Development of Online Tutorials with an Active Learning Concept to Enhance Interaction and Collaborative Learning: New and Next Normal in Distance Education

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Abstract

This paper aims to I. present the process of designing online tutorials with an active learning concept which consists of a preparatory stage, introductory stage, learning stage, and assessment stage; II. present digital tools that were applied in online tutorials such as online meeting tools, collaborative learning tools, and evaluation tools, and; III. present the results of the assessment of satisfaction in online tutorials with an active learning concept. It was found that 29 undergraduate students who enrolled in the Management of Information Organizations Course (13314) of the School of Liberal Arts, Sukhothai Thammathirat Open University and received online tutorials in the second semester of 2021 were willing to answer a questionnaire, accounting for 70 percent. It was found that (1) Students' overall satisfaction with the design of online tutorials with an active learning concept was at a high level (Mean = 4.35, SD = 0.65); (2) Students' satisfaction in applying digital tools to organize online tutorials was at a high level (Mean = 4.10, SD = 0.78); and (3) Students needed courses and advice to prepare for online tutorials (Mean = 4.31, SD = 0.75), an instruction manual of video meeting tools (Mean = 4.31, SD = 0.70), and an area for exchanging the reflected opinions on online tutorials at a high level (Mean = 4.31, SD = 0.79), respectively.

Keywords: Active Learning, Cooperative Learning, Distance Education, Learner Interaction, Online Learning

1.   Introduction

COVID-19 crisis is an important driving force that changes people's lifestyles in every aspect, including study, work, and personal life. It is also a catalyst that results in changing of instructional style from a physical format to an online format. Instructors and students have to adapt and learn to use digital technology as a tool to tackle problems that arise from this crisis. Sukhothai Thammathirat Open University offers distance education using mixed media as the main media and supplementary media in the form of print media and digital media to transfer knowledge. Several courses at the bachelor's level offer face-to-face teaching activities called **"tutorials"** to help summarize the main content of all 15 units of the teaching materials on difficult and complex issues which requires further explanation from reading. There are two kinds of tutorial activities: semester tutorials (not collecting scores) and score-collecting tutorials. This paper will only focus on the case study of the design of score-collecting tutorials.

Before the COVID-19 pandemic, students had to physically attend score-collecting tutorials on an appointed date and time. The student will collect 30 points when completely attending 2 tutorial sessions (each session lasts 2 days, 6 hours each day), a total of 24 learning hours. Score-collecting tutorials are mainly intended to help students pass the exam. Most undergraduate students are working adults who have a limited amount of time for self-study. Participating in tutorial sessions helps them review the essential content to prepare for the exam. The score-collecting tutorial session also provides scores for students to help them pass the exam. During the COVID-19

pandemic, it is necessary to change the tutorial session from face-to-face to online format. This requires a new instructional design by applying an active learning concept and digital tools to create interaction between instructors and learners, learners and technology, and learners and learners. This innovation is a new dimension in distance education that collaborates subject-matter experts and instructional designers in the process of planning and preparing digital tools, producing media and activities, using the developed media, and evaluating for improvement.

Designing online tutorials with an active learning concept

Active learning is a concept that focuses on a learner-centered approach by allowing students to be an investigator to acquire knowledge by themselves [1],[2]. The concept is in line with the concept of "the learning pyramid" or "the cone of learning" developed by the National Training Laboratory. It shows that different teaching methods and the use of educational materials affect the persistence of information in long-term memory and create different learning experiences. Most learners can remember only 10% of the content when learning by reading from textbooks. Giving learners the opportunity to discuss, practice, and learn through teaching others results in deep and long-term learning for 50%, 75%, and 90%, respectively [3],[4]. This concept led to the design of online tutorials that aims to engage students in group discussions as a form of cooperative learning that promotes interaction between learners and instructors and among learners themselves. The activity encourages students to practice thinking, increases participation in learning, and reinforces students.

The application of an active learning concept to design online tutorials to promote interaction and collaborative learning in the Management of Information Organizations Course (13314) of the School of Liberal Arts, Sukhothai Thammathirat Open University consists of a preparatory stage, introductory stage, teaching stage, and evaluation stage. The details are as follows.

