

Technology Utilization Training In Material Design Process, Learning Engagement & Learning Assessment For Senior High School Teachers

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Abstract.

The use of technology is crucial to support effectiveness in the learning process. In this development trend, teachers are required to master and be able to use technology inside and outside the classroom or Teacher Pedagogical Content Knowledge (TPACK). This service program aims to answer the challenges faced by teachers at the high school level. Through training programs/workshops, teachers as participants are supposed to get knowledge about the use of technology in 3 learning processes, namely preparing materials (material design), attractive learning activities (learning engagement), and conducting evaluations or assessments.

Keywords: Learning technology, Teacher Pedagogical Content Knowledge (TPACK)

I. INTRODUCTION

The trend of today's digitalization era is one of the important indicators in the era of globalization. Almost all aspects of life have used technology as a support. In education, technology has become an unavoidable element. This is confirmed by the phenomenon where almost all students are able to access the internet and get information from various sources and from any country (Pathak & Manoj, 2019). It is because almost all aspects that intersect with the interests of education have begun to utilize and apply technology in it. This situation also has an impact on teachers who are at the forefront of education. In this digitalization era, teachers get a new task regarding self-development in terms of the ability to use technology in the learning process. Knowledge and mastery of Teacher Pedagogical Content Knowledge (TPACK) is crucial considering that technology continues to develop and cannot be ignored (Durdu & Dag, 2017). Furthermore, there are 3 main aspects that must be mastered by teachers to carry out learning by utilizing technology. The first aspect is the ability to prepare comprehensive and easily accessible materials. By utilizing technology, teachers will find it easy to design materials by utilizing templates or materials available on the internet (Hero, 2019). The next aspect is the teacher's understanding of the importance of getting students' enthusiasm in the learning process. It can be done by using technology that triggers student responses actively and creatively. The next thing is an understanding of the effectiveness and efficiency in the implementation of assessments using technology.

Nowadays learning assessment is very easy and can be done automatically or semi-automatically by utilizing technology (Elmahdi et al, 2018). From the results of observation, it was found that teachers tend to be reluctant when discussing learning technology. It can be caused by a lack of understanding of the development of learning technology. Furthermore, teachers also cannot operate simple software or applications available on the Internet for free because there is no/ lack exposure and opportunity to learn comprehensively. This condition also causes the teacher to find it difficult to make attractive teaching materials due to the lack of creative ideas from the teacher. The next finding is teachers feel unable to create an interactive learning environment because they have not mastered it and do not even know that there is software/application that can be used simply. The result of the last need analysis is that teachers still tend to use paper as an answer sheet and provide feedback manually through writing or orally. These kinds of conditions can be seen as an obstacle in terms of effectiveness and time efficiency in the learning process. Responding to this phenomenon, in this program, teachers get an in-depth direction and

understanding of technological trends that can be used as teaching media. Teachers are expected to be able to provide materials that can be flexibly accessed by students. Furthermore, teachers are also expected to be able to comprehensively provide feedback/feedback and assessment/assessment of student performance. Wong & Yang (2017) also emphasize that corrective feedback is very important in student development. In line with this, providing feedback by utilizing technology is also able to increase students' motivation in learning and students' cognitive abilities in receiving lessons because of the ease in accessing the material and feedback. In this program, there are 3 stages of implementation that include observation (need analysis), deepening of learning theory related to pedagogy and tutorials or simulations of using technology in the learning process.

1). Observation

At this stage, a survey (need analysis) has been conducted on the needs of teachers in teaching using technology. From the results of these observations, several findings were found, namely the teacher's lack of understanding of the theory of using technology in accordance with the pedagogy, the teacher's lack of knowledge about the types of applications that can be used in the learning process and the teacher's lack of ability to operate technology in the learning process.

2). Deepening understanding of theories related to technology in the learning process

In this stage, the teacher gets refreshment about the learning theory that suits the needs of today's students. The theory given is the use of technology in classroom, collaborative learning approach, effective assessment in classroom and online feedback as an effective approach. In addition to theory, several studies that support the use of technology in the learning process are also presented.

3). Training on the use of technology in the learning process

In this activity, there are 2 main stages given to teachers as training participants. The first stage is a tutorial which is presented in front of the class with the aim of the teacher being able to get a big picture of the use of technology in the learning process. Then, in the second stage, the teacher will practice the use of technology by using the account of each teacher as a training participant with the aim of the teacher being able to apply the technology in the class being taught.

II. RESULT AND DISCUSSION

In this aspect, the results and discussion are divided into 2 points which are the main objectives of the training. The points are raised based on the problems found in the field.

2.1. Teachers' understanding of the use of technology in accordance with pedagogical principles

At this stage, the teacher gets several teaching theories that are in accordance with the use of technology in it. The first theory is interactive material. Interactive materials are materials designed to foster student interaction in the classroom. This allows students to further explore the metrics given by the teacher. Interactive materials can have a significant impact on students' motivation and understanding in the learning process.



