achievements through Collaborative Teaching Techniques from Learning and Innovation Sources in Thailand 4.0.* Bangkok: Suan Dusit University.