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STRATEGIES FOR CULTIVATING ACTIVE LEARNING IN ONLINE ENVIRONMENT



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Preface

In recent years, the landscape of education has undergone a remarkable transformation with the advent of online learning platforms and digital tools. The COVID-19 pandemic in 2020 forced educational institutions around the world to close, compelling both students and teachers to adopt new learning methods. This unprecedented situation presented both challenges and opportunities for instructors and learners, catalysing the need for cultivating active learning experiences in online environments.

SEAMOLEC, as a centre for open and distance learning, aims to provide readers with innovative approaches, methodologies, and best practices through this journal. By empowering educators to create dynamic and engaging online learning experiences, it is hoped that active learning will flourish in virtual spaces.

At its core, active learning is a pedagogical approach that encourages learners to actively participate, collaborate, and construct knowledge through meaningful interactions. In an online environment, where physical barriers separate learners and instructors, harnessing the power of active learning becomes even more critical to foster student engagement, critical thinking, and deep understanding.

This journal brings together diverse perspectives, insights, and research findings, exploring how to cultivate active learning in online environments. It delves into various aspects of active learning, including instructional design, technology integration, assessment strategies, learner-centred approaches, and the role of social interaction in virtual spaces.

It is crucial to recognize that education is an ever-evolving field, and no single approach fits all contexts. The strategies discussed here are catalysts for further exploration and adaptation, inviting readers to experiment, reflect, and refine their own practices within the dynamic online educational landscape.

While the journal aims to offer valuable insights and recommendations, it is important to note that the content represents the views and experiences of individual authors. Readers are encouraged to critically analyze the presented information and consider its applicability within their specific contexts.

We hope that the articles in this journal inspire collaboration and ongoing dialogue among educators, researchers, policymakers, and all stakeholders invested in the advancement of open and distance learning. Together, let us embark on a journey to discover effective strategies for cultivating active learning in the dynamic and ever-expanding realm of online education.

July 2023

Director, SEAMEO SEAMOLEC



Effectiveness of The Gamified LMS Platform on The Level of Online Course Completion

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Abstract

Gamified Massive Open Online Courses (G-MOOCs) is a Learning Management System (LMS) platform built on the gamification framework (MARC Gamification Framework) that has been proposed in previous studies based on various aspects of game elements, social learning, motivation and interactive theory learning environment (ILE). G-MOOC is a background element that can motivate them when taking courses in online learning. This program is intended to increase the intrinsic motivation of participants in completing their courses. Tests are carried out using the experimental group method using two indicators, namely the level of mastery of the course (performance) and the status of learning courses (Done/Not Done). To produce data from used indicators, researchers gave four weeks to take the course. The courses are compared with the LMS platform which has no gamification element (SIMOOC), the performance indicators are tested in the participant values between the G-MOOCs platform and the SIMOOC platform. Based on the results of the test, the platform is a platform that is better and different compared to the SIMOOC platform. Judging from the status of the participants, out of 71 participants who took the course on the G-MOOC platform there were 46.5% which were declared completed, while on the SIMOOC platform only 7% had completed status. It can be concluded that the G-MOOC platform can increase the effectiveness of the value courses compared to the SIMOOC platform.

Keywords : G-MOOCs, Learning Management System, effectiveness, motivation

Background

One of the right online learning platforms to help free and open distribution of learning is the Massive Open Online Course (MOOC). According to Kaplan & Haenlein (2016), MOOC gives freedom to students because of its open nature and not limited number of participants (Porter, 2015). MOOC has features that distinguish it from other online learning platforms, including the MOOC providing an opportunity for anyone to be able to take courses offered without being limited by the number of participants, age, gender, nationality and level of education. In addition, MOOC is free, and can be accessed from anywhere via the internet by adopting conventional instruction-based learning methods and content provided within a certain period of time.

Although MOOC has various advantages, the MOOC platform also has weaknesses. One disadvantage of MOOC online-based learning is the low level of willingness of students to complete the course compared to the number of students taking courses (Jordan, 2014; Xing, Chen, Stein, & Marcinkowski 2016; Hone & El Said

2016). One of the factors that influence the low level of completing the course is the problem of lack of motivation (Visser et al., 2002; Gené, et al., 2014; Monterrat et al., 2014; Zheng et al., 2015). This is due to the assumption that online- based learning media as electronic media is passive which only presents images, videos and text, so it is not much different from independent learning using books (Miller, 2013).

The efforts used by researchers to increase motivation for online based learning are very diverse. One of them is by using the gamification approach. Gamification is a method that utilizes game elements and designs to be adopted into non-game contexts (Deterding et al. 2011). However, efforts to use gamification as an approach to encourage increased motivation are not easy. If it is not designed properly it will cause a decrease in user motivation. The use of gamification elements, especially elements of rewards such as points, badges, leaderboards (PBL) in online based learning will lead to the emergence of demotivation of learners (Werbach & Hunter, 2012; Landers & Landers 2014; Dichev et al. 2014). The reason is that the side effects of element rewards only affect student motivation in the short term, if students have got all the rewards they will not be motivated again (Borges et al., 2016; Kim et al., 2015; Nicholson, 2015). Therefore, caution is needed in determining the types of game elements to be used, as well as the mechanism for using game elements by referring to the motivation theory approach.

Gamified Massive Open Online Courses (G-MOOCs) is a platform built to solve motivational problems in online learning. G-MOOCs are built based on the MARC framework (Meaningful Purposes, Autonomy, Realatedness & Competence to Mastery) proposed by Saputro, et al., (2019) which focuses on efforts to increase the motivation of course participants in completing online courses. But the platform that has been built has not been tested directly, so that the effectiveness and up-to-date of G- MOOC has not been well measured. Therefore it is necessary to do a testing process on the G-MOOCs platform so that the effectiveness and usefulness of the platform can be tested and measured properly. So the purpose of this study is to test the G-MOOCs platform that has been built to determine the effectiveness and usefulness of the platform in dealing with the problems of low motivation and high drop out rates in online courses.

Hypotheses

In the study there are two groups of hypotheses, each group has two hypotheses. The first hypothesis group regarding the effectiveness of the G-MOOCs platform was compared to the non-gamification platform in terms of value, while the second hypothesis group regarding the percentage of students who completed the course on the G-MOOCs platform compared to the non gamification LMS platform.

Hypotheses 1:

H0: The percentage of students completing courses on the G- MOOCs platform is greater than the LMS platform without the gamification framework.

H1: The percentage of students who complete the course on the G-MOOCs platform is less than the LMS platform without the gamification framework.

Hypotheses 2:

H0: Students in learning on the G-MOOCs platform are more effective in terms of value compared to the LMS platform without the gamification framework.

H1: Students in learning on the G-MOOCs platform are not more effective in terms of value compared to the LMS platform without the gamification framework.

Research Method

This section will explain in more detail the research methods in this research. Previous research carried out by researchers was the stage of investigation and design stage, so that in this study the focus was on the last stage, namely the evaluation phase. In this study involving students of Amikom Purwokerto University in the information system study program to evaluate the G-MOOCs platform that had been built. The evaluation results from the G-MOOCs platform will be compared to platforms that are built without using gamification elements.

The number of students in the information system study program at Amikom Purwokerto University were 142 students, the population was randomly sampled, 71 student samples to evaluate the G-MOOCs platform, and 71 other student samples to evaluate platforms that were built without using gamification elements. Figure 1 shows an overview of student data based on sex on the two platforms that will be evaluated.

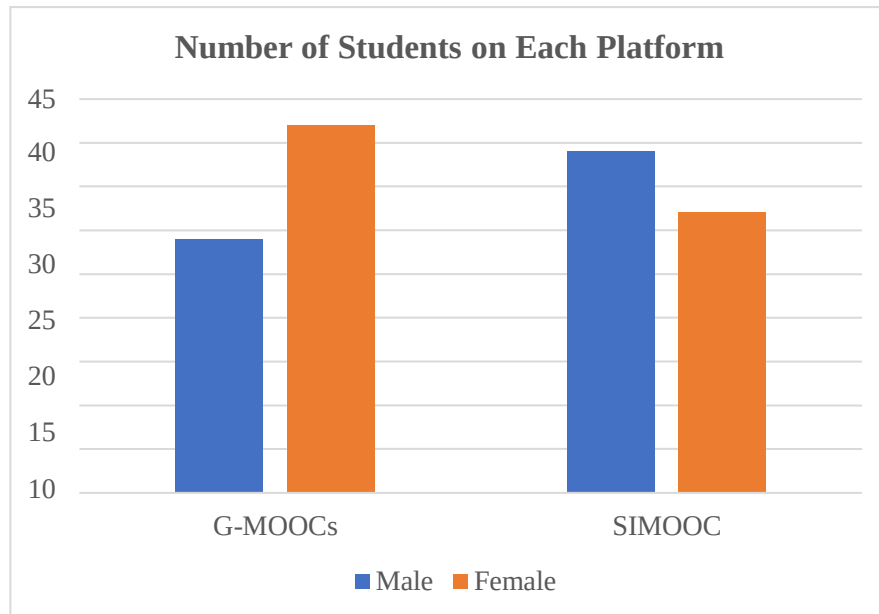


Image 1. Number of students on each platform

Based on Figure 1 above, the number of male and female sex students who take courses on the G-MOOCs platforms are 29 and 42 respectively, while on the SIMOOC platform (platforms that do not contain gamification elements) the number of consecutive men and women according to 39 and 32. Students on both platforms get the same treatment, where they are given one month to take the course, in one month it is divided into four topics, each subject has ten sub-topics. The material they learned on each platform is about information system security, the material presented in the form of videos on each sub-topic. If students have completed the course in one subject, students are asked to complete the exam regarding the material that has been studied before. So each student will take the exam four times, and get a score of four on four subjects.

There is no compulsion to complete the course and rewards given to students if they can complete the course on each platform, students are asked to take courses according to their interest in platform use. The test results from the four subject matter topics on the G-MOOCs platform will be compared with the results on the SIMOOC platform. The comparison aims to determine the average value on the G-MOOCs platform whether it is significantly different from student grades on the SIMOOC platform. Inferential statistics such as independent t-test are used to determine the difference between the averages of two groups in quantitative parametric variables, the group is the value generated from the G-MOOCs platform and the SIMOOC platform. So that it can be seen the level of effectiveness of the platform in terms of value.

Result And Discussion

Based on the results indicated, that of 71 samples of students who took courses with information system security materials using the G-MOOCs and SIMOOC platforms for one month, not all students were interested in completing the courses offered on both platforms. However, there are differences in the percentage of students who have completed courses on the G-MOOCs and SIMOOC platforms. Figure 2 - 5 shows the number of students completing from week one to week four on the G-MOOCs and SIMOOC platforms.

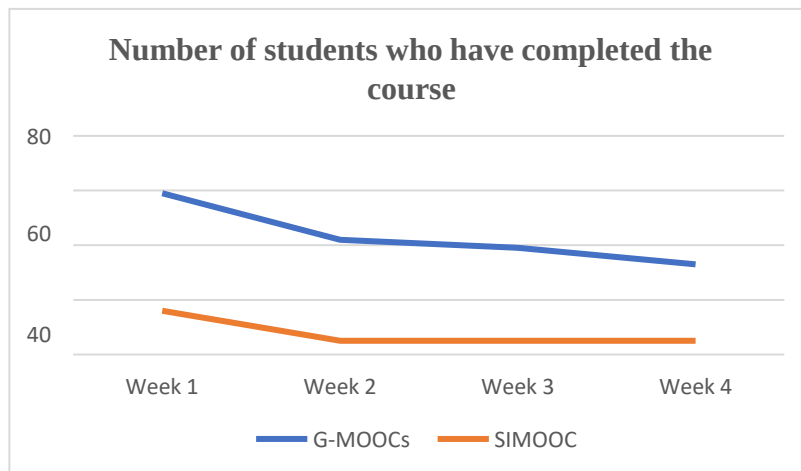


Image 2. Number of students who have completed courses on the G-MOOCs and SIMOOC platforms

Based on Figure 2, the number of students completing courses from week 1 to week 4 has decreased, this has happened on the G-MOOCs platform, while on the SIMOOC platform it has only decreased from week 1 to week 2, from week 2 to week 4 there are no changes the number of students completing the course. However, judging by the large number of students who complete the course, the G-MOOCs platform is always higher every week. There are also many differences in the number of residents, the difference between students who completed the course in weeks 1-4 between the G-MOOCs platform and the SIMOOC platform respectively 43, 37, 34, and 28. Students who complete the course until week 4 each The platform is a student who has completed weeks 1, 2, and 3, because the system is designed so that students take courses in sequence, according to the material prepared. However, there are students who do not complete until Sunday 4. Figure 3 shows the process of students completing all material on the G-MOOCs and SIMOOC platforms.

Based on the final results obtained, the percentage of students who complete the course on the G-MOOCs platform is as much as 46% and SIMOOC is less than students who do not complete the course, because only 7%. There are several factors that cause there are still many students who do not complete the course, based on the results of interviews with students who did not complete the course, the researchers concluded several factors that could cause students to only complete some material.

- 1) Time, too short time to complete the course with the amount of material offered, while as students there are still many activities or work that they have to complete, both college assignments and other additional activities.
- 2) Video quality, because researchers are not focused on how to produce interesting learning videos, so the material presented by the researchers on both platforms is downloaded from youtube.com.

Even though this happens, the percentage of students who complete the course on the G-MOOCs platform is greater than the SIMOOC platform. The main factor of these results is of course because there is an element of gamification on the G-MOOC platform that makes students interested in exploring the platform by taking the courses provided. Unlike the SIMOOC platform, the LMS has no gamification element at all, so students feel bored in running the platform and taking the provided course. Based on Figures 3 and 4 it can also answer and prove the first hypothesis, that H_0 is accepted, so it is proven that the process of students completing courses on the G-MOOCs platform is greater than the platform that does not have gamification (SIMOOC), and H_1 is rejected.