Preparatory Stage

This stage is to organize meetings to set objectives for score-collecting tutorials, plan learning activities, select digital tools, organize score-collecting tutorial teaching events, and design evaluation methods. The objective of the tutorial is to review the key points in each teaching unit (15 teaching units) for students and to collect scores from the post-test of two tutorial sessions, totaling 30 points. Tutorial activities employ the synchronized format, consisting of listening to lectures and exchanging learning among learners. The digital tools used for organizing activities were created and tested for accuracy and completeness before using. Evaluation methods include both formative evaluation from group work and summative evaluation to measure learning achievement.

Introductory Stage

This stage allows learners to get to know each other by asking about their background and learning experiences to create a friendly atmosphere and encourage discussion and exchange among learners. Then, the instructor gives an orientation of the course to review the students' knowledge and understanding of "Course Descriptions," "Course Objectives," "Teaching Units," and "Evaluation Criteria." Educational technologists will then demonstrate the use of digital tools to create interactions and promote collaborative learning.

Learning Stage

This stage is to present the essence of the teaching materials. In the first step, the instructor will briefly describe the main content to demonstrate the techniques and methods of self-studying the teaching materials. Then, students will be divided into a small group of 4-5 students. The concept of cooperative learning is employed to help promote socialization and learning among learners. Group tasks are assigned with topics related to the subject matter in the unit. Each group will be assigned to summarize the main points to present and exchange knowledge with the class. The activity design at this stage focuses on enabling learners to act with the instructor as a facilitator and coaching, resulting in learning persistent and long-term knowledge memory.

Assessment Stage

It is a knowledge test before and after the tutorials. The pre-test is a multiple choice of 24 questions, taking 30 minutes to complete the activity. Learners will know the results of the self-assessment and the level of their knowledge. The post-test consists of filling in short answers and long answers. The test takes 60 minutes.

Application of digital tools in score-collecting tutorials

Digital tools that are applied to organize the score-collecting tutorials in the Management of Information Organizations Course (13314) of the School of Liberal Arts, Sukhothai Thammathirat Open University are divided into 4 types: video meeting tool, live engagement tool, collaborative brainstorming tool, and online evaluation tool.

Video Meeting Tool

Microsoft Teams which is the team workspace in Office 365 is used as the primary platform for online score-collecting tutorials to replace classroom and face-to-face tutorials. The staff of the Office of Educational Services will create Teams and add members, including instructors and students, to the system. The instructor then schedules a meeting. A Break out room can be created for group discussion activities to foster interaction between learners.

Live engagement tool

Mentimeter is used as it is a tool that allows users to engage and interact with the audience in real-time. Multiple-choice questions were created for students, for example, which region they are from, and whether they have experience in studying this course before. The basic information from this stage will be used for the next learning stage.

Collaborative brainstorming tool

Padlet which is an online noticeboard is used. After dividing students into small groups or using a Break out room tool in MS Teams. Each group will have 20-30 minutes for meeting and discussion on their assigned topic. The assignment will then be presented or posted in the group discussion on the Padlet for the exchange of learning together. The instructor will check and give suggestions for improvement of the work.

Online evaluation tool

MS Form is used for both pre-test and post-test assessments. The application can create various types of questions. It can set the scope of the test takers and the date and time of opening and

closing of the test. Test results can be displayed in real-time and can be processed in the MS Excel program.

Assessment results of satisfaction in online tutorials with an active learning concept

Assessment of satisfaction in online tutorials with an active learning concept. The results are from 29 undergraduate students who enrolled in the Management of Information Organizations Course (13314) of the School of Liberal Arts, Sukhothai Thammathirat Open University and received online tutorials in the second semester of 2021 were willing to answer a questionnaire, accounting for 70 percent. The results can be summarized as follows.