Fig 1. The activities of training

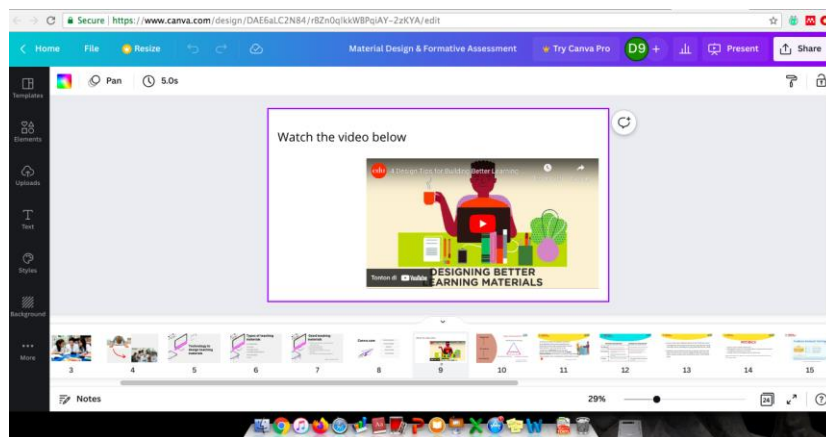
2.2. The teacher's ability to use technology in the classroom

In this stage, teachers learn and practice the details of how to use technology in the learning process. There are 4 applications/software have been studied, namely Canva as a material design tool, Paddlet as a learning engagement tool, Mentimeter as a Students response system tool and Quizziz as a learning assessment and corrective feedback tool.

2.2.1. Canva.com

The use of Canva as a medium for making teaching materials has proven to be very helpful for educators and increase the interest of students. This is supported by the findings of Fauziyah et al (2022) which showed that the use of Canva as a learning medium was able to increase students' enthusiasm in the learning process. On the other hand, teachers also find it difficult to make attractive material due to the limited creative ideas of the teacher. As a result, teachers feel Canva can help and simplify the learning process. It is because there are template features that can be adopted by teachers easily and simply. Furthermore, a feature that is considered very helpful is the link attachment. This feature allows teachers to add learning video links and can be played directly when accessing materials from Canva.

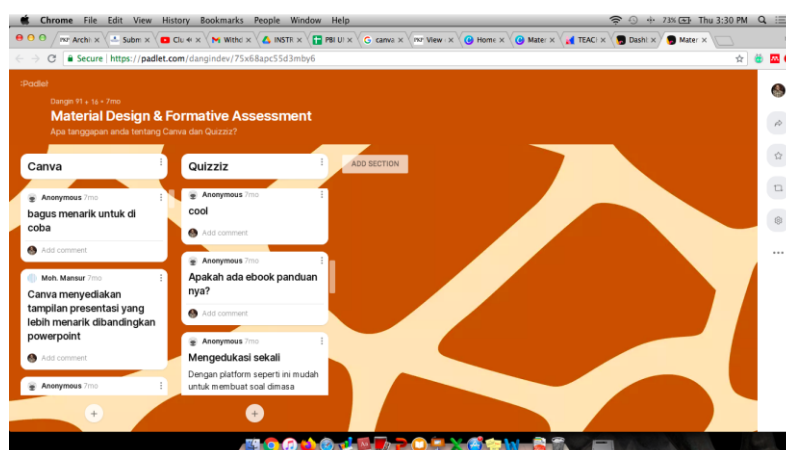
Fig 2. An example of video attachment on Canva



2.2.2. Padlet

Padlet is software designed as a virtual whiteboard. Padlet allows teachers to present material virtually and can be equipped with link attachment features such as videos, articles and other teaching materials (Dangin & Elysa, 2022). Besides being able to be used as a medium for presenting material, Padlet also allows teachers and students to display the results of discussions in 1 virtual whiteboard. After practicing Padlet both as a teacher and as a student, the trainee teachers got new ideas on how to make the classroom atmosphere interactive and collaborative. Students' participation in the learning process (students' involvement). Padlet can indirectly stimulate students' motivation to be more active because their work can be seen by other students in the class. In addition, Padlet can provide a positive atmosphere and improve students' cognitive abilities by working together both in the realm of discussion and collaborative group work (Gill-Siemmen, 2021, Haris et al, 2017 & Zaenuddin et al, 2020).

Fig 3. The use of Padlet on training class



2.2.3. Mentimeter

In the learning process, the mentimeter can be used as a medium of students' response system. Mentimeter is software that can be used by teachers to attract students' enthusiasm and improve students' communication skills. Interactive teaching can encourage students to be more active in the class. It triggers them to critically express their ideas and response since their work or ideas are posted in the virtual wall. In other words, teachers could use mentimeter to do ice breaking before the class started. By means of mentimeter, teacher also could lead students to elaborate their ideas about what have been studied and what are going to learn. It will give bigger possibility for students to be more prepared before the class and more active in finding the conclusion of the class.



Fig 5. The use of mentimeter in gaining students' ideas

2.2.4. Quizizz

Quizizz is a game-based educational application. This application can be accessed for free and does not drain the user's internet quota. This application allows students to follow the assessment process in an attractive atmosphere because of the multiplayer and realtime ranking features. The Quizizz application also supports teachers to do real-time feedback when students do formative tests. After the training process, the participating teachers got a new perspective that formative assessment using Quizizz was very effective. This is because teachers can find out student scores automatically after students complete the exam. The results can also be downloaded in a portable document format. Another benefit is the efficiency of test preparation and execution time. By using Quizizz, teachers can provide feedback that is included in the answer feedback. Furthermore, Quizizz also offers an attractive and competitive experience with realtime rankings that can increase students' motivation and enthusiasm. This application has proven to be very helpful for teachers in the formative assessment process and can increase student participation in the classroom so that students feel more interested in taking lessons (Permana & Permatawi, 2019 and Puspitayani et al, 2020).

III. CONCLUSION

Technology with all its developments has changed the process and form of learning. At the beginning of the training process, the teacher as a participant felt unfamiliar with technological developments and was reluctant to try. After joining the training, teachers got new perspective of technology use in classroom. They think that technology is useful and simply utilized when they know the exact application and how to use it in classroom. Teachers also got 4 main applications that can be used as support in designing materials, doing collaborative learning, doing students' response system and giving effective feedback.

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