When viewed in terms of the value produced, the gamification element can also make students get grades from exams per week better than student grades on platforms where there is no element of gamification. Figure 5 shows the average scores of students on the G-MOOCs and SIMOOC platforms every week.

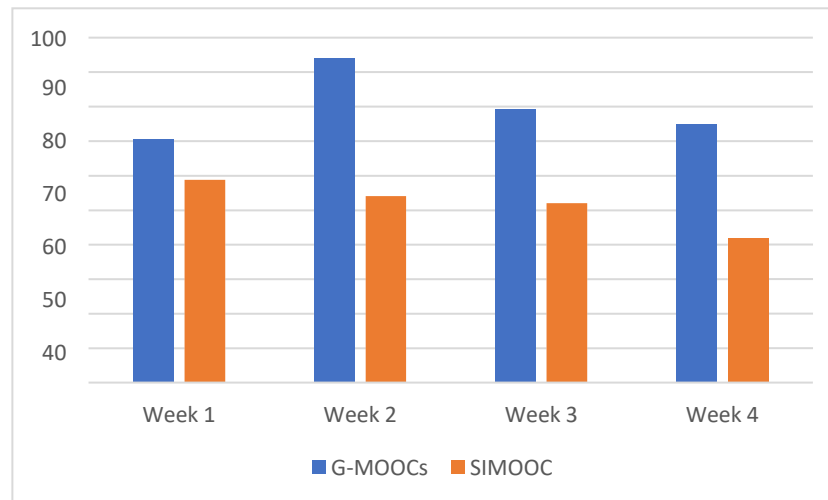


Image 3. Comparison of average student scores on the G- MOOCs and SIMOOC platforms

Based on Figure 5, the average student score per week on the G-MOOCs platform is greater than the student score on the SIMOOC platform. The value of the G-MOOC platform has experienced an increase from week 1 to week 2 and has decreased from week 2 to week 4, while student grades on SIMOOC platforms from week 1 to week 4 have decreased. The highest and lowest average student scores on the G-MOOCs platform respectively at weeks 2 and 1, while on the SIMOOC platform occur at week 1 and 4.

To prove the second hypothesis, an independent t-test was carried out. Testing for average differences is done every week. Table 1 - 4 shows the test results of differences in the average student scores on the G-MOOCs and SIMOOC platforms.

Table 1. Test The Difference In Average Value Of Week 1

	G-MOOCs	SIMOOC
Mean	70,50847458	58,75
Variance	301,4611338	238,3333333
Observations	59	16
Hypothesized Mean Difference	0	
df	26	
t Stat	2,628923641	
P(T<=t) one-tail	0,007095337	
t Critical one-tail	1,70561792	
P(T<=t) two-tail	0,014190673	
t Critical two-tail	2,055529439	

Table 2. Test The Difference In Average Value Of Week 2

	G-MOOCs	SIMOOC
Mean	93,92857	54
Variance	42,11672	680
Observations	42	5
Hypothesized Mean Difference	0	
df	4	
t Stat	3,411293	
P(T<=t) one-tail	0,013498	
t Critical one-tail	2,131847	
P(T<=t) two-tail	0,026995	
t Critical two-tail	2,776445	

Table 3. Test The Difference In Average Value Of Week

	G-MOOCs	SIMOOC
Mean	79,23077	52
Variance	53,25444	470
Observations	40	5
Hypothesized Mean Difference	0	
df	4	
t Stat	2,788958	
P(T<=t) one-tail	0,024682	
t Critical one-tail	2,131847	
P(T<=t) two-tail	0,049365	
t Critical two-tail	2,776445	

Table 4. Test The Difference In Average Value Of Week 4

	G-MOOCs	SIMOOC
Mean	74,84848485	42
Variance	57,00757576	670
Observations	33	5
Hypothesized Mean Difference	0	
df	4	
t Stat	2,819560474	
P(T<=t) one-tail	0,023924745	
t Critical one-tail	2,131846786	
P(T<=t) two-tail	0,04784949	
t Critical two-tail	2,776445105	

Based on Table 1 - 4, the results of the test of the difference in average student scores on the G-MOOCs and SIMOOC platforms resulted that the p-value was below the predetermined p-value, ie 0.05. These results indicate that the average student scores on the G-MOOCs platform are larger and differ significantly from the average student scores on the SIMOOC platform. With these results, so that it can answer the second hypothesis that H0 is accepted and H1 is rejected. It is evident that students who take online courses using LMS that have gamification elements (G-MOOCs) are more effective in terms of value compared to students who take online courses on LMS that have no gamification element at all (SIMOOC).

Conclusion

The LMS platform that was successfully built using gamification elements (G-MOOCs) was successfully tested to measure the percentage of success of students completing the course and the level of effectiveness in terms of value compared to the LMS platform that did not apply the gamification element (SIMOOC). Based on the results of testing carried out the element of gamification makes students interested in completing the courses provided and students can get good grades. For further research, it is necessary to pay attention to the testing time so that students can better explore the material and platforms, then regarding the video containing the material, it should be noted the content so that students are not only interested in the platform, but also interested in the material presented.

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Exploring the Students' Mathematical Communication Skill through Online Discussion Activities in Google Classroom

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Abstract

Being communicative is one of the 21st century skills that students must have to face challenges of the industrial revolution 4.0 era. Communication is also an important part of Mathematics education. Writing and discussions are some forms of activities that can help to improve the students' mathematical communication skills. Specifically, the discussion session should not only done face-to-face, but can be done online through certain applications such as Google Classroom. This research tries to explore the students' mathematical communication skills in solving the mathematical problems provided by the teacher through online discussions. An ethnographic approach is used in this research to observe the students' activities in Google Classroom in the online discussions both with the teacher and their peers. The results showed that the Google Classroom-assisted discussion sessions has good potential to support the improvement of the students' mathematical communication skills. Some positive potential for the students' active participation in the online discussions is that they were able to construct their knowledge to understand the mathematical concepts shown by finding mathematical solutions to mathematical contextual problems provided by the teacher. They were also increasingly accustomed to solving mathematical problems related to their real life.

Keywords : *mathematical communication skill, online discussions, Google classroom, mathematics learning, junior high school*

Background

The article consists of 4000 – 5000 words including the preface, research method, result, discussion, conclusion, and suggestion. Preface itself explain the background of the article, literature review, supporting theory and the purpose of writing. Article is written in essay form without numeric and alphabetic format to separate or to mark the new chapter. If there is a need to put numbering or bullet list kindly use (1), (2), etc. All citation on this article is using APA style. The impacts of the 4.0 industrial revolution on the educational world in Indonesia are getting higher from day to day, shown from the many educational innovations that utilize technology to support the teaching and learning activities. Schools as the forefront of the field of education are required to be able to prepare more skilled and competent learners of 21st century skills, known as 4C: critical thinking and problem solving, creative thinking and innovation, communication, and collaboration [1]. With these skills, the students are expected to be able to face the challenges that are emerging in the era of the 4.0 industrial revolution as it is today.

Besides the schools, the teachers also play an important role in preparing the students to be technology literate, so that ongoing teaching and learning activities can adapt to the development of science and technology. The presence of technology helps the teachers in evaluating the learning outcomes, as in the OECD report [2] which

states that "... technology can amplify great teaching practice, but great technology cannot replace poor teaching", therefore "... it takes educators time and effort to learn how to use technology in education while staying firmly focused on student learning." The teachers need to work hard to integrate the technology in the teaching and learning activities, because the students' learning process remains a top priority. In the context of mathematics learning, the teachers' role is not only to help the students constructing their knowledge, but also encouraging them to be actively involved in practicing their high-level cognitive skills [3, 4]. It is important for the teachers to have a good understanding of technology in order to facilitate them in supporting the learning process that is meaningful to their students [5]. Thus, the teachers are expected to be able to design a learning program that is rich in information and relevant in mathematical activities in school.

Mathematical Communication

Communication is an exchange of information done both verbally and non-verbally [6]. The flow of information is constantly adjusted according to the development of the topic being communicated. Mathematical communication is the ability to convey certain mathematical ideas orally and in writing [7]. So, writing and discussions are part of communication that can help to improve the understanding of mathematical concepts [8]. By writing, the students can articulate their mathematical problem solving strategies, so that they are able to improve procedural knowledge and generate cognitive benefits in general. Meanwhile, through the discussion, the students can reflect on the mathematical concepts they have learned. The discussions also allow them to become more familiar with certain ways of describing steps for finding mathematical solutions. Thus, the discussion activities give the wider opportunity to become more knowledgeable [9].

Mathematical communication skills can be divided into three categories [7]: (1) writing (written text), which explains the ideas or solutions of a problem or picture using their own words; (2) drawing, which explains ideas or solutions to mathematical problems in the form of drawings; and (3) Mathematical expressions, to express daily problems or events using the language of mathematical models. One way to measure the students' mathematical communication skills is by delivering exploratory, transfer, elaborative and applicative questions [10].

Google Classroom

Google Classroom is a free web service developed by Google to support teaching and learning in the classroom to be more productive and meaningful [11]. Using Google Classroom, the teachers can provide online assignments, increase collaboration among their fellow teachers, and their students and among the students, and foster communication with the students at all times. The teachers can create virtual classes, distribute assignments, send feedbacks and see everything within one media. The flexibility and many features offered by Google Classroom make this application considered practical to support learning activities [12].

The technology like Google Classroom can make the students to be more receptive to the learning materials. Baskerville [13] states that the application of technology in the classroom must provide opportunities for the students to make their learning experiences more meaningful, for example exploring information from digital media to get new ideas and build knowledge. The teachers in this case need to use an appropriate learning strategy in order to create interesting and effective learning atmosphere. The interactions and discussions between the teachers and students and / or among the students can no longer be held just at school, but can also be online anywhere and anytime. In this research, the researcher has chosen the Google Classroom application as a tool to improve the students' mathematical communication skills through blended learning activities.

Research Methods

This research used an ethnographic approach. This research observed how the students used their mathematical communication skills through active participation in virtual learning space in Google Classroom. The ethnographic approach is considered appropriate because it has an "intimate nature" [14], where the

researcher is directly involved on the field for some times and interacts directly with the research subjects at the observation site. Such an approach allows the researcher to explore aspects of the phenomenon of students' learning process. Ethnographic research also offers a variety of procedures that provide convenience and flexibility to be applied in the education field [15].

A total of 35 seventh grade students of SMP N (State Junior High School) 33 of Semarang city were involved in this research. The selection of participants was done using purposeful sampling technique [16] namely the selection of research participants is adjusted to the school where the second author is currently working. The data collection techniques were carried out using observation participants, students' interviews, documents and online posting. The data that had been collected were then managed collectively using NVivo software. Qualitative content analysis was used as a descriptive approach to identify codes and then find the theme. Trustworthiness check was also carried out by referring to the interpretation and the extent to which the researcher accurately described the viewpoints, thoughts, feelings, intentions, and experiences of the research participants [17].

Results

The teacher in every teaching and learning activity always delivered a mathematical problem, both to reinforce the concept and that was applicable to measure the students' mathematical communication skills. Some practice questions were included in Google Classroom, and some others were delivered directly in the classroom. Figure 1 is an example of a mathematical contextual problem posted online by the teacher in Google Classroom. The problem is related to the topic of Types of Angles and Inter-Angles Relations.

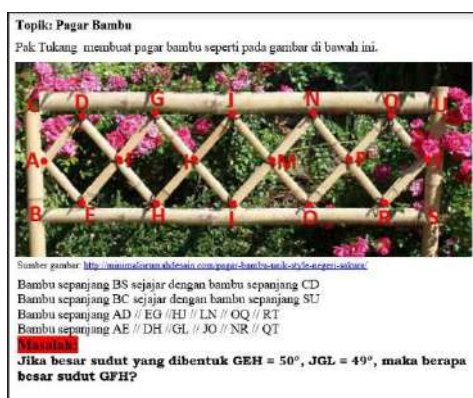


Image 1. One of Mathematics questions posted in Google Classroom

The question in Figure 1 got 23 responses. Figure 2 is a discussion section of a student and the teacher in Google Classroom

Agung : I get 100° , because I make 49° as an integer, so it becomes 50° , which means $50^\circ + 50^\circ = 100^\circ$

Teacher : Would you please explain to us through the picture if 49° should be made into an integer or not? an integer

Reynoll : 99°

Guru : Reynoll, please tell us why you only state your answer without any further explanation.

Image 2 *The dialogues between the students and the teacher in Google Classroom*

From the excerpt in Figure 2, Agung seemed to be able to express his idea. However, his mathematical expression that he conveyed in the comment column was still unclear. Meanwhile, Reynoll only presented the final result of the calculation without giving any explanation. From this conversation, it appeared that there was a shortcoming of Google Classroom that could not include images, so the students could not upload the results of their calculations. The teacher also followed up on this finding, by asking Agung and Reynoll to explain the results of their answers in front of the class in a face-to-face session.

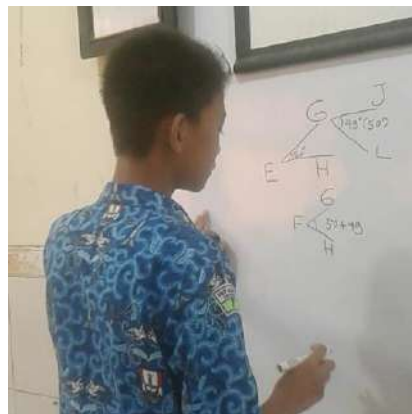


Image 3. *Agung explained the result of his mathematical solution*

Agung tried to explain why the answer was 100° . From the explanation given, Agung had been able to compose the mathematical communication through the presentation of the angles of JGL, GEH and GFH, but he had not been yet able to explain in detail the relationship among the three angles, even though the final result was correct.



