

Professional Development Programs: Increasing Lecturers' Competencies in Technology Enhanced Learning and Gaining Students' Engagement

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Abstract—Keeping up with the rapid progress in the educational field requires lecturers to gain competencies so that they can improve the quality of the classroom teaching and learning process. The purpose of this study is to explore how Professional Development (PD) might increase lecturers' competencies in implementing Technology Enhanced Learning (TEL) in their classrooms and its impact. TEL refers to the application of information and communication technologies in the classroom. It also includes the development of digital content and digital teaching skills, particularly for engaging students in the classroom. Based on the findings of the research, it appears that lecturers can gain knowledge and competence in developing digital content through PD programs that follow an ideal framework. Several digital tools are used to create and revise the digital contents, however the impact is still far from what was expected. It is still necessary to improve the quality of digital content developed and the way lecturers implement digital applications to increase student engagement in the classroom.

Keywords—digital contents, lecturers' competencies, professional development program, students' engagement, technology enhanced learning

I. INTRODUCTION

With the advancement of the educational field, lecturers are forced to incorporate technology into their classroom practices in order to enhance the learning experience of their students. This integration is then known as Technology Enhanced Learning (TEL). The main purpose of TEL is to integrate information and communication technologies into the teaching and learning process [1]. Furthermore, [2] states that TEL should follow these criteria, they are technology to increase student' engagement, technology to endow learning resources, technology to implement teaching strategies and technology to assess learning outcomes. Those criteria are in line with nowadays trends in educational field that are oriented in the usage of ICT,

especially in order to attract both teachers' and students' interests in the teaching-learning processes. However, the application of TEL is quite challenging since it requires several design preoccupations, such as working environment, resource system, classroom activities, curriculum design and teachers' abilities [3]. TEL, thus, goes beyond the traditional classroom processes, and it impacts the urgent need of increasing teachers' teaching abilities in conjunction with ICT related ones.

The importance of TEL knowledge and application in the classroom leads some universities to design special Professional Development (PD) programs for their lecturers. This is due to the fact that most university teachers need to increase their teaching knowledge and skills, especially the ones that are related to the application of TEL. This condition becomes the reason why an ideal framework for PD programs for gaining lecturers' technology competencies should be designed and implemented. That framework follows the criteria of TEL and aims at how lecturers develop digital teaching materials and increase students' engagement in digital classrooms. It means that the conducted PD programs should consist of several training materials including digital content development and digital teaching abilities, especially to increase students' engagement in the classroom.

Thus, the aim of this study is to investigate the effectiveness of TEL professional development programs in equipping lecturers in developing digital content materials and gaining lecturers' competencies in increasing students' engagement in classroom. The underlying hypotheses is that lecturers who join and participate actively at TEL PD program will have ample knowledge to create digital contents that when they are implemented in classrooms, they can be used as tools to gain students' engagement in teaching and learning process.

II. LITERATURE REVIEW

A. Professional Development Program

The rapid progress in work practices, especially the implementation of technology in the classrooms forces

lecturers to be computer literate and increase their capabilities in technological practices. In this case, Professional Development (PD) programs play important roles in gaining lecturers' competencies and provide real contribution to students' learning [4]. PD is often seen as the lecturers' effort to gain their teaching practices and experiences and should have a direct impact on the lecturers' daily job. Furthermore, [5] mentions that PD needs theoretical explanations and practices for complete comprehension and effective application in order to gain professional competencies as the main impact. So, the lecturers as the participants of PD programs should have ample chances to implement what they have learned.

The impact of lecturers' PD programs depends on several factors, one of them is their motivation in participating in the lecturers' PD programs. Research shows that lecturers' motivation is influenced by how fast PD materials can be applied in their job. So, PD materials should be closely related to the needs of the lecturers, in this case gaining lecturers' knowledge in TEL and increasing students' engagement in digital classrooms [6].

B. Technology Enhanced Learning

Education around the world, nowadays, has been implementing teaching and learning through digital technologies, such as e-learning, mobile learning, etc. The various forms of learnings that apply digital technology are commonly known as Technology Enhanced Learning (TEL). The goals of TEL are to design, develop and define the utilization of Information Communication Technology (ICT) in teaching and learning process. At universities context, [7] presents some reasons behind the implementation of TEL and those are all related to the importance of ICT and the advantages of TEL. For example, gaining students' engagement and abilities, enriching resources and enabling flexibility in students' learning.

