



The Integration of ICT in ELT of Pre-Service Teacher Professional Education (PPG) Students

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Abstract

Student teachers are expected to take advantage the use of technology for teaching process. This study aims to investigate the ICT tools used by Pre-service English Teachers who are also PPG students to achieve their learning goals in teaching English during their Teaching Practicum (PPL), how they integrate these ICT tools evaluated by TPACK and SAMR framework, and examine the obstacles. This current study was descriptive qualitative research. In this research design, the data was gathered by means of document analysis, semi-structured interview and observation. The participants were five Pre-Service Teacher Professional Education (PPG) Students majoring English Education Batch 2 academic year 2022/2023 in one of university in Yogyakarta, who represented three school levels (SMP, SMA and SMK). The data were in three distinct stages: reduction or condensation, data display, and conclusion drawing or verification. The result shows that (1) variety of ICT tools are used to achieve the learning goals, they are Google Form, Google Docs, WhatsApp, Canva, Blooket, Bamboozle, WordWall, Kahoot, Quizizz, YouTube, and GimKit. These tools are selected based on the learning needs, students' need, students' preferences, learning objectives, availability of facility, and possible challenges. (2) The activities that integrating ICT tools majority are in augmented level of SAMR. While the pre-services teachers' TPACK is effectively help them in integrating ICT tool to enhance the quality of learning, but still need optimization. (3) There are three main obstacles faced by the teachers; which come from the technical problems, teachers' TPACK, and students' problem. Technical problems covers the lack of internet access, insufficient devices, and restrictive school rules. Teachers' challenge on their TPACK includes the selection of suitable tools, the time management in integrating ICT tools, and the struggle to keep up with the rapid development of technology. The students face no significant problems, yet sometimes the negligence of the task arises as they become too attached with the ICT tools.

Keywords: *ICT Integration; English Language Teaching; Pre-service Teacher; PPG Program*

Introduction

Over the past decade, there has been a dramatic increase in the existence of digital technology and Information Communication Technology (ICT) which gives an immense impact in almost every aspect, one of them being in the educational field. In spite of all the challenges and constraints of the use of ICT in teaching and learning, its usefulness and advantages cannot be precluded. Sources, virtual

classrooms, and knowledge are easily found everywhere and anywhere effortlessly by means of technology. Therefore, it can be said that upgraded technology has altered the ways we teach and learn (Farr & Murray, 2016).

Regardless of the ease with which people can learn and gain knowledge individually, the role of a teacher cannot be replaced by technology. No matter how advanced and modern technology is, it will not be able to replace teachers. This view is in the same vein as Clifford's statement (Clifford, 1987, p. 13) who writes that "Technology will not replace teachers. Teachers who use technology will probably replace those who do not". Precisely, teachers nowadays are expected to be in a better position to take advantage of the existence of ICT in their teaching and learning process. Besides that, this advantage gives teachers an opportunity to accomplish their students' needs to face the swift digitalized situation.

To support this, the Indonesian government has mandates related to this issue in educational policy which is stated on Government Regulation (PP) number 74 in the year 2008 chapter 2 article 3 about the teacher competency and certification. Firstly, it is being highlighted several times that one of the teacher competencies is utilizing the learning technology as a part of pedagogical competencies. The role of a teacher is also required to be able to make use of technology and the internet further than pedagogical ability and mastery of subject materials.

Secondly, when it comes to teacher certification, a professional teacher has to have a teacher certificate as a formal recognition evidence. This certificate is obtained through a professional education program held at teacher training institutions [Lembaga Pendidikan Tenaga Kependidikan (LPTK)] appointed by the Ministry of Education and Culture. There are some government laws (No. 14 year 2005 about teacher and lecture, No. 12 year 2012 about higher education) and government regulations (No. 19 year 2017 amendment to government regulation number 74 of 2008) which underlie the Indonesian teacher reformation through a professional education program after obtaining a bachelor's degree (S-1 or D-4).

In facilitating teachers to get both competence and educator certification, the newest Pre-Service Teacher Professional Education (PPG Prajabatan), which is organized by the Ministry of Research, Technology, and Higher Education (MoRTHE), has been managed since 2022 and is still going on until 2023. MoRTHE issued various educational transformation policies through the Merdeka Belajar program which aims to create quality education. This is done through a paradigm transformation in the way of teaching and learning. Therefore, the current PPG program is the result of continuous improvement from the previous PPG program. The change is in the form of a paradigm shift that leads to the teacher as a reflective lifelong learner.