Image 4. Reynoll presented the result of his mathematical solution

Meanwhile Reynoll, on the next occasion, had been able to describe the angles of JGL and GEH, but from the picture presented, the direction of the GEH angle was not in accordance with the problem given. The teacher then gave a follow-up question as to why he decided that the GFH angle was 99° . Reynoll had not been yet able to explain in more detail about this result. He could only conclude that the magnitude of the angle of GFH was obtained from the angle of JGL plus the angle of GEH.

The analysis of the perspective of mathematical communication skills showed that the students already enabled to explain the parallel lines needed to resolve the magnitude of the GFH angle. They had also been able to express their mathematical ideas which were able to find the angles needed to determine the magnitude of the GHF angle. However, they had not been yet able to arrange sequence steps to obtain mathematical solutions precisely. In addition, they also had not been able to express verbally about the types of angles needed, namely the facing angles. Presentation of the angle images provided by the students when they conveyed their mathematical solution steps also had not been able to reveal the expected answers.

The teacher in this activity used a lot of open-ended questions, such as "can you give an explanation ...", "Please describe it through pictures ...". These types of open-ended questions, such as those presented by Cai, Jakabcsin and Lane [18], are types of questions that can be used to explore the students' mathematical communication skills

On the topic of Social Arithmetic, the teacher also provided practice questions posted online in Google Classroom. Figure 5 is a type of social arithmetic problem given to the students and some comments from them.

Mr. Hamid sold his motorcycle for Rp. 10,800,000.00 with a loss of 10%. What was the purchase price of his motorbike?

Abhinaya : Selling price = 10.800.000
Discount % = 10%
Purchase price/selling price = $100/100-10\%$
Purchase price/10.800.000 = $100/90$
Purchase price = $10.800.000 \times 100/90 = 12.000.000$

Putri : Selling price = Rp10.800.000,00
Loss percentage = 10%
Question:
Purchase price of the motorbike = ... ?
Answer:
Loss value = loss percentage $\times$ purchase price
Loss value = purchase price – selling price
Therefore, purchase price – selling price = loss percentage $\times$ purchase price
Purchase price – Rp10.800.000,00 = $10\% \times$ Purchase price
Purchase price – Rp10.800.000,00 = $\times$ Purchase price
Purchase price – Rp10.800.000,00 = $0,1 \times$ Purchase price
Purchase price – 0,1 (Purchase price) = Rp10.800.000,00
 $0,9$ (Purchase price) = Rp10.800.000,00
Purchase price = $\text{Rp}10.800.000,00 \times 10/9$
Purchase price = Rp12.000.000,00
Therefore, the purchase price of Mr. Hamid's motorcycle was Rp12.000.000,00

Image 5. Type of social arithmetic question and summary of some students' responses

The above posting had been responded for 38 times. The type of questions given was a contextual mathematics problem, where the teacher connected the real world problems with the mathematical concepts. From Abhinaya and Putri's responses, both showed the same answer but in different steps. The steps to find a mathematical solution from Abhinaya were shorter than Putri. Both of them were able to present their answers using mathematical symbols and expressions. Putri's steps were more coherent and clear. In NCTM [19], it is stated that to analyze mathematical communication skills, the students are not only seen from their ability to use mathematical language both written and oral, but also the mathematical symbols and expressions, as well as the presentation of clear mathematical ideas. In this case, Putri had been able to use her mathematical communication skills well to answer the mathematical problem given.

Conclusions

This research has explored the students' mathematical communication skills through discussion activities in Google Classroom. This research has also provided evidence that the Google Classroom-assisted discussions have been able to foster the students' mathematical communication skills. Through online discussions, the students have demonstrated their mathematical communication skills in solving mathematical problems. The level of skill of each student was surely different. Some were able to briefly explain their mathematical steps and some had succeeded in finding mathematical solutions by searching clearly using good mathematical languages, using correct mathematical symbols and expressions, and with coherent steps. The role of the teacher in Google Classroom- assisted online discussions was crucial. To explore the students' mathematical communication potential, the teacher must use open-ended questions. The type of commands in the questions given to the students must also be in the form of open-ended tasks. This study used purposeful sampling to select the research participants, so there are still some limitations. The results of this research are limited only to the students involved in this study and cannot be generalized.

Acknowledgement

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Supporting Teachers' Competence in Designing Learning Activities to Facilitate Students' Engagement in Online Environment

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Abstract

The new normal in education requires teachers, parents, and students to carry out online learning by utilizing various media and learning models different from before. To ensure that students continue to receive good learning services, teachers need to be equipped with technological and pedagogical knowledge to support the implementation of online learning activities during the pandemic situation. This study aims to develop online training that can equip teachers to become designers of collaborative and engaging learning activities with the help of digital technology. The method used in this study is the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The subjects are teachers who have experienced and implemented distance learning education during the pandemic. Data collection techniques were obtained from the results of tests and questionnaires. The data analysis technique used is descriptive statistics and inferential statistics. The product produced in this development is an online training that can develop the teachers' ability to design lessons that can facilitate students' engagement. The study results indicate that the product developed has a good validity value to be used at the implementation stage. The implementation results show that the online training has supported teachers in designing collaborative, innovative, and applicable learning activities. In addition, users show positive responses towards the activities in the online training. In conclusion, this online training can be considered valid and feasible and recommended to be disseminated for a wider audience.

Keywords: Online Training, Technology and Pedagogy Skills, Student Engagement.

Background

The Covid-19 pandemic has forced schools from 190 countries worldwide to close schools and stop all learning activities (World Bank, 2020). As a result, more than 1.7 billion students are forced to study from home. In a very short time, educators must find ways to ensure that students are still learning. The majority of educators choose a solution to migrate face-to-face learning to online mode. Online learning, which requires careful preparation, has turned into Emergency Remote Teaching (ERT) with all its limitations. Hodges et al. (2020) explained that ERT is a temporary migration from face-to-face learning activities to alternative modes due to crisis conditions. Changes in learning from the face-to-face classroom mode to the online mode have created new problems for teachers and students. Based on the survey results in the preliminary study, three main problems were identified

in the implementation of online learning. The problems are the limited time that teachers and students have to adapt face-to-face learning to online learning and the lack of teachers' technological and pedagogical knowledge and experience in using technology tools for online learning. Most students become less motivated due to the fact that they are unprepared and have minimum resources to learn through online modes.

Teachers need to keep changing their teaching styles and method because changes naturally occur in the content of what teachers teach, how students learn, and many aspects related to the teaching and learning process itself (Grundy & Robinson, 2004). Koehler and Mishra (2005) view that teachers' knowledge of technology is important and closely related to the teaching context. They believe that changes in education through technology integration cannot rely on the introduction of technology only. Instead, changes can occur through the way teachers teach using technology (Carr, Jonassen, Litzinger, & Marra, 1998). Departing from this view, they propose a framework to describe teachers' understanding of the complex interactions between technology, content, and pedagogy (Mishra & Koehler, 2006). Within this framework, the addition of technological knowledge (TK) to Shulman's PCK is considered an integral part of the teaching profession. TPCK is about how teachers incorporate technological knowledge into the structure of pedagogical content knowledge and the surrounding context (Koehler & Mishra, 2006). Knowledge is considered as a tool for designing certain goals. Polly & Brantley-Dias (2009) explained that the TPACK framework refers to what teachers do and what teachers know. Integrating technology into the classroom requires a broader and deeper understanding of the interactions among the TPACK elements (Mishra, Peruski, & Koehler, 2007). To support teachers in integrating emerging technologies into their teaching effectively, there is a need for teacher to understand better the underlying factors that can encourage and hinder technology integration. The combination of the three types of teacher basic knowledge advocated by the TPACK framework is content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK).

In the context of this study, the online training that will be developed aims at supporting teachers' technological and pedagogical knowledge (TPK) to take full advantage of the use of technology. In this training, teachers are not only given procedural knowledge to operate certain technology applications. Instead, they will be involved in in-depth discussions and explorations to be able to evaluate the potential and affordances of technological tools before deciding to integrate them into learning activities.

Referring to the urgency to develop teacher competencies as discussed above, this study aims to develop online training that can equip teachers to become designers of active and collaborative learning activities with the help of digital technology. Through this training, teachers will be equipped with the technological and pedagogical knowledge to explore and evaluate the potential of digital technology tools before integrating them into an online learning design.

Research Methods

This study utilized the ADDIE (Analysis, Design, Development, implementation, and Evaluation) model for developing the model of online training. The following is the research design and development of the ADDIE model (Branch, 2009, p. 20).

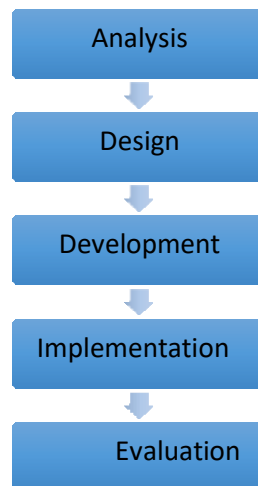


Image 1. *The Flow Of The Study*

The stages of the online training development model are as follows:

- a. **Analysis**
The analysis stage in this study is carried out by conducting literature studies and surveys regarding the target needs, the learning environment, students' needs, and technological advances.
- b. **Design**
At the design stage, the first draft of the module was created in the form of an initial syllabus which will be used as the underlying document in the following development process.
- c. **Development**
The development stage involves creating the product designs that have been previously designed in the first draft. In the previous stage, the product produced was still in the conceptual stage, while in the third stage, the framework was made into a product that was ready to be applied.
- d. **Implementation**
The implementation stage of ADDIE research and development consisted of activities conducted in the online class to obtain feedback from the product development results in the second draft.
- e. **Evaluation**
The evaluation stage of ADDIE research and development is carried out to provide feedback to product users so that revisions can be in accordance with the evaluation results or needs that the product has not met.

Findings And Discussions

The results of this study will be described using the stages of the ADDIE model, and the details are as follow:

a. **Analyze**

This stage was utilized to get the needs analysis on the kinds of online training which is required by teachers in conducting distance learning education. The need analysis was delivered to several teachers joining focus group discussions related to the teachers' perception of Emergency Remote Teaching delivery. The result of this needs analysis were used as the basic foundation in designing the online training for teachers. The followings are the result of the needs analysis, which was generated using Mentimeter.

- (1) The result of the needs analysis of teachers' satisfaction with the delivery of online learning activities for students obtained from the survey is depicted in Figure 2. Drawing from the data below, it can be seen that most of the teachers feel unsatisfied (44%) with their online learning process. Only a few (8%) admitted that they feel extremely satisfied with the online activities being carried out with their students.

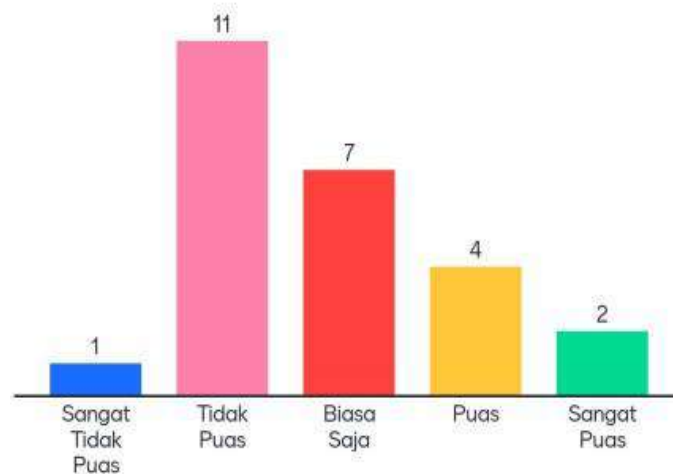


Image 2. Teachers' Satisfaction in Carrying Out Online Learning

- (2) The result of the needs analysis of teachers' expectations on the implementation of online learning is depicted in Figure 3 below. In terms of expectation, it is obvious that teachers wish to have a more interactive class which are interesting, fun, and enjoyable for their students. In this manner, it can be inferred that teachers need a kind of teacher professional development program that can help and support them in designing such online learning, which might boost students' engagement in their classroom.



Image 3 Teachers' Expectations on the Implementation of Online Learning

- (3) The result of the need analysis on the aspects of online learning that teachers wish to improve in their online class activities can be seen in figure 4 below. Drawing from the description below, it can be seen that teachers wish to improve the quality of their online learning which has the

potentials to improve the students' engagement and motivation to learn. They believed that by having a visually attractive and interactive lesson, students would not feel bored in the classroom. In addition, they also need to get some knowledge on designing online learning activities that do not require many zoom meeting sessions, as it is considered high bandwidth and expensive.



Image 4. *The aspects of online learning that teachers wished to improve from their online classes.*

The result of the needs analysis shows that many teachers still feel unsatisfied with the online learning process that they carried out. The information is reinforced by the results of the analysis on teachers' expectations on the ideal online learning and the aspects of online learning that they wish to improve from their current implementation.

To respond to the result of the needs analysis, this online training was designed to facilitate teachers to be able to design low bandwidth online learning activities which are fun and engaging for their learners. The online training is designed using E-Learning SEAMOLEC as the platform to provide asynchronous activities throughout the training. The decision to conduct online training is in line with the recommendation from UNESCO (2020), which states that online learning can help stop the spread of the virus by avoiding direct interaction between people. UNESCO (2020) has also provided a list of free educational platforms and resources that can be used for online learning according to the needs of each educational institution, providing care and social interaction during school closures.

b. Design

The design stage is the creation of an online training prototype in which the product is generated from the course syllabus. The online training was designed in terms of content and also the visual display of the product. The training content and the task were designed in the bite-size mode, allowing participants to be able to access and do the tasks and activities in chunks. Table 1 below shows the syllabus as the guidance for the design and development process of the online training.

Table 1. Online Course Syllabus

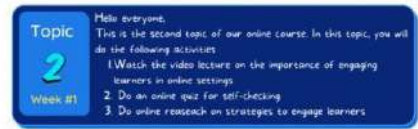
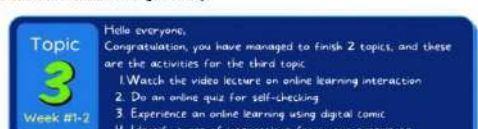
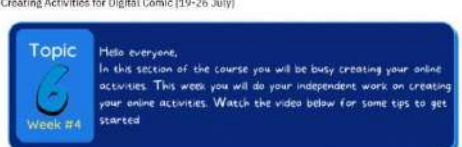
Week	Topics
1.	Introduction to the online course
2.	Foundations of Engaging Online Learning
3.	Interaction in Online Learning (Student-Material, Student-Student, and Student-Teacher)
4.	Exploring Technology Tools For Engaging Online Learning
5.	Planning Digital comic For Engaging Online Learning
6.	Producing Activities for Digital comic
7.	Creating Digital comic for Engaging Online Learning

Each topic on the syllabus was then broken down into a series of activities, ensuring that participants could follow the activities one by one in a self-paced mode. The initial parts of the materials in the online training contain the introduction of instructors and tutors and the details of each meeting consisting of 6 weeks of activities. The materials and activities in each meeting consisted of video lectures, interactive activities, and some individual tasks. A telegram group was also utilized to facilitate easy communication among participants and tutors.

c. Development

The development stage is the stage in which the development process was carried out generated from the prototype in the previous stage. In addition to using Seamolec E-Learning as the main platform of the training, some additional applications were utilized to support the production process. The series of activities designed in the previous stage were converted into storyboards before the production of learning objects was conducted. Digital applications such as Canva, Prezi Video, Zoom, Vocaroo, Bitmoji, Google Slides, and Youtube were utilized and the production process. Table 2 shows the online training interface on E-learning Seamolec, which was created in accordance with the syllabus.

Table 2. Display of Online Course in LMS Seamolec.

No	Online Course Interface	
1	Digital Comic for Engaging Online Learning  Download the course syllabus here	Introduction to The Course [25-30 June]  Click the following icons to move on to the next activities
2	Foundation of Engaging Online Learning Interaction [28 June-4 July]  Click the icons below to go to the next activities	Interaction in Online Learning [1-10 July]  Click the icons below to go to the next activities
3	Stop and Reflect 	Technology Tools for Engaging Online Learning [5-11 July]  Click the icons below to go to the next activities:
4	Planning Digital Comic Project [12-18 July]  Click the icons below to go to the next activities	Creating Activities for Digital Comic [19-26 July]  Getting started!

5	Stop and Reflect	Feedback Continue
6	END SEAMEO SEAMOLEC Southeast Asian Minister of Education Organization Regional Open Files: 0 Forum: 5 Questionnaires: 2 Pages: 11 Quizzes: 2 Assignments: 2 Feedback: 1 Custom certificate: 1 Progress: 13/32	

Furthermore, after the online training content was finalized, validation was carried out by the online learning experts to get their judgment. The purpose of validation is to improve the quality of the online training product to suit the learning purpose. Based on the results of the expert trial, the detailed recapitulation of the validation results can be seen in the following figure.

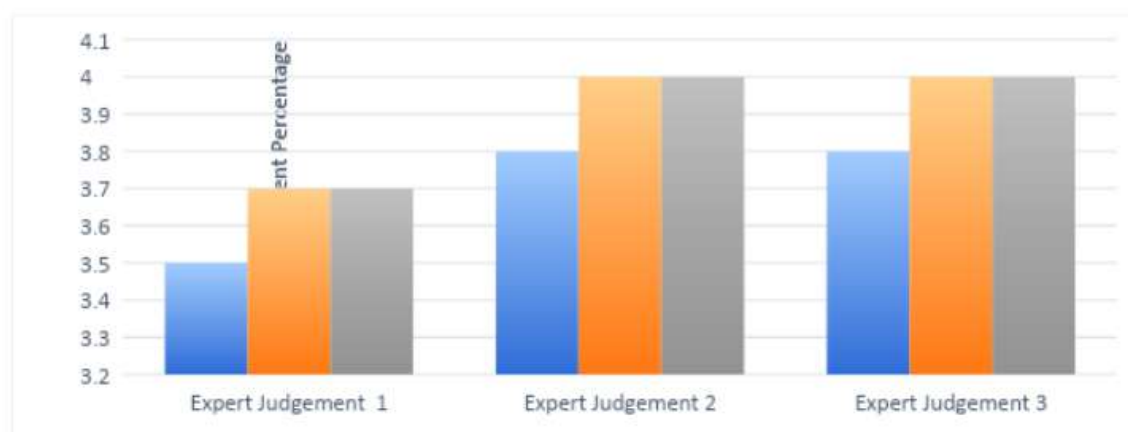


Image 5. Recapitulation of Assessment from Expert Judgment

The validator's comments and suggestions regarding the results of the quality of the online course are summarized in Table 3.

Table 3. Comments and Suggestions from Validators Regarding the Quality of Products Developed

No.	Comments and Suggestions
1.	There should be some tips on the most appropriate feedback strategies with lesson models like this and how to implement them.
2.	Some indicators can be given to teachers when engagement occurs well?
3.	In general, this online training module is well-organized and in accordance with the learning objectives. It may be necessary to give an optional extension reading about the material presented.
4.	Not many participants are active in the discussion forum: for example, when introducing themselves (in week 1) and responding to your learning experience with Digital comic (in week 2). Maybe they are “lazy” to type. There are no simple answers to respond to this issue. However, asking participants to record their voices and upload them to the forum might be a solution? It may also be necessary to give some kind of additional points for those who actively participate in the discussion forum
5.	Overall, the strength of this training is its kindness and ready-to-use and practice training materials.

Source: Expert Validation Questionnaire Result

Based on table 3, it can be described that the assessment results from Expert Judgment (validator) obtained an average percentage of 95% with valid criteria without revision. Suggestions from the overall Expert Judgment in table 3 are input for researchers in further development of this online training.

d. Implementation

The implementation stage is the trial stage for the online training participants. This stage aims to determine the applicability of online training in and evaluate the implementation of the training. Data on the applicability of the online training trial was obtained from the participants using the pre-experimental design method. In this design, only one class gets treatment, and then a post-test is given to see the effect of the treatment given. The treatment given is conducted within the online training, then the post-test is given in the form of a project to make digital comics. This project in this study aims to explore the participants' ability

to create a digital learning environment using digital comics. The ability to create can be seen through the participants' ability to arrange elements into a coherent and functional whole (Krathwohl, 2010,

p. 128). The ability to create can generally be done if an individual thinks in line with previous learning experiences. The hallmark of the ability to create is producing a work of creative expression that is original and distinctive. This method is used to see the effect of online training on the participants' ability to create digital learning in the form of digital comics. The following is a recapitulation of the product scoring results produced by the participants.

Table 4. Recapitulation of Online Course Trial Results

No.	Name	Score	No.	Name	Score
1.	YL	92	11.	SRH	96
2.	YPR	75	12.	RSPMP	88
3.	SS	88	13.	MMSPMP	67
4.	M	83	14.	LMS	71
5.	AKSPMA	96	15.	US	92
6.	IN	71	16.	MAS	88
7.	WM	71	17.	PI	96
8.	FS	88	18.	LFBAH	88
9.	MH	71	19.	SF	83
10.	MG	96	-	-	-
Amount		1600			
Average		84			
Max		96			
Min		67			

Based on Table 4. The result of the recapitulation of the product analysis shows that the average score was 84, the highest score was 96, and the lowest value of 67. Based on the analysis described, the test results and test the validity of the online training product have high quality and are suitable for use for the wider audience. To evaluate the effect of the online training, an inferential statistical test was performed through a normality test, homogeneity test and t test. Data analysis was carried out with the help of SPSS 26. The effectiveness of the developed online training module can be analysed using the following statistical tests:

1. Normality Test

The purpose of the normality test is to determine whether the class data is normally distributed or not. Data analysis to determine the ability to create using SPSS 26, namely by using the Shapiro Wilk test . The results of the data normality test are shown in Table 5.

Table 5. Normality Test Results

Product Creation Ability	df	Shapiro-Wilk	Information
		Sig.	
Online course participants	19	0.15	Normal Distribution

Table 4. 6 shows that the data significance value for the class-tested using SPSS 26 using Shapiro –Wilk is α ($0.150 > 0.005$). Thus, it is normally distributed. Therefore, the following step is to do a homogeneity test.

2. Homogeneity Test

The purpose of the homogeneity test is to determine whether the research sample is homogeneous or not. A homogeneity test was performed using SPSS 26 by doing the Levene test. The results of the homogeneity test are presented in Table 6

Table 6. Homogeneity Test Results

Data	Levene Statistics	Df1	Df2	Sig.	Information
Product Creation Ability	0.000	1	17	0.276	Homogeneous Data Variance

Table 4. 6 shows that the value of the data significance for the class-tested using Levene is $\pm$ ($0.000 > 0.005$), so that the data is in accordance with the test criteria that it can be concluded that the research sample comes from homogeneous data variance. So the next step is to do a parametric test with the help of SPSS 26, namely the one-sample t-test.

3. T-test

The data from the normality test shows that the class data is normally distributed and has a homogeneous variance. Hypothesis testing is carried out using parametric statistical tests, namely by using the One-Sample T-Test with the help of SPSS 26. The following calculation results are presented in Table 7.

Table 7. Testing the Effect of Hypothesis

	t	Sig. (2-tailed)	Decision
Product Creation Ability Posttest	3.980	0.001	There is an influence

Table 7. shows the results obtained a significance value of 0.001 with a significance value of $\pm$ ($0.001 < 0.005$), so it can be concluded that the use of online training products significantly affects the ability to create digital comics.

Learning is an effort to facilitate intentional learning to achieve predetermined learning goals/achievements. In designing blended learning, the combination carried out must achieve learning objectives (Saadatmand et al., 2017), defining learning as a learning condition that is intentional to encourage the achievement of predetermined learning objectives. Thus, the predetermined goals or learning outcomes play an important role in designing an effective learning system. Therefore, the researcher places the formulation of learning objectives or outcomes as the first step. Researchers also provide templates and examples of how to make digital comics according to learning objectives. The effect of using Moodle in this training is reinforced by a study stating that students view Moodle as a learning tool that provides freedom in choosing the right time to do assignments. In addition, the self-paced learning modes make students more independent in finding information, helps students develop positive attitudes, and provides motivation in learning to collaborate (Ani, 2013). Teachers who work in collaboration or in partnership with teachers from other schools have increased opportunities for learning (Fielding et al., 2005). In short, learning that involves collaboration among students causes reciprocity to make students share, develop minds more openly, and collaborate in working together to build ways to develop a practice.

e. Evaluation

In the final evaluation stage, a user experience test was carried out using a user response questionnaire. The use of an attitude scale questionnaire in this study aims to determine participants' attitudes towards the developed online training. This attitude scale questionnaire was given to online training participants who attended the training, used the Moodle online training, and created a digital comic product. The questionnaire on the participants' attitude scale towards the online course developed in this study consisted of 16 statements. The attitude scale consists of 8 negative statements and 8 positive statements. Participants filled out the attitude scale by ticking on the choices, namely, strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD). The average percentage of student responses to the online course developed in each aspect can be visualized in Figure 6.

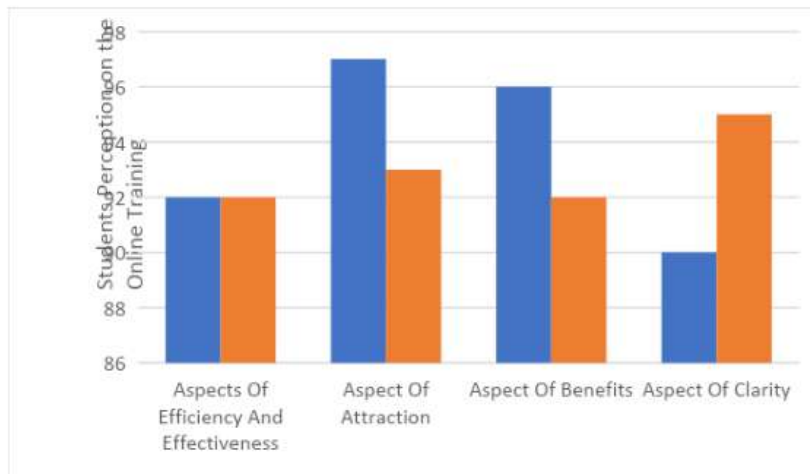


Image 6. User Responses to Products

Based on Figure 6, the data on student responses to the developed online course showed that students gave high approval to positive statements and disagreed with negative statements. Students strongly agree with the aspects of efficiency and effectiveness, attractiveness, usefulness, and clarity of orders on the online training. This means that students can easily understand the materials, projects, evaluation questions presented in the online training. Students agree that the statement regarding the presentation of online training and project creation activities can practice their ability to create learning in the form of digital comics. This indicates that the online training being developed obtained positive responses from the participants and can be used as an online training model for a wider scope. Furthermore, this online training is suitable for any teachers from different educational levels and subjects and is in accordance with 21st-century abilities and ICT competencies for teachers from UNESCO. According to UNESCO ICT Competency Standards for Teachers, in general, teachers must be able to combine ICT skills with pedagogical innovation, curriculum, and school organization. This means that a teacher must use ICT skills and resources to incorporate them into teaching, collaborate with peers, and in the long run, become an innovation leader in his institution. Participants of this online training felt motivated and enthusiastic about attending sessions because they were willing to be able to create interesting digital comics. The learning activities offered in the online training have attracted the participants' interest in learning. Mayer (2011) stated that online videos adapted to certain features of multimedia principles are very beneficial for the class (Prilop, Weber, and Kleinknecht, 2020).

Finally, It can be concluded that in general, students' responses to the online training were positive. Students are very enthusiastic and excited to learn and participate in all the activities. The online training design, which was self-paced, bite-size, engaging, and collaborative, was considered useful for the participants. Participants feel that they have the freedom to discuss, explore, develop their creativity and imagination in expressing their ideas in the form of digital comics. This is in line with Baron (2002, p. 4), stating that the application of interactive technology in the learning environment is able to raise enthusiasm in the learning process. Zulvianda (2016) also mentioned that applying the material in the online module is easier to understand than reading a book, as long as the module is interesting and the instruction is clear. Based on the results of participants' responses, it can be concluded that the online training module is easy to use because it is user-friendly with the support of online course content integrated with web-based learning.

Nieveen (1997:127) stated that digital technology for learning purposes can be said to have high quality if it includes the characteristics of validity, practicality, and effectiveness. In addition, the learning environment should be designed in a way that learners get the opportunities to work with teachers, in groups, and individually. Thornburg (2014) created a metaphor for Learning spaces in online learning, including a campfire, watering holes, and caves where learning is presented in several ways, such as small groups, large groups, and

individuals where students can collaborate and work independently. This is in line with the study Macau at universities, where Moodle has significant benefits related to ease of use, output quality, trialability, and subjective norms. Student responses regarding the ease of using Moodle were significantly influenced by the complexity of the technology and the ability to experiment (Teo, et.al, 2019).

Conclusion

Research and development of this online training can be evaluated starting from the process analysis stage. Analysis of the needs of teachers showed the teachers' dissatisfaction in implementing emergency remote teaching due to the lack of ability to create interesting learning experiences for students. After obtaining the online training syllabus draft, the researcher begins to develop the product at the development stage. The results of the development stage were then tested for feasibility by the experts and obtained 95% results so that this online training is valid to be implemented. The implementation stage was carried out by testing the effectiveness of the products created by conducting research with the pre- experimental design method to determine the effect of the online course. As a result, participants show their ability to create digital learning through their digital comics. The results obtained are the influence of product use on the ability to create digital comic products for online course participants. The final stage is product evaluation using user response questionnaires to products that have been tested and used by online course participants. Drawing from the result, it can be concluded that, In general, students' responses to the online training were positive. Students are very enthusiastic and excited to learn in this way. The teaching and learning process is carried out flexibly, bite-size, engaging, and collaborative

Suggestion

Based on these findings, it can be concluded that the online training is highly recommended and can be used on a wider scale. The online training has the potential to be implemented and disseminated to teachers with different and specific levels of education starting from Early Childhood Education, Primary, Secondary and Higher education. The product feasibility testing phase should not only be carried out on teachers in general. However, it will be more beneficial if it is used for teachers, specifically for certain educational levels. Thus, students' responses as users of the resulting product in the form of digital comics can be identified. Thus, a study needs to be conducted to evaluate the effectiveness of the online training and the effectiveness of the digital comics as a digital learning tool.

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The Development of Open and Distance Learning Model based on the Common ASEAN Tourism Curriculum: Unit D2.TTG.CL3.11 “Lead Tour Group in a Responsible Manner”

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Abstract

Each country in the ASEAN region agreed to cooperate in various fields, including the economy, which was later called the ASEAN Economic Community (AEC). This step also leads to the disclosure of human resources and labor. For the sake of uniformity, it is necessary to standardize the competencies that apply in ASEAN, so that the mobilization of professional personnel can be realized properly. In the field of tourism, one of the efforts to support the AEC is the Common ASEAN Tourism Curriculum (CATC). In its implementation, CATC has not made much use of the development of technology, information, and communication, so it is necessary to develop learning strategies in the field of technology-based tourism, especially those that can be accessed more broadly and more easily. This research then aims to develop a open and distance learning (ODL) strategy in the tourism sector, as well as to formulate an open and distance learning model for vocational higher education in the tourism sector that is in accordance with the characteristics of the region. This research focuses on the tour operation division which is more specific in travel service, namely the competency unit “Lead Tour Group in a Responsible Manner”. The development of this model includes several outputs, such as e-module, podcast, demonstration video, as well as PPT and Voice over. Research data collection techniques were carried out through quantitative methods by having questionnaire, involving students who are participants of the ODL trial. The application of ODL for this is deemed to have been in accordance with the interests and needs of the participants' studies, but some learning media seems necessary to be added so that they can be accepted more clearly and increase participants' understanding of the presented material.

Keywords : CATC, ODL, Tourism, ASEAN Toolboxes, Tour Operation

Background

The free flow of goods, services, capital, investment, and skilled labor among ASEAN member states (AMS) is a result of the 2015 ASEAN Economic Community (AEC) in the ASEAN region so that welfare increases, poverty decreases, and socio-economic diversity improves. To support the 2015 AEC, ASEAN Tourism Ministers facilitate the free movement of professional workers in the tourism sector who are qualified and certified under the Common ASEAN Tourism Curriculum (CATC) (<https://atprs.org/atprs/>). The main

objective of this arrangement is to strengthen the tourism industry among ASEAN member countries through the development of human resources.

The implementation of CATC needs to be conducted at all levels of tourism education in all ASEAN member countries, especially in vocational education considering that vocational education is an institution that contributes a lot to professional candidates in the tourism sector. The United Nations World Tourism Organization (UNWTO) states that tourism (higher) education holds the potential to achieve customer satisfaction and also increase the competitiveness of tourism businesses and the region, if certain education and training are guaranteed (Maureen et al., 2009). This needs to be done to get professionals in the tourism sector who have the same standard. To support professionalism in the sector, it is important to deliver courses which are relevant to the industry's requirement. Beside involving the experts from the industry in the curriculum design process, the weight of practical activities must be adequate to enrich the student with the competencies before they join the industry (Krisnawati, et.al., 2020)

The implementation of CATC also needs to involve Information and Communication Technology (ICT) developments that have demanded the world of education to be able to adapt and innovate by utilizing technology in the learning process to suit the phase and need. Since the learners in ODL system are not directly involved in the regular classroom teaching-learning process and not having direct interaction with the teachers regularly, they are provided with adequate Learners Support Services, such as provision of study materials both in print media and audio visual forms, information services related to rules, regulations, procedures, schedules etc. (Kukreja & Gidwani, 2019). Utilization of ICT and innovation through Open and Distance Learning (ODL) can also expand the reach of information and knowledge and can overcome various problems in the world of education so that education can be more easily accessible. During Covid-19 pandemic, the development and implementation of ODL is being forced since face-to-face meetings that can usually be held are blocked due to circumstances that are not possible. Distance learning or distance education is not a future possibility that must be prepared by higher education, but a present reality that creates opportunities and challenges for educational institutions; a reality that offers students a wider choice of where, when, how and from whom they learn; the reality of making education accessible to more people (Mehrotra et.al., 2001).

ODL also allows for the resulting learning methods and models to be spread more widely. With the use of ODL, it is also hoped that the CATC that has been prepared together can be disseminated so that it can produce professionals in the field of tourism who have competencies that can be recognized and have a global reputation. To realize this, it is necessary to make efforts to incorporate CATC in the ODL system so that learning models and strategies are created, so it can be applied by educational institutions in each ASEAN member country. In addition to the term ODL, the change in the learning model from the classroom to the virtual space gave rise to the term Virtual Learning Environment (VLE). The goal of VLE is to make education available to wider population. In VLE, students not only able to access learning materials from remote locations at any time, but also can provide feedback to instructors about content and design (Kumar et al., 2002).

Based on the above background, the vocational education curriculum in the tourism sector has been stated in the CATC. However, not all of the curriculum in the CATC is contained in this ODL. To provide wider benefits to ASEAN member countries and ease of access to education, it is necessary to conduct a study so that learning models and strategies will be suitable for each region and produce professionals who have standardized competencies. In relation to tourism professionals and Southeast Asian context, ASEAN Tourism Ministers signed Mutual Recognition Arrangement on Tourism Professionals (MRA-TP) in November 2012 which designed to address the imbalance between supply and demand for tourism jobs across the ASEAN region and establish a mechanism to facilitate the mobility of skilled and certified tourism labour across the ASEAN region (The ASEAN Secretariat, 2018). It also aims to facilitate mobility of Tourism Professionals; encourage exchange of information on best practices in competency-based education and training for Tourism Professionals; and provide opportunities for cooperation and capacity building across ASEAN Member States (AMS).

This research aims to develop an open and distance learning strategy in tourism, as well as formulate a distance learning model that is open to vocational higher education in the tourism sector in accordance with regional characteristics. Preliminary study conducted by Arini et.al. (2018) concluded that Cambodia, Indonesia,

Thailand are ready to approach Distance Education on the implementation of Curriculum ASEAN Tourism Curriculum - ASEAN Qualification Framework Level II - IV. This research is then expected to provide benefits in the form of recommendations for open and distance learning strategies in the tourism sector, especially for higher vocational education, as well as recommendations for ODL models for higher vocational education in the tourism sector in accordance with regional characteristics.

Research Methods

This research is divided into several stages, starting with a study and review of all competency units in the ASEAN Toolboxes, then trying to find a unit of competence in the field of tour operation or travel service, so it was decided to develop a competency unit of Lead Tour Group in a Responsible Manner, considering that this competency unit is quite important to be mastered by professionals in the field of tour operation, especially in the field of guiding. Furthermore, the basic modules available at ATPRS in the form of training guides, trainee manuals, and assessor manuals are studied in depth, to determine study materials, learning materials and activities, delivery methods, and assessment techniques in accordance with the relevant competency units. After the learning model was compiled, this distance learning model was then tested on 10 students who took studies related to tour and travel. Each student is asked to access the online learning module based on CATC through the <https://catc.elearning.seamolec.org/> platform. Students involved in the trial are also asked to work on the available assessments for each performance criterion or sub-element in the competency unit. The duration of the trial lasted for one week. After participating in the trial, participants were asked to fill out an online questionnaire in the google form with some information that must be provided such as name, latest education, current job, and participation in training and education in the tourism sector as well as statements that must be responded to, such as the suitability of online learning materials with participant's interest, suitability of learning topics with needs, suitability of learning media with online learning contexts, quality of online learning display, clarity of online learning materials, quality of online learning materials, understanding of participants during online learning, ease of accessing material on the platform, quality of platforms in the implementation of learning online, the usefulness of the material for participant's knowledge, the usefulness of the material for participant's future (the world of work), the suitability of the assessment with the material. Participants were asked to respond to these statements by choosing one response, ranging from very good, good, enough, not good, totally not good. In addition, participants were also asked to write suggestions and input for improving the quality of online learning products, which are also available on the google form.

Result and Discussion Overview of Competency Units

This unit of competence developed for distance learning based on CATC is under the scope of tour operation and travel service, which is devoted to achieving certificates 3 in guiding. This unit deals with the skills and knowledge required to lead tour groups in a responsible manner in a range of settings within the tour industries workplace context. It is also deals with skills and knowledge required to apply co-ordination, communication, leadership, and conflict resolution skills to enable a tour group to be led in a responsible manner while on tour. This unit consists of 4 elements and 20 performance criteria. The following are the elements and performance criteria included in the unit of "Lead Tour Group in a Responsible Manner":

Table 1. Elements and performance criteria in the unit

No	Element	Performance Criteria
1	Identify the pre-requisites for responsible tour leadership	1.1 Describe host enterprise policies and procedures relating to tour guiding and tour activities
		1.2 Describe the legal implications involved in conducting guiding activities
		1.3 Describe the characteristics of effective tour group leaders
2	Co-ordinate tour movements group and activities	2.1 Advise tour group members of the type of tour and the proposed movements and activities and
		2.2 Maintain adherence to the tour itinerary to the greatest extent possible
		2.3 Provide tour-related advice and information to the tour group members
		2.4 Supervise movement and activities of the tour group
		2.5 Encourage tour group to members participate in the tour
		2.6 Modify planned activities, add new activities and/or delete activities where required to meet identified special needs of tour group members
		2.7 Optimize compliance with host enterprise policies and procedures, and host country legal requirements while on tour
3	Facilitate tour group interaction with each other and the tour environment	3.1 Introduce tour group members to each other, where appropriate
		3.2 Explain the objectives and opportunities provided by participating in the tour
		3.3 Use techniques to build and maintain group cohesion on tour
		3.4 Share and explain general rules that apply to group members while on tour
		3.5 Balance the needs of the group with individual needs
4	Deal with on-tour problems	4.1 Predict the potential for problems and take appropriate avoidance action
		4.2 Assess and respond to emergencies and unexpected events
		4.3 Resolve person-to-person conflict
		4.4 Take action to resolve tour group member dissatisfaction with the tour
		4.5 Seek to maximize tour group member enjoyment with the tour under adverse conditions

Source: Training Guide for Lead Tour Group in a Responsible Manner

In principal, distance learning in the “Lead Tour Group in a Responsible Manner” unit is a Competency Based Training (CBT) and assessment, which refers to the ability to perform particular tasks and duties to the standard of performance expected in the workplace. Competency requires the application of specified

knowledge, skills and attitudes relevant to effective participation, consistently over time and in the workplace environment. The aims of this curriculum are to enable participants to undertake a variety of subject courses that are relevant to industry in the current environment; learn current industry skills, information and trends relevant to the industry; learn through a range of practical and theoretical approaches; be able to identify, explore and solve issues in a productive manner; be able to become confident, equipped and flexible managers of the future; and be 'job ready' and a valuable employee in the industry upon graduation of any qualification level.

For assessment, several combinations of Assessment Methods are used to determine Competency for each Competency Unit on a student-by-student basis. Competency based assessment does not award grades, but simply identifies if the participant has the knowledge, skills and attitudes to undertake the required task to the specified standard. Therefore, when assessing competency, an assessor has two possible results that can be awarded, 'Pass Competent' (PC) and 'Not Yet Competent' (NYC). If the participant is able to successfully answer or demonstrate what is required or in accordance to the expected standards of the performance criteria, they will be deemed as 'Pass Competent' (PC). The participant will be awarded a 'Pass Competent' (PC) if they have the necessary knowledge, skills and attitudes in all assessment tasks for a unit. If the participant is unable to answer or demonstrate competency to the desired standard, they will be deemed to be 'Not Yet Competent' (NYC). This does not mean the participant will need to complete all the assessment tasks again. The focus will be on the specific assessment tasks that were not performed to the expected standards. The participant may be required to undertake further training or instruction and/or undertake the assessment task again until they are deemed to be 'Pass Competent'.

Design and form of e-learning model of the unit

The "Lead Tour Group in a Responsible Manner" competency unit (which was originally designed for face-to-face learning) was developed in response to massive technological developments, as well as changing interests and learning styles of students, who tend to choose to access digital learning resources, which can be accessed anytime and anywhere. In addition, the development of this ODL model is also suitable to be applied in the era of the covid-19 pandemic, where learning and training is difficult to carry out face to face.

In designing a CATC-based ODL model for this competency unit, the development team involved several applications, including Canva. Canva is considered to be an application that can be used to produce output in the form of learning media according to the interests of current students, where there are many choices of templates, photos, graphics, videos, frames, shapes, ornaments, and animations to design a PowerPoint Presentation or an e-modules. The form of learning media provided to participants through the Learning Management System is also adjusted to the performance criteria of this competency unit. In addition, the method of assessment applied in this travel service learning model prioritizes competencies (covering knowledge, skills, attitudes) that are adjusted to the performance criteria (PC). The initial part of the LMS also includes an introduction to the course which contains a brief explanation of the competency unit of "Lead Tour Group in a Responsible Manner", includes information about 4 elements and 20 performance criteria that can be completed in 40 hours, information on the assessment that determines participants as Pass Competent or Not Yet Competent. Each element also has an introduction slide that leads students to understand the content and scope of the elements to be studied.

Table 2. Forms of Learning Media and Assessment for Each Performance Criteria

PC	Learning Media	Assessment Form
1.1	e-module (flipbook)	Oral test
1.2	e-module (flipbook)	Oral test
1.3	PPT (slide)	Work Project
2.1	e-module (flipbook)	Written test
2.2	PPT with voice over	Observation of skills
2.3	e-module (flipbook) and demonstration video	Observation of skills
2.4	PPT (slide) and demonstration video	Observation of skills
2.5	PPT (slide) and demonstration video	Observation of skills
2.6	PPT (slide)	Observation of skills
2.7	PPT (slide)	Work project
3.1	PPT (slide) and demonstration video	Observation of skills
3.2	Podcast	Observation of skills
3.3	PPT (slide)	Observation of skills
3.4	PPT (slide)	Observation of skills
3.5	PPT (slide)	Work project
4.1	PPT (slide)	Work project
4.2	PPT with voice over	Work project
4.3	PPT (slide)	Work project
4.4	PPT (slide)	Work project
4.5	PPT (slide)	Work project

Sumber: Author, 2021

Assessment of this competency unit is available in several forms, including pretest, oral test, written test, observation of skills, and work projects. The following are the details of the assessment forms available in this unit:

- Pretest: before starting the activities in this ODL and training, participants are asked to do a pretest, to measure their knowledge so far related to competencies in the "Lead Tour Group in a Responsible Manner" unit. This pretest consists of 20 essay questions, where participants are required to answer each question by typing the appropriate answer in the column provided.
- Oral test: this form of test is applied to measure knowledge. Questions in this method of assessment were delivered orally through recordings available on the platform, while participants were asked to also answer orally by recording the answers and uploading them in the section provided. There are 5 questions on performance criteria 1.1 and 3 questions on performance criteria 1.2.
- Written test: the method of assessment contained in performance criteria 2.1 consists of 4 questions, where participants are required to answer all questions by writing the answers in the space provided in the LMS.
- Observation of skills: for this method of assessment, participants are specifically asked to demonstrate certain skills in accordance with the relevant performance criteria based on the guidelines provided, including important points that need to be considered when demonstrating the required skills. Considering that all learning is carried out online, there are also guidelines for recording evidence of competence through video, as well as how to upload this evidence to the LMS in the section provided.
- Work project: participants are asked to work on a project according to the related performance criteria. In the assessment section, a guideline to working on the project is provided as well as a guideline on how to upload the files needed as evidence or other supporting data that supports competence. Evidence is simply proof showing that participants can actually do what they are required to do.

Distance Learning Trial and Evaluation of the Unit

After the design, content, and assessment for the “Lead Tour Group in a Responsible Manner” unit were completed, the team then moved on to trial. The trial was conducted among students at vocational colleges who took the field study of tour and travel. Ten participants took part in the ODL implementation trial for this unit, starting with a briefing through Google Meet. The briefing for participants includes general information about ODL, the “Lead Tour Group in a Responsible Manner” competency unit, learning implementation duration, assessments that must be carried out, as well as evaluation forms that must be filled out after completing the ODL series. Each participant gets 2 performance criteria which are divided randomly. From the learning results, it can be seen that most of the participants understood the learning materials and the content well, as evidenced by the assessment carried out in accordance with the guidelines and requirements. However, there were several participants especially on the 4 performance criteria who were categorized as not being able to adjust the competency-based assessment requested. It seems that some of these students have not been able to understand the instructions and guidelines for the assessment process, so the results are not in accordance with the purpose of the assignment or do not include the components of competence (knowledge, skills, and attitude). Evaluation related to the implementation of ODL was also carried out, asking participants to fill out an online questionnaire which contained several statements, suggestions, and input. This evaluation study uses an evaluative research model that produces recommendations for improvement of a program (Darodjat & Wahyudhiana, 2015; Muryadi, 2017; Widoyoko, 2017). The evaluation model used is the CIPP model which uses four indicators, namely Context, Input, Process, and Product (Stufflebeam, 2004). Collecting data using a Likert-scale open questionnaire survey (Joshi, Kale, Chandel, & Pal, 2015) by taking a sample of 10 students as respondents, from the Vocational College, Gadjah Mada University (6 respondents) and the Faculty of Tourism and Hospitality, Pelita Harapan University (4 respondents) who have conducted trials on the SEAMOLEC platform. The research instrument uses Google Form media to answer survey questions online (Mardiana & Purnanto, 2017). The sampling used in the study used a non- probability technique, namely convenience sampling (Emerson, 2015). Convenience sampling is a sampling technique based on the availability of data and the ease of collecting it. The sample was chosen because it was at the right place and time. This technique is the fastest approach because researchers can freely determine who they meet to be the sample unit (respondent). This sample is useful in early-stage research that aims to find early evidence of a condition of interest (Etikan, Musa, & Alkassim, 2016). Furthermore, the data obtained were analyzed by tabulation, graph, and descriptive, so as to produce evaluation results of learning trials.

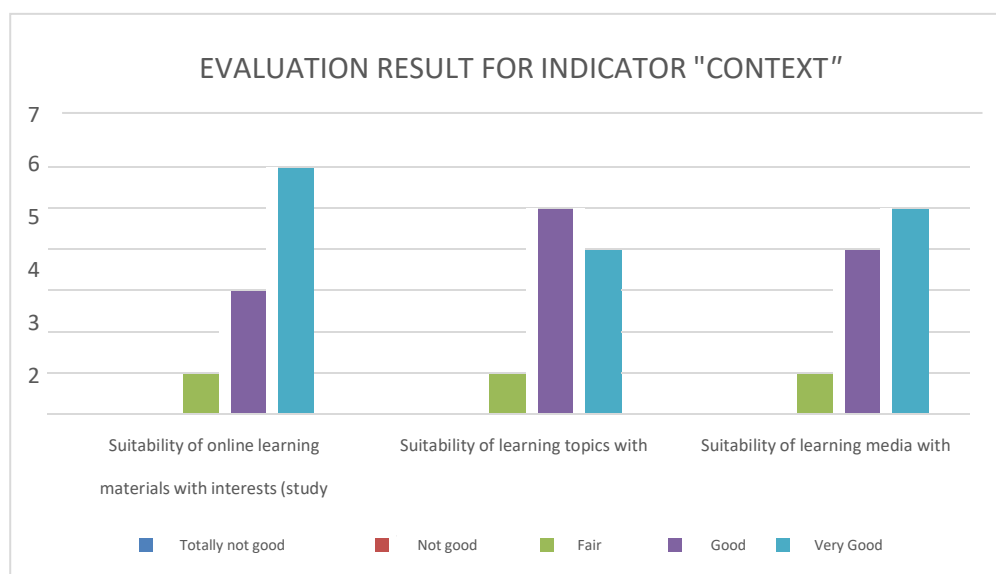


Image 1. Evaluation Results on Context Indicators (Source: Analysis, 2021)

The input indicators in this evaluation study used four measurements and the results obtained according to Figure 2. First, the measurement of the quality of the online learning display obtained very good evaluation results. Respondents stated that the presentation of the material in the form of texts and learning videos "Lead Tour Groups in A Responsible Manner" has very good quality. Second, the measurement of the clarity of online learning materials obtained good evaluation results. Respondents stated that the clarity of the presentation of learning materials was well received. Third, measuring the quality of online learning materials obtained very good evaluation results. Respondents stated that the materials presented were of very good quality learning materials. Fourth, the measurement of students' understanding while carrying out online learning obtained good evaluation results. Respondents stated that they could understand the delivery of materials and assignments well

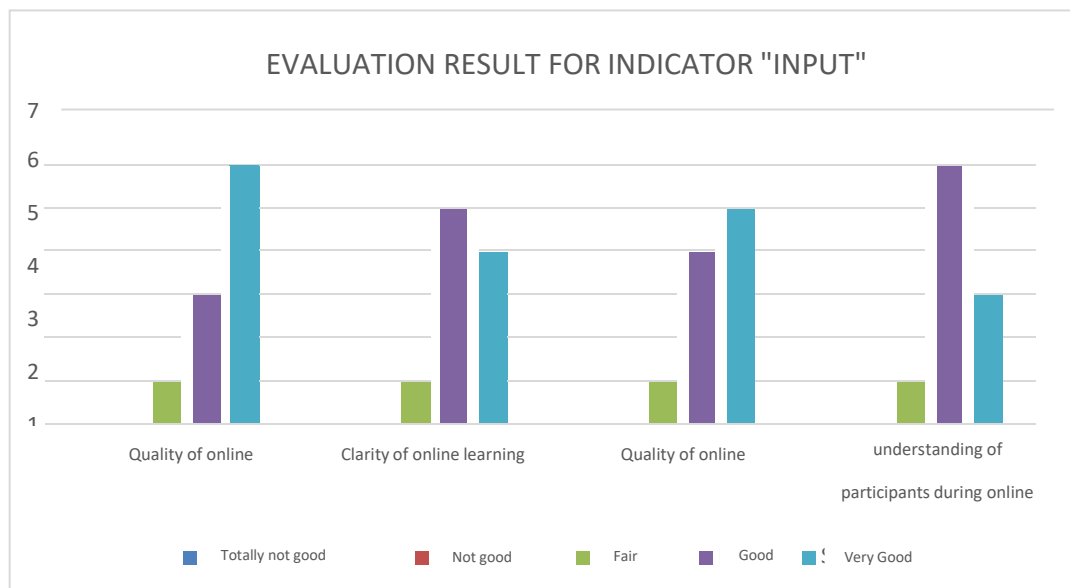


Image 2. Evaluation Results on Input Indicators (Source: Analysis, 2021)

The input indicators in this evaluation study used four measurements and the results obtained according to Figure 2. First, the measurement of the quality of the online learning display obtained very good evaluation results. Respondents stated that the presentation of the material in the form of texts and learning videos "Lead Tour Groups in A Responsible Manner" has very good quality. Second, the measurement of the clarity of online learning materials obtained good evaluation results. Respondents stated that the clarity of the presentation of learning materials was well received. Third, measuring the quality of online learning materials obtained very good evaluation results. Respondents stated that the materials presented were of very good quality learning materials. Fourth, the measurement of students' understanding while carrying out online learning obtained good evaluation results. Respondents stated that they could understand the delivery of materials and assignments well.

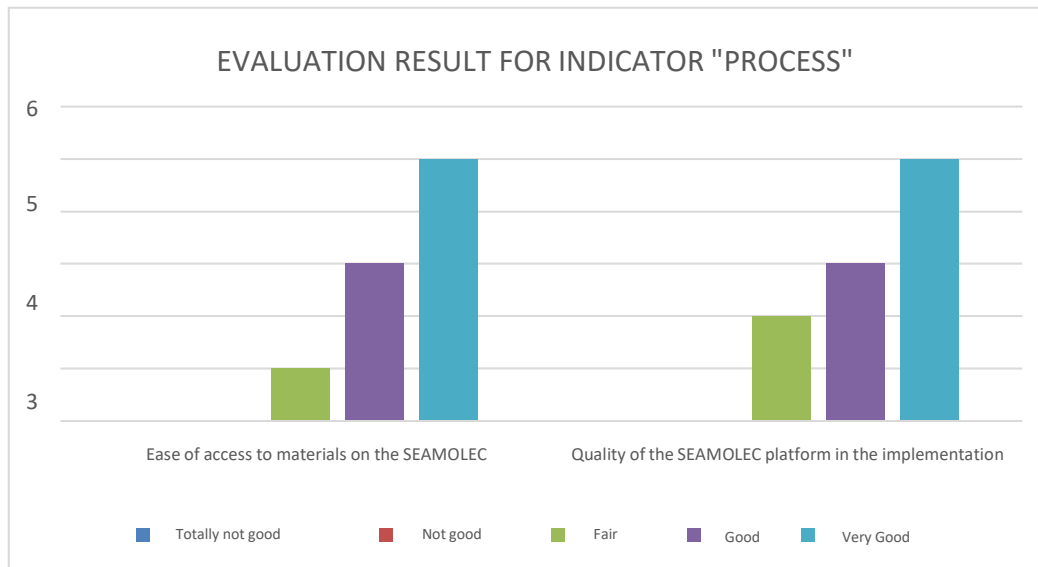


Image 3. Evaluation Results on Process Indicators (Source: Analysis, 2021)

The process indicator in this evaluation study used two measurements and the results obtained according to Figure 3. First, the measurement of the ease of accessing materials on the SEAMOLEC platform obtained very good evaluation results. Respondents stated that access to the SEAMOLEC platform starting from logging in, looking for "Lead Tour Groups in A Responsible Manner" learning, gaining access to learning, and reading texts, playing videos, and submitting assignments, could be done smoothly without any problems. Second, the measurement of the quality of the SEAMOLEC platform in the implementation of online learning obtained very good evaluation results. Respondents stated that the implementation of learning on the SEAMOLEC platform was a very good quality learning experience.

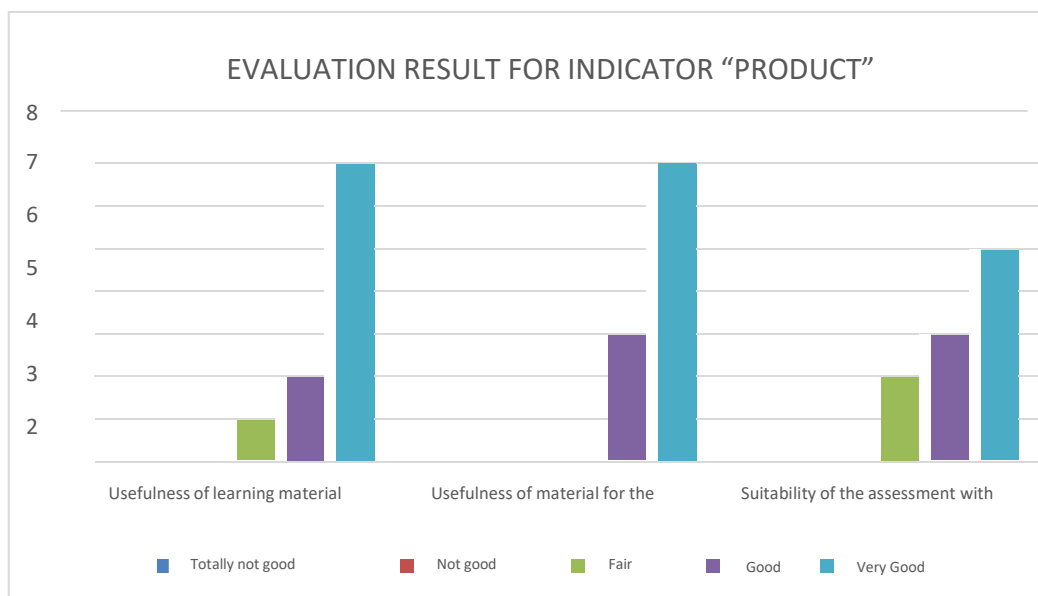


Image 4. Evaluation Results on Product Indicators (Source: Analysis, 2021)

The last indicator is the product which has four kinds of measurements and the results obtained according to Figure 4. First, the measurement of the usefulness of the material for science, the evaluation results are very good. Respondents stated that the material studied had very good benefits for individual use. Second, the measurement of the usefulness of the material for the future (professional world) obtained very good evaluation results. Respondents stated that by studying the learning material "Lead Tour Groups in A Responsible Manner" indirectly has very good benefits for preparing for the future, especially in the professional occupation. Third, measuring the suitability of the assessment with the material obtained very good evaluation results. Respondents stated that the assessment carried out was in accordance with the material being studied.

Conclusion

The development of technology towards the industrial era 5.0 provides certain challenges in the preparation of the curriculum as well as the implementation of learning for students. Tourism as a sector that demands the professionalism of its human resources is increasingly emphasizing the need for mastery of competencies that include knowledge, skills, and attitudes to provide quality experiences to stakeholders in tourism. The development of Open and Distance Learning based on the Common ASEAN Tourism Curriculum is deemed able to answer the anxiety of today's students who have more flexible and innovative learning styles and interests. The ODL in unit D2.TTG.CL3.11 "Lead Tour Group in a Responsible Manner" was designed by involving the Learning Management System provided by SEAMOLEC, with interesting audio- visual learning media, complete with assessments taken using several methods Evaluation and feedback related to this ODL model have also been submitted by trial participants/respondents, with the hope that it can be a reference for improvements to the development model for the next stage. In order to ensure the competencies possessed by participants after taking this ODL, the development or instructor seems to need to add learning media to increase participants' understanding of the material presented, for example by adding learning videos containing explanations from tutors and also demonstrations that emphasize knowledge, skills, and attitudes. It is necessary to make a more organized and planned mechanism in the system related to the assessment method, so that the learning objectives in the form of mastery of material and competence can be achieved by each participant. Lastly, each material contained in the elements and performance criteria should be adapted to current conditions and situations by looking at and reviewing existing cases, so that they are more relevant and contextual to the development of tourism at a certain time.

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Online Training Development on English Storytelling for Entrepreneurs

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Abstract

This study aims: 1) to know the stages of development of "Online Training Development on English Storytelling for Entrepreneurs", and 2) to find out the effectiveness of the results of "Online Training Development on English Storytelling for Entrepreneurs". Research on the development of digital books using the ADDIE development model consists of 5 stages: 1) analysis; 2) design, 3) development, 4) implementation and 5) evaluation. The results of the study concluded that: 1) researchers conducted the development of "Online Training Development on English Storytelling for Entrepreneurs", 2) the design and development of training in this network using the ADDIE model. 3) the results of feedback from as many as 83% of training participants were prepared to take part in online training. 72% of online training participant responded positively to online learning in English Storytelling for Entrepreneurs. Technology received a positive response of 75% and aid services received a positive response of 83%.

Keywords : Development, Online Training, Storytelling

Background

Entrepreneurship has long been an important concern in developing the socioeconomic growth of a country (Zahra in Peterson & Lee, 2000). Entrepreneurs help provide a variety of job opportunities, meet consumer needs, service services, and eventually grow the welfare and level of competition in a country. At school age entrepreneurship aims to develop attitudes, souls and abilities in creating something of value for themselves and others. Creating individuals who are creative, innovative, independent, have leadership, have the ability to manage finances, and an unyielding soul. Every entrepreneur will produce a product or service that will be offered to consumers. In conjunction with entrepreneurship, it is inseparable from individuals in it who are known as entrepreneurs. Marketing is one of the stages in offering products or services to consumers, both marketing domestically and abroad. One way is to tell stories or products or services. Storytelling is one of the competencies that must be possessed by entrepreneurs so that consumers understand the products or services offered and the benefits of being consumers. Storytelling is not fixated on verbal, but there are 4 other forms of storytelling, namely iconography, manuscript, print, and audiovisual.

SEAMOLEC has a collaborative program with SEAMEO Secretariat in the "To Be Entrepreneurship" program to train high school and vocational students to have entrepreneurial skills. Storytelling is one of the online trainings offered in this program. The online training will be carried out through MOOC SEAMOLEC. MOOC stands for "Massive Open Online Course". In a sense, MOOC is (1) open and free, (2) courses in the network through the internet, which (3) human resources are limited to managing hundreds, thousands and even more course participants by utilizing information and communication technology to support the learning process. Unlike OERs (Open Educational Resources) which only share and as a forum for delivering material, MOOC has a function as a supporter of learning, has an evaluation and participants get a certificate if

they have completed the course taken. The minimum requirement of MOOC is network learning that must be open and free for anyone who wants to learn. Learning trends within the network allow for greater, cheaper learning opportunities that can be easily accessed by anyone. SEAMEO SEAMOLEC through MOOC SEAMOLEC develops "Online Training Development on English Storytelling for Entrepreneurs". Through this research, it is also expected to create one of the learning resources in improving storytelling skills.

Method

In this study took the subject of the Storytelling material to Improve the Presentation Capability in English for Entrepreneurs. The object of this research is the stages of implementation and effectiveness of Training in the Storytelling Network to Improve Presentation Capabilities in English for Entrepreneurs. The development of online training is carried out with the ADDIE model (Analysis, Design, Development, Implementation and Evaluation). In this study using a questionnaire or questionnaire in collecting data in which there is a set of list of questions that have been prepared previously. Data collection was done by using a measuring instrument in the form of a Guttman scale questionnaire, the data obtained in the form of interval or dichotomous data (two alternatives), namely "Yes" and "No" so as to get a firm answer to the problem under study. The statistical technique used in this study is percentage. The percentage for each possible answer is obtained by dividing the frequency obtained by the number of samples, then multiplying by 100%. The formula is as follows:

$$P = \frac{f}{n} \times 100\%$$

P = percentage
 f = frequency of each selected answer
 n = total
 100% = constant (Bungin, 2019:177)

Image 1

The population of this study was 60 participants who had been registered as trainees. While the sample is part or representative of the population studied. Sampling is done by random sampling technique, with a calculation of 10% of the total population. Respondents in this study amounted to 6 respondents.

Discussion

The research development procedure uses the ADDIE development model which consists of five stages, looking at how much the effectiveness of online training will be evaluated at the final stage. Analysis Phase: an analysis of the need to improve English language competence through literature studies is carried out. Design Phase: Design the training syllabus in the network. Development Stage: Development of teaching material materials in the form of videos and texts, development of assessments and upload to mooc.seamolec.org. Implementation Stage: the training will be held on December 10, 2018-4 January 2019. Evaluation Phase: at this stage participants will evaluate the ongoing of the online training. The training was attended by 60 participants consisting of participants from tertiary institutions, teachers and high school and vocational students from all over Indonesia. Participants who did not carry out account validation were 14 participants and 41 other participants who had validated.





Image 2

68% of the participants came from the vocational school level, 22% went to high school, 8% were teachers and 2% were lecturers from universities. Although the announcement stated that online training was specifically for high school and vocational school students, 10% of participants who participated were teachers and lecturers. Of the total participants only 9 people (15%) were active and 4 people (6%) completed quizzes and assignments.

Feedback from the Online Training Participants English Storytelling for Entrepreneurs

Table 1

No	Aspect	Percentage	Category
1	Readiness of Participants	83%	Mostly
2	Learning	72%	More than half of it
3	Technology	75%	More than half of it?
4	Aid service	83%	Mostly

Based on statements that have been developed by the researcher and received feedback from the trainees. As many as 83% of training participants are ready to take part in training in the network. 72% of trainees in the network responded positively to the online training. Technology received a positive response of 75% and aid services received a positive response of 83%.

Conclusions and Suggestions

The development of this training uses the ADDIE model which consists of Analysis, Design, Development, Implementation and Evaluation. The online training is carried out for 4 weeks from 10 December 2018-4 January 2019. The material developed is in the form of videos, images and texts. Measuring the competencies of trainees by giving quizzes and assignments uploaded to mooc.seamolec.org There were 60 participants of the Online Training Development on English Storytelling for Entrepreneurs. Only 9 participants

actively participated in quizzes and assignments. Participants who completed the online training were 4 people. The assignment given was that the participants made a video of themselves in explaining products that had English. Videos uploaded by participants via the YouTube channel.

Results of feedback from as many as 83% of training participants were prepared to take part in training in the network. 72% of trainees in the network responded positively to online learning in English Storytelling for Entrepreneurs. Technology received a positive response of 75% and aid services received a positive response of 83%.

Suggestions in this study, developers can modify the learning approach in carrying out training in the network. Modification of the learning approach is done to increase the motivation of the trainees. The material for teaching materials in the form of videos needs to be developed according to the target interest of the training participants, namely to add animation, the video is not only in the form of sound and improved video quality.

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Analysis Of Peer Instruction Flipped Type Of Flipped Classroom Learning Towards Concept Comprehension, Collaboration And Communication Skills

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Abstract

This study aims to analyse how peer instruction flipped type of flipped classroom learning can improve students' concept comprehension and facilitate collaboration and communication skills. The design of this study is quasi-experiment. The sample of this study consists of 45 students in XI MIA 7 and XI MIA 8 of SMA Alfa Centauri Bandung. The result showed that the average score of conceptual comprehension of students who learnt through peer instruction flipped of flipped classroom model were higher than the students who learnt through conventional model. Furthermore, flipped classroom type peer instruction flipped type learning gave an effect to collaboration and communication skills.

Keywords : Peer instruction flipped, Flipped classroom learning, Communication skills

Background

Chemistry is the study of matter and the changes it undergoes. Studied chemistry is basically aimed to understand the natural events that occur in everyday life, know the nature of matter and its changes, inculcate scientific method, develop the ability to propose ideas, and foster perseverance and precision. The nature of chemistry includes two things, namely chemistry as a product and chemistry as a process. Chemistry as a product includes a set of knowledge consisting of facts, concepts, and chemical principles. Chemistry as a process includes the skills and attitudes possessed by scientists to obtain and develop chemical knowledge. These skills are called process skills and the attitudes that scientists have are called scientific attitudes (Susiwi, 2007).

Related to chemistry learning in classroom, Kean and Middlecamp (1985) stated that 1) chemistry concepts are most abstract, so it is needed a learning media which is able to concretize those abstract concepts, 2) the chemistry that we learn is a simplification of a real chemistry object, 3) chemistry is not just solving numerical questions, 4) chemistry is consecutive and rapidly developing. One of chemistry learning purpose is to form a student which has a problem solving skill; a skill to understand the problem. Problem solving skill is supported by student' concept comprehension.

Chemistry Concept is different among other any other science concepts. Chemistry concept includes numerical concept, facts to remember, an exclusive vocabulary, laws which are related one to another and have to be fully understood. Chemistry concepts are levelled, grown from basic concepts to complex concepts. Therefore, to understand higher chemistry concepts, good comprehension about the basic concepts that build the complex one is needed. The concept comprehension is an ability to construct a concept based on their basic knowledge, it could be from their personal experience or by combining their new knowledge on a scheme that

they have on mind. As described above, concept comprehension is one ability to be able to explain, distinguish, give examples and combine concepts based on the available knowledge and new knowledge.

Through good concepts comprehension, it will allow students to be more objective to make every decision in their lives, students will become skilled on screening relevant information, analyse it and reinvestigate the results. Unfortunately, what actually happens is students' concept comprehension in Indonesia is still low. This is proven by TIMSS (Trends in International Mathematics and Science Study) and PISA (Program for International Student Assessment) results. The last TIMSS results in 2011, the science achievements of Indonesian students ranked 40th out of 42 participating countries with an average score of 406, which was below the international average score of 500 (IEA, 2012). The latest PISA results in 2015 were not much different, Indonesian students' science literacy ranked 64th out of 72 participating countries with an average score of 403 below the international average score of 493 (OECD, 2016).

In addition, learning must be directed to be able to grow and develop 21st century students' skills, such as collaboration, communication, critical and creative thinking. Along with the times, these skills are important for students to compete in globalization era.

Therefore, an effort is needed to improve students' concept comprehension which also facilitate students to grow 21st century skills. In this research, 21st century skills which become the focus are communication and collaboration skills. By focusing on those matters, chemistry learning process in classroom must use an appropriate method and right learning media. One of the learning model that has the potential to be able to improve concept comprehension and also practice communication and collaborative skills is peer instruction flipped type which is a type of flipped classroom model.

Flipped classroom is a teaching method that is currently become a concern among education experts. Even in America, a lot of media reports about flipped classroom learning methods (Johnson, 2013). Although flipped classroom is currently being introduced as a new learning innovation, it has been used for more than a decade. Flipped classroom research is still in initial state, but most publications provide definitions that describe flipped classroom as a type of guided learning. In flipped classroom learning, information transformation occurs from the traditional face-to-face learning (lecture) brought to the outside the classroom. therefore, classroom learning becomes more active and students are given the tasks to enhance their collaboration skills.

Flipped classroom approach is characterized by:

1. Changes in the use of time in class,
2. Changes in use of time outside the classroom,
3. Conduct activities that are traditionally considered 'homework' in class,
4. Conduct activities that are traditionally considered outside work,
5. Activities in class that emphasize active learning, collaborative and problem solving,
6. Pre-class activities,
7. Post-class activities, and
8. Use of technology, especially video.

So, flipped classroom definition is a set of pedagogical approaches that move most of the information transmission in the classroom, use class time for active learning activities and ask students to complete pre and / or post-class activities to get the full benefits of activities in the classroom. The activities carried out by students are by reading journals, watching videos and visiting sites that support learning material. (Bergmann and Sams, 2012; Abeysekera and Dawson, 2014; Logan, 2015; Subramaniam and Muniandy, 2016; Sale and Cheah, 2017; Uzunboylu and Karagozlu, 2017; Reidsema, et al, 2017).

In flipped classroom learning model, peer instruction flipped type can train students to be more active in learning because students will construct concepts that are learned with friends through discussion and tests of understanding concepts given by the teacher. The uniqueness of this flipped classroom learning model is the teacher learning uses the help of multimedia media and technology devices like videos for the provision of students' initial knowledge before learning takes place in class. Videos are given before learning takes place and could be distributed online. Therefore, students can download and study anytime and anywhere depends on their condition.

Research Method

The type of research conducted is quasi- experimental research. This design has a control class group, but it cannot fully function to control external variables that affect the conduct of experiments (Sugiyono, 2018). In this study, subjects were not randomly grouped, but researchers accepted the subjects' condition as it was. The consideration of the use of this research design is to use research time effectively. Therefore, it will not form a new class that will cause changes to the existing schedule. The sample used in this research consists of two sample groups. The first group is an experimental group that learns through flipped classroom learning with peer instruction flipped type and the second group is a control group that learns through conventional learning. This research population is IX MIIA grade students in odd semester Alfa Centauri Bandung High School Academic Year 2018/2019. Furthermore, from this population, two classes were selected as the research sample determined based on purposive sampling, which is a technique of determining the sample with certain considerations (Sugiyono, 2018) with the aim that research can be carried out effectively and efficiently, especially in terms of supervision, subject conditions, time and the conditions of the research site and licensing procedures. The sample in this study was class XI MIIA 7 and XI MIIA 8. Then experimental group and control group class randomly selected.

The instruments used in this research were test instrument and non-test instrument. The test instrument consists of multiple-choice questions to measure students' comprehension of the material which has been studied, while non-test instrument is communication and collaboration ability assessment rubrics. Multiple-choice questions validity and reliability were tested using Rasch analysis model with the help of Winsteps software 3.73. Empirical validity testing was done using the Rasch Model using software assistance. The measurement of validity test using the Rasch model used criteria developed by Linacre (2002). There are three criteria used to determine whether an instrument is valid or not, which could be seen from the outfit value of mean square (MNSQ), z-standard outfit (ZSTD) and point measure correlation (Pt- Measure Corr) (Boone et al., 2014). The results obtained from the test validity test are shown in Table 1.

Table 1. Validity Test Result of Concept Comprehension Test

ENTRY	TOTAL	TOTAL		MODEL	INFIT	OUTFIT	PT-MEASURE	
NUMBER	SCORE	COUNT	MEASURE	S.E. MNSQ	ZSTD MNSQ	ZSTD CORR.	EXP.	
				+	+	+		
2	34	45	-.68	.37 1.17	.9 2.07	2.5 A	.13	.36
5	26	45	.28	.33 1.09	.8 1.29	1.4 B	.27	.39
6	33	45	-.54	.37 1.14	.8 1.23	.8 C	.22	.37
12	34	45	-.68	.37 1.19	1.0 1.12	.5 D	.21	.36
4	13	45	1.72	.36 1.12	.8 1.08	.4 E	.28	.39
7	34	45	-.68	.37 1.04	.3 1.04	.2 F	.32	.36
8	39	45	-1.53	.46 1.03	.2 .86	-.1 G	.30	.30
14	10	45	2.14	.39 1.00	.1 1.00	.1 H	.36	.37
3	32	45	-.41	.36 .97	-.1 .86	-.4 g	.41	.37
13	19	45	1.03	.33 .94	-.5 .83	-.9 f	.48	.40
1	40	45	-1.77	.50 .92	-.1 .75	-.2 e	.36	.28
15	38	45	-1.33	.44 .92	-.2 .63	-.7 d	.43	.32
10	22	45	.71	.33 .87	-1.3 .79	-1.2 c	.53	.40
9	15	45	1.48	.34 .82	-1.2 .74	-1.1 b	.56	.39
11	26	45	.28	.33 .79	-1.9 .71	-1.6 a	.59	.39
				+	+	+		
MEAN	27.7	45.0	.00	.38 1.00	.0 1.00	.0		
S.D.	9.5	.0	1.17	.05 .12	.8 .34	1.0		

Based on analysis results there is one question that is not in compatible with the criteria, which is question with code S2. This indicates that the question needs to be corrected. But most of the questions used for understanding tests are valid (Boone et al., 2014). This shows that the questions are valid. Reliability is a measurement of how far an instrument provides a truly reliable picture of one's abilities (Arikunto, 2009). If the instrument has high reliability, repeated measurement with the instrument on the same subject in the same conditions will produce same or almost same information (Firman, 2000). While based on Arikunto

(2009), a test is said to have a high level of trust if the test provides a fixed result. Reliability criteria that uses value is developed by Fisher (2007).

Table 2. Instrument Reliability Test Results

SUMMARY OF 15 MEASURED ITEM								
	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	ZSTD	OUTFIT MNSQ	ZSTD
MEAN	27.7	45.0	.00	.38	1.00	.0	1.00	.0
S.D.	9.5	.0	1.17	.05	.12	.8	.34	1.0
MAX.	40.0	45.0	2.14	.50	1.19	1.0	2.07	2.5
MIN.	10.0	45.0	-1.77	.33	.79	-1.9	.63	-1.6
REAL RMSE	.39	TRUE SD	1.10	SEPARATION	2.83	ITEM	RELIABILITY	.89
MODEL RMSE	.38	TRUE SD	1.11	SEPARATION	2.91	ITEM	RELIABILITY	.89
S.E. OF ITEM MEAN = .31								

Based on Table 2, reliability test result shows that items reliability included to good category (0.89). This indicates that used questions have good reliability.

Research Result

The data collection and assessment were carried out at Alfa Centauri High School in Bandung, starts from August to October in the XI MIIA 7 and XI MIIA classes. Research result of peer instruction type of flipped classroom learning analysis against student comprehension, collaborative skills and communication skills are presented below.

Concept Comprehension Test Results

Chemistry concepts comprehension test results in thermochemical material for the control class and experimental class were taken using Winsteps software, along with the results.

Table 3. Control and

Experiment Class Score

ALL SCORES ARE NON-EXTREME							
PERSON COUNT	MEAN MEASURE	S.E. MEAN	OBSERVED S.D.	MEDIAN	MODEL SEPARATION	MODEL RELIABILITY	CODE
45	56.82	1.70	11.30	59.23	1.16	.57	***
22	58.06	2.61	11.98	59.23	1.24	.61	XI MIIA 7
23	55.64	2.23	10.48	55.04	1.04	.52	XI MIIA 8

Based on Winsteps data result, it was found that the average experimental class (XI MIIA 7) was 58.06 greater than the control class (XI MIIA 8) with an average value of 55.64.

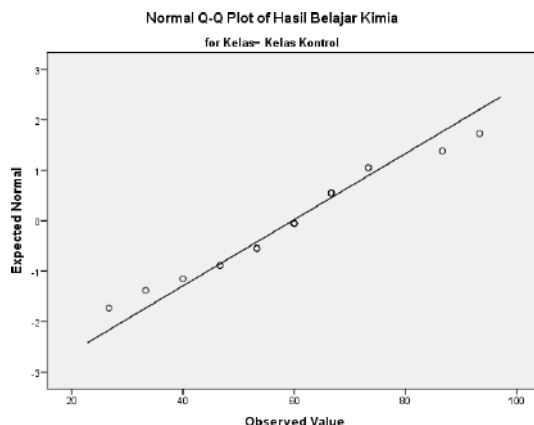
Normality test

Normality test of control and experimental class was done to determine whether the obtained data was normally distributed or not. The normality test for the two classes was carried out by the Shapiro-Wilk test using the SPSS 24 for Windows program with a significance level of 0.05. After data processing, the output display can be seen in Table 4.

Table 4. Normality of Control and Experimental Classes Distribution

	Statistic	df	Sig
Control Class	0,962	23	0,499
Experiment Class	0,933	22	0,140

Based on normality test result using Shapiro- Wilk test, the obtained significance value for control class was 0.499 and experimental class was 0.140, both values were greater than 0.05. This indicates that control



class and experimental class were normally distributed. For more details, see Graph 1 and Graph 2.

Image 1 *Control Class Chemistry Learning Outcome Normality Q-Q Plot*

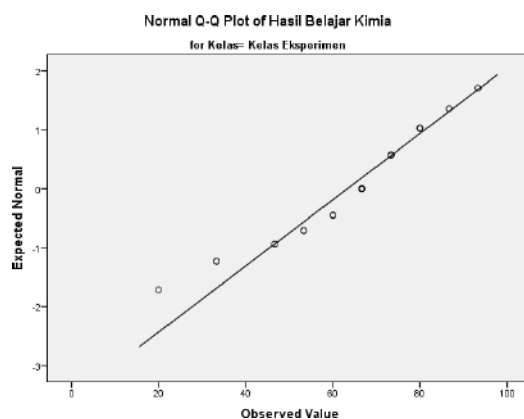


Image 2 *Experiment Class Chemistry Learning Outcome Normality Q-Q Plot*

Based on Graph 1 and Graph 2, it can be seen that the data is around a straight line. This indicates that the chemistry learning outcomes data for control class students and experimental classes come from populations that are normally distributed.

Two Variance Homogeneity Test

Based on the learning outcome (comprehension) normality distribution data the students in the control and experimental classes were normally distributed so that the analysis was continued by testing the two variances homogeneity by Levene test using SPSS 24 for Windows program with a significance level of 0.05. After processing the data obtained data as shown in Table 5.

Table 5. Two Variance Homogeneity Students Comprehension of Control and Experiment Classes

Levene Statistic	df1	df2	Sig.
0,596	1	43	0,444

Based on variance homogeneity test result using Levene test, the significance value is 0.444. This indicates that the students in control and experimental class were from populations that had the same variance value or both classes were homogeneous.

Difference Test Using T Test

The Next one is t test, used to determine the differences in the effect of peer instruction flipped type of flipped classroom learning towards students' comprehension of control and experimental classes. The significance level used is 0.05. The data analysis results are shown in Table 6.

Table 6. Hypothesis Test Results for Students' Comprehension in Control and Experimental Classes

Independent Sample Test				
Nilai		t-test for Equality of Means		
		T	df	Sig. (2-tailed)
	Equal variances assumed	- 0.735	43	0.466
	Equal variances not assumed	- 0.732	41.375	0.446

Based on the t-test results, it is obtained that the value of Sig. (2-tailed) of 0.466. This indicates that it rejects H0 and accepts Ha. It means that based on the statistical test the average grade value using peer instruction flipped type of flipped classroom learning is greater than the class which uses conventional learning model.

Collaborative Skills Assessment Results Data

The result of collaborative skills assessment scores on students who learnt with peer instruction flipped type of flipped classroom models produce an average score of 2.15. Then, an analysis is carried out by calculating the percentage of these aspects by using a formula:

$$N = \frac{\text{total average}}{\text{Highest Score}} \times 100\%$$

$$N = \frac{2,15}{3,00} \times 100\%$$

$$N = 71,67\%$$

It shows that the chemistry learning on Thermochemistry topic using peer instruction flipped type of flipped classroom learning gets high scores for students' collaborative skills.

Communication Skills Assessment Results Data

The average score of total communication skills is 2.20. By using the same formula as the analysis of collaborative ability, the score percentage for communication skills is 73.33%. It shows that the students who learnt by using peerinstruction flipped type of flipped classroom learning get high scores for communication skills.

Conclusion

Based on this research goal, it can be concluded that chemistry learning using peer instruction flipped type of flipped classroom produces a higher average score of students' concepts comprehension compared to the conventional model learning. Furthermore, learning using a peer instructor flipped type of flipped classroom model proves that there are influences on communication and collaboration skills.

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