If we focus on knowledge of TEL and students' engagement in the classroom, actually these are related to what [5] mentioned about nine trends of education 4.0, they are learning can be conducted anytime and anywhere, student-centered learning is preferred, students may choose what and how they want to learn, project based learning is conducted to enhance students' learning, hands-on 'learning, students' ability in data interpretation, formative assessment, students' opinion is useful for the input to the teaching materials and students' independent learning. All of these trends should be covered in the implementation of lecturers' PD programs.

From the above explanation, we can see that lecturers are hoped to implement the nine trends of education 4.0. It means that they have to increase their competencies, especially on TEL, since the students' achievement depends on their teaching competencies. In this condition, lecturers' PD is one solution that enables lecturers to gain their skills and adapt to the current condition.

III. MATERIALS AND METHODS

This research was an experimental study that focused on how PD programs helped lecturers implement TEL in

their classrooms. The direct effect that was expected was how this program gave impact on increasing lecturers' competencies in developing digital content and gaining students' engagement in digital classrooms. 98 lecturers were selected as the participants in this PD program, they were from various departments of a private university in Jakarta, Indonesia. Furthermore, they were supposed to participate in a complete PD program held in 1 month, in which it consisted of pre-training, in-class training, did action learning project and submitted the reflection report.

Considering that the purpose of the study was to implement digital content in the classroom and in order to get more complete data. students' opinions were also required, and 226 students participated in the study.

IV. RESULT AND DISCUSSION

This study followed the ideal steps of a PD program as figured in the following Fig. 1.

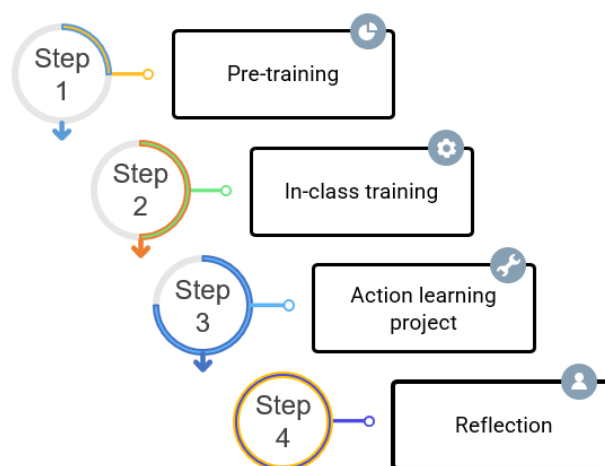


Figure 1. The steps of the PD program.

As presented in Fig. 1, the initial step of the PD program was pre-training that was in the form of lecturers' self-learning activities that aimed to increase their knowledge about TEL, especially the one that was related to the importance of TEL in gaining students' engagement and how to implement TEL in the classroom. In this phase, the lecturers were provided a week to read several texts about TEL that consisted of the theory of TEL, the importance of TEL and how to implement TEL in the classrooms. As the assessment of learning and to check the lecturers' comprehension regarding the reading materials, pre and post-test were conducted before and after this phase.

To get the result of the pre and post-test, see Table I below.

TABLE I. PRE AND POST-TEST RESULT

	N	\bar{x}
Pre-test	98	53.37
Post-test	98	77.86

The first result, as we can see, was related to knowledge gained regarding TEL. The test consisted of 10 multiple choice questions that asked the lecturers about the theory of TEL and the importance of TEL in teaching learning process in the classrooms. From the data, it could be seen that all lecturers did the pre and post-test and based on the average score of pre and post-test, lecturers' knowledge regarding TEL increases 68%. The data also showed that lecturers' knowledge about TEL was just moderate that could be seen from the average score of the pre-test, it was 53.37. However, the average score of the post-test was 77.86, which meant that there was a significant increase between the pre and post-test scores.

Furthermore, from the score of pre and post-test, it can be concluded that the lecturers had ample knowledge about TEL. The importance of TEL and how to implement it in higher education had been well understood by the lecturers. More specifically, as questioned at the test, what they valued about TEL was the nature of it that it changed the traditional teaching method and it was more suitable to the current condition when the students' active learning and self-learning method were really required. Moreover, the result of the test also informed that all lecturers had awareness that TEL provided lecturers with innovative ways of teaching, such as developing a more interactive digital content and using online quiz for teaching, that they would gain students' knowledge through a more interactive and engaging class.