Table I. Satisfaction in online tutorials with an active learning concept

Items	Mean	SD	Meaning
I. Help to enhance and complete the understanding of the content of the course.	4.45	0.56	Agree
II. Know the techniques and methods of studying the teaching materials for successful learning.	4.24	0.73	Agree
III. Interact with the instructors to ask questions and problems about teaching materials.	4.48	0.62	Agree
IV. Interact with other learners, build friendships and help each other.	4.34	0.66	Agree
V. Help to build confidence in applying the knowledge gained from tutorials to the exam.	4.34	0.60	Agree
VI. Be able to apply knowledge gained from tutorials to work.	4.28	0.64	Agree
VII. Learn to use technology and tools for organizing digital activities.	4.38	0.67	Agree
VIII. Help to create enthusiasm and can memorize the essential content better.	4.38	0.67	Agree
IX. Provide activities that focus on students as the center of learning (Active Learner).	4.29	0.64	Agree
Overall satisfaction with the design of online tutorials with an active learning concept.	**4.35**	**0.65**	**Agree**

From Table I, it was found that learners were satisfied with the interaction with the instructors to ask questions and problems about teaching materials at a high level (Mean = 4.48, SD = 0.65), followed by the score-collecting tutorials help to enhance and complete the understanding of the content of the course (Mean = 4.45, SD = 0.56), interaction with other learners to build friendships and help each other. (Mean = 4.34, SD = 0.66), and the score-collecting tutorials help to build confidence in applying the knowledge gained from tutorials to the exam (Mean = 4.34, SD = 0.60), respectively. The overall satisfaction in the design of the online score-collecting tutorials with the active learning concept is at a high level (Mean = 4.35, SD = 0.65).

Table II. **Satisfaction in the application of digital tools in the online score-collecting tutorials**

Items	Mean	SD	Meaning
I. Basic knowledge assessment before receiving tutorials in an online evaluation tool (multi-choice in MS Form)complete the understanding of the content of the course.	4.14	0.82	Agree
II. Getting to know each other activities before class in a live engagement tool (Mentimeter)	3.86	1.14	Agree
III. Collaborative activities in a small group (Break out room) in a video meeting tool (MS Teams)	4.17	0.70	Agree
IV. Discussion activities to exchange knowledge by posting summaries in a collaborative brainstorming tool (Padlet)	4.10	0.71	Agree
V. Post-test in an online evaluation tool (filling in short answer in MS Form)	4.21	0.55	Agree
Overall satisfaction in the application of digital tools in the online tutorials.	**4.10**	**0.78**	**Agree**

From Table II, the application of digital tools in the online score-collecting tutorials showed that learners were satisfied with the post-test in an online evaluation tool (filling in short answers in MS Form) at the highest level (Mean = 4.21, SD = 0.55), followed by collaborative activities in a small group (Break out room) in a video meeting tool (MS Teams) (Mean = 4.17, SD = 0.70), and basic knowledge assessment before receiving tutorials in an online evaluation tool (multi-choice in MS Form), respectively.

Table III. **Requirements to support the organization of online score-collecting tutorials**

Items	Mean	SD	Meaning
I. Courses for preparation or orientation before taking online tutorials	4.31	0.75	Agree
II. A manual on techniques of using MS Teams for teaching and learning)	4.31	0.70	Agree
III. A manual on using digital tools to support learning	4.24	0.82	Agree
IV. Communication via social media to update information in a timely manner	4.28	0.78	Agree
V. Area for exchanging the reflected opinions on online tutorials	4.31	0.79	Agree

From Table III, it was found that learners had a need for courses for preparation or orientation before taking online tutorials, a manual on techniques of using MS Teams for teaching and learning, and an area for exchanging the reflected opinions on online tutorials at a high level (Mean = 4.31, SD = 0.75), (Mean = 4.31, SD = 0.70) and (Mean = 4.31, SD = 0.79), respectively.

2.   Conclusion

Changing the format of tutorials from face to face to online is a turning point in distance education in the era of the new and next normal. The principle of educational technology is used to help solve

problems that arise from crisis situations. The most important factor for successful online tutorials is the readiness of the learner's infrastructure in terms of hardware, software, and basic knowledge of using computers and digital tools. This is an important issue that the university must consider and prepare for students in order to provide equal access. Also, the preparation of training courses to develop online teaching for instructors by using information and communication technology to promote active learning is also necessary. Learners are encouraged to be active learners. The tutorial will encourage enthusiasm and learning cooperation, create interactions between learners and instructors, and among learners themselves. It also helps develop learners to have advanced thinking skills, both analyzing, evaluating, and creating.

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