This PPG program is conducted in 2 semesters and covers 38 credits consisting of 32 core subjects, 4 selective subjects, and 2 elective subjects. Based on Peraturan Direktur Jenderal Guru dan Tenaga Kependidikan Number 3830/B/Hk.03.01/2022, those subjects are delivered to prepare the PPG students, who are the pre-service teacher, to be capable and skilled in developing plans, implementing, and evaluating student-centered learning. The learner-centered learning process is carried out in the form of lectures using learning principles and using technology. Moreover, based on the Buku Pedoman Program Pendidikan Guru Prajabatan (Kemendikbud Ristekdikti, 2020), teachers have to possess abilities to face the 4.0 industrial revolution. One of them is to carry out innovative and fun learning by integrating information and communication technology literacy through the TPACK approach. Thus, the use of technology is highlighted in this PPG program, especially on the teaching and learning progress.

The use of technology in the educational process is frequently associated with TPACK. The topic of Technological pedagogical content knowledge (TPACK), has been widely discussed in recent years. TPACK itself is a framework dealing with the combination of three cores of knowledge that should be possessed by teachers, namely technological knowledge, pedagogical knowledge, and content knowledge (Koehler & Mishra, 2009). This issue highlights that having worthy technological knowledge is not

sufficient enough for technology integration (Koehler, Mishra & Yahya, 2007). Furthermore, the implementation of TPACK is strongly interconnected with the SAMR (Substitution, Augmentation, Modification, and Redefinition) Model, which was promoted by Puentedura (2006). This model presents a hierarchical representation of how teachers integrate technology into pedagogical practice, serving as an evaluation model for teachers' adoption of ICT. It starts with Substitution at the lowest level and culminates with Redefinition at the highest level. Therefore, both frameworks are crucial to be used when discussing the integration of ICT in the context of teaching and learning.

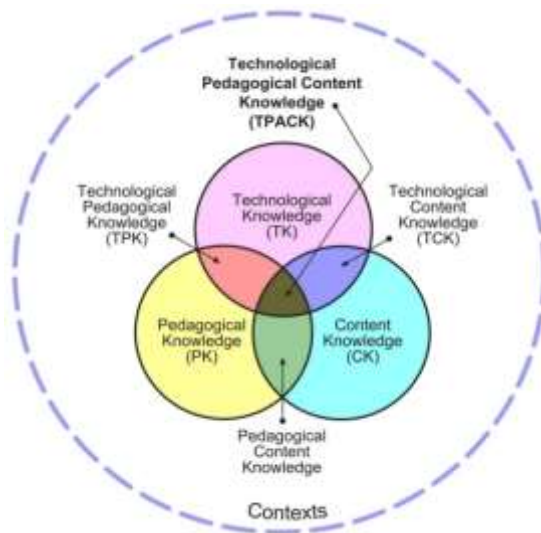


Figure 1. The TPACK framework by Mishra and Koehler (2006)



Figure 2. The SAMR Model by Puentedura (2006, 2014, 2020)

Along with the development of ICT, the government laws and regulations as well as the PPG program purposes, however, it is found that the subjects which specifically teaches the technological knowledge for teaching English, named “New Technologies in Teaching and Learning”, is a selective subjects. However, that subjects is one of the selective subjects chosen by the PPG students. These selective subjects are chosen from a range of options provided by the LPTK which holds the PPG Program. The list of selective subjects offered is predetermined at a national level. It should be noted that not all LPTKs offer the course on New Technologies in Teaching and Learning, which means that not every PPG student has the opportunity to choose this subject.

This issue happens in one of LPTK which is undergoing a PPG program majoring in English Education in Yogyakarta. This LPTK does not offer the subject that specifically teaches the technological knowledge for teaching English. Nevertheless, according to preliminary observation conducted with some PPG students, they revealed that up to this point they have also been integrating ICT while teaching, even though they did not receive any subject that specifically teaches it.

As a consequence of this gap, it is not clear how Pre-Service Teacher Professional Education (PPG) students implemented ICT integration in practicing teaching and learning, as well as the obstacles that they faced. Knowing the facts and potential challenges that might happen in real teaching practice encountered by the teachers can be used as the evaluation tool for the PPG program improvement.

Several previous studies have discussed the analysis of ICT integration on language teachers with TPACK analysis and SAMR framework, which is only focused on the ecology and techno stress in integrating. However, it is recognized that the deeper issue about the ICT integration of Pre-service

teachers particularly in ELF PPG students program has not been scrutinized deeply. Therefore, this study is an attempt to bridge the gap by conducting an exploration on the EFL pre-service teachers who are undergoing a PPG program in implementing ICT integration on their teaching practicum.

Method

Design

This current study used descriptive qualitative research. It was chosen because the study was aimed at gaining in depth understanding related to the opinion, feeling, perspective of attitudes of the participants (Lodico, Spaulding & Vogtle, 2010; Nassaji, 2015).

This research was conducted in one of LPTK that offers the PPG Prajabatan program, particularly those that provide English Education study programs in Yogyakarta. The reason for choosing this particular LPTK is that it does not offer a subject specifically teaching technological knowledge for English teaching yet the PPG students at this LPTK have been integrating ICT in their teaching practicum.

Participants

The population of this research was the whole Pre-Service Teacher Professional Education (PPG) Students majoring English Education Batch 2 academic year 2022/2023 in one of private university in Yogyakarta, henceforth identified as a pre-service teacher. The population of this research is 70 teachers. Purposive sampling was used to select several participants who used different tools. Therefore, there were five participants; they are pre-service students who represent the variety of different ICT tools and three school levels, which are junior high school, senior high school and vocational high school.

Research Instruments and Data Collection Techniques

The data were gathered by means of document analysis, conducting interviews and observation. The document analysis was used to collect clear written evidence of what kind of ICT tools and how ICT was integrated in the English teaching practicum. The interview was designed to answer the research questions related to the objectives of the study, which are how the pre-service teachers integrate the use of ICT in English teaching practices as well as what are the obstacles faced by them. In addition, observation was conducted to assess the extent to which the pre-service teacher successfully applies the ICT tools in accordance with the planned lesson plan, as well as to confirm the findings obtained from the previously conducted interviews.

Data Analysis

The data were analysed using the content analysis methodology proposed by Miles, Huberman, and Saldana (2014). The interactive model analysis consisted of three distinct stages: reduction or condensation, data display, and conclusion drawing or verification.

Data Validation

To guarantee the accuracy and dependability of the data in this research, one of the typical techniques is to prove the trustworthiness of the data through triangulation (Tracy, 2013). As mentioned earlier, this study utilized document analysis, interviews, and observation as data collection techniques. The data gathering process began by conducting an analysis of documents, with the aim of acquiring comprehensive information from relevant sources. A series of semi-structured interviews were undertaken in order to directly gather thoughts from research participants, thereby enhancing the dataset. Subsequently, the results obtained from these two methods were then used as a basis for conducting the

classroom observation. Those different techniques in collecting the data were also used to avoid biases in this study. Therefore, this study triangulated the result of the document analysis, interview, and classroom observation to strengthen the credibility of the data.

Findings & Discussion

1. ICT Tools Used by Pre-service Teacher

Planning Stage		Implementation Stage		Assessment Stage	
Google Form	Surveying students' need, preferences, and learning styles	Canva	Asking students to create mind map, brochure, or info graphic	Google Form	Asking students to write reflections
Google Docs	Collaboratively constructing a teaching modules	Blooket	Delivering quiz in the form of hacker game	GimKit	Delivering live quiz in the form of collaborative and competitive game
Search Engine	Searching materials, references,	Kahoot	Delivering live quizzes		
YouTube	Finding materials in the form of video	Quizizz	Delivering live quizzes		
Ilmuguru.org	Finding lesson plan references	WordWall	Delivering live quizzes in the form of individual game		
WhatsApp	Sharing information, link, materials, and task	Bamboozle	Delivering live quizzes in the form of collaborative game		
Canva	Creating media (slides and flashcard)	Google translate	Translating words or sentences		

2. The ICT Integration Analysed by TPACK and SAMR Model

a) Tpack

Viewed through the lens of Technological Pedagogical Content Knowledge (TPACK), two indicators have been identified to measure teachers' competence, they are; knowing technology applications and convenient tools, and being able to operate technology applications and tools to support teaching strategies for teaching EFL materials (Muslimin, 2023). Both indicators are used as the parameter on teachers' competency in integrating ICT tools.

Concluded from the findings, teachers have strong opinions and continuous effort to keep updated of the latest developments in technology in order to employ them as tools for teaching and enhance the quality of learning. As mentioned by Darling & Hammond (2021), technology is one of the element of teaching practice. Therefore, teachers take significant effort in achieving two TPACK indicators although in their PPG programs there is no specific subject that teaches about new technology in teaching English. Commitment to become a continuous learner in keeping updated with technology development is shown

in their response. The response is in the form of seeking knowledge through discussions with peers and mentor teachers, attending seminars and training, and self-study with the help of the internet. These efforts are in line with Lisa et al (2021) opinions that to prepare pre-service teachers' readiness, practical training sessions, mini-workshop, and courses have to be provided.

Furthermore, the proficiency of teachers in relying on TPACK to integrate ICT tools into their teaching practicum is an essential component for dealing with global challenges 4.0. Although technology and infrastructure are available, the didactic and methodological concepts should not be neglected due to their significance (Weidlich & Kalz, 2023).

Added to that, it is discovered that teachers adapted and adopted ICT tools as strategies and tools in increasing students' enthusiasm and interest without neglecting the learning objectives that must be achieved in learning English. Thus, conducting need