This self-learning was then followed by one day in-class training, in which it provided the lecturers with skills in developing digital content and how technology may gain students' engagement in classroom learning process. This was a step in which the lecturers were given the opportunity to create digital content with the focus on how they might increase students' engagement in online classes and to occupy several tools that were useful in creating and editing the digital content. This part focused a lot on TEL as a means of facilitating students' interaction and engagement in the classroom and that digital contents were crucial in achieving this objective.

During this one-day training, the lecturers were trained to develop digital content as their teaching materials. Developing digital content required technical expertise, such as the use of digital tools, and subject content expertise. In this phase, the lecturers implemented the steps to develop basic digital content with the provided digital tools.

During this in-class training, the lecturers were also introduced to several digital tools that were useful in creating and editing digital content, such as Office 365, online video editing platforms, PC video editing software, mobile video editing software and BITS (Binus Interactive Software).

Fig. 2 below shows the information about the digital tools or applications used by the lecturers in developing digital content.

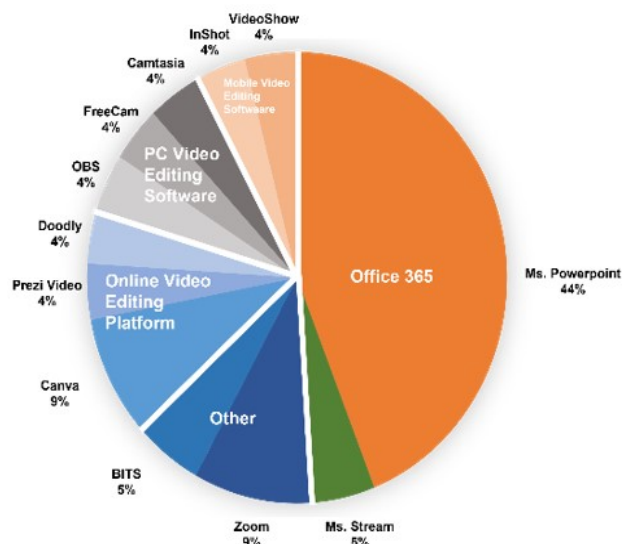


Figure 2. Digital tools used in creating and editing digital content.

The data presented that the lecturers had knowledge about several useful digital tools for developing and editing digital content, however most of them, 44% of the lecturers, chose Office 365, especially the PPT application, in developing digital contents. The reason mentioned by them was that they had been familiar with this application so it was easier and simpler for them to create the digital content. However, it was no doubt that creating digital content needed editing skills as well. This skill and the applications for it were also learned by the lecturers. They were introduced to several editing applications such as Camtasia, InSHot, Prezi and Canva, however only 4% of them preferred to use them. Most of them preferred PPT application, again since it was easier for them to create the digital content, especially videos and also to edit them.

The next step was called action learning project, in which the lecturers had to develop digital contents that must be used in their classrooms along with filling reflection forms that talked about the classroom conditions when they presented their digital content.

Fig. 3 below shows the information about students' opinions.

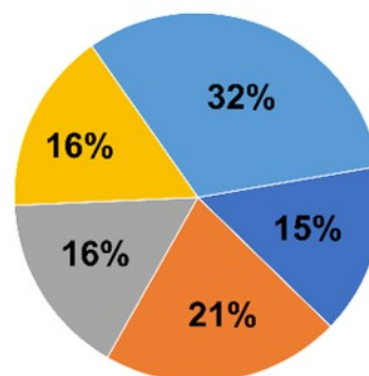


Figure 3. Percentage of students' opinions regarding the content developed by the lecturers.

The data showed that 100% of the lecturers applied their knowledge in developing digital content. Nonetheless, there was different result in term of knowledge improvement and skills in developing digital content. Although the result of the post-test showed significant knowledge improvement, however, when those contents were delivered in the classrooms, only 32% of the students said that the contents developed were good, while the others thought that the contents were confusing (16%), too much explanation (16%) and needed more examples (21%), pictures or interactive materials (15%).

In order to gain students' engagement in the teaching-learning process, the lecturers hoped to also use suitable applications.

Fig. 4 below presents the applications occupied by the lecturers in classrooms.

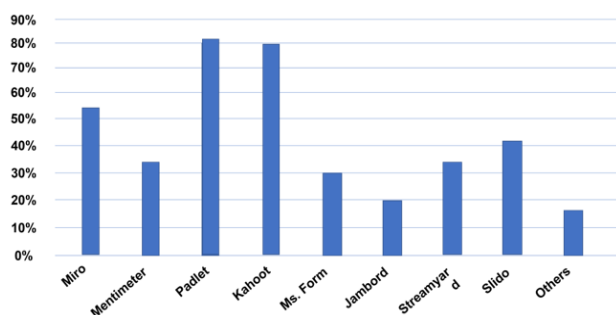


Figure 4. Application used in the teaching process.

Based on the data gathered after class, it showed that all lecturers used technology application in their classrooms. The most recently used application was Kahoot! and Padlet, followed by Miro. It happened because those applications provided interactive processes that were easy to use and accessible from any kind of devices.

At the end of each session, the lecturers wrote their comments regarding students' engagement when they applied digital content and preferred applications in their classrooms.

Fig. 5 below shows how digital content may increase students' engagement.

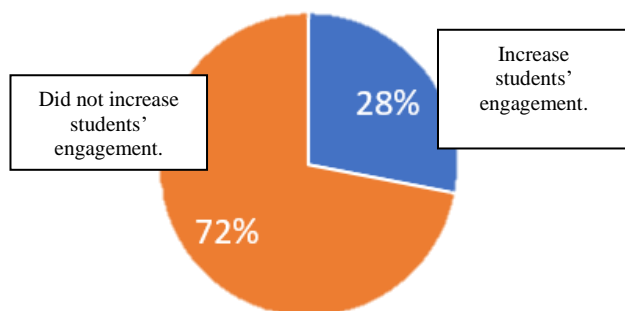


Figure 5. Students' engagement.

The result was quite surprising that although the lecturers had tried to increase students' engagement by implementing digital content and application, however the data showed that 72% of the lecturers stated that the use of digital content did not automatically increase students' engagement. The lecturers' reflection results showed that the students were active during game sessions using Kahoot!, for example, and when they were asked to share their opinion using Padlet. However, when it came to sessions when the students hoped to learn from the digital content developed by the lecturers, they tended to be passive. The students' active participation that was hoped to be arisen due to the implementation of digital contents were not reached as expected.

To get more complete data, the questionnaire also asked several questions about lecturers' and students' qualitative feedback after the use of digital content in classrooms. 42% of students stated that the digital contents were helpful since they could review the learning materials anytime they need. They also commented that those contents could become the ongoing resource that prevented them from being left behind since they were allowed to recap the information that they had missed during the class.

However, they also said that the lecturers should increase their competencies in developing the digital content, because the content created tended to be monotone, in-interactive and not interesting either. From the lecturers' side, 81% of the lecturers agreed that digital contents created were the things that they needed in teaching activities nowadays. These were the ways that enable them to provide additional materials for the students, provide quizzes and feedback in more interactive ways and helped students learn the subject wherever and whenever they are. However, they also stated that they needed improvement in terms of how to speak in front of the camera and created more interactive digital content.

Learning was also described as a process of modifying existing knowledge. Through some random interviews, 7 lecturers in this study mentioned that they expected that conditions happened in their classrooms and the shared digital contents might trigger them to analyze their previous and current knowledge. To reach this expectation, the students' engagement in the form of their involvement in the teaching-learning process was highly needed, and unfortunately this did not happen in their classrooms.

V. CONCLUSION

The emerging need of implementing technology as significant support to teaching and learning processes is indisputable. The focus of it is the impact of technology in increasing university students' learning. Through TEL, students may become more independent learners. This condition should then be supported by the lecturers' technological competencies as well.

The aim of this study is to investigate the effectiveness of TEL professional development programs in equipping lecturers in developing digital content materials and gaining lecturers' competencies in increasing students' engagement in digital classrooms, while the underlying hypothesis is that lecturers who join and participate actively at TEL PD program will have ample knowledge to create digital contents that when they are implemented in classrooms, they can be used as tools to gain students' engagement in teaching and learning process. However, the research result that has been described above shows that the PD program conducted follows the ideal steps of training program, with the goal as follows the hypotheses that lecturers are able to develop their digital content for their teaching processes, and that those contents follow the criteria well, furthermore, it is assumed that the digital content developed and the implementation of digital application as part of TEL may gain students' engagement in classrooms. Nonetheless, from the study, it can be concluded that they do not meet the main goal directly. It needs other strategies that may help lecturers increase their ability in conducting TEL that can gain students' motivation in engaging actively in the nowadays classrooms. Moreover, continuous improvement plan should include other criteria of implementing TEL, that TEL should be frequently used by the lecturers with the point is increasing interaction between students and lecturers and among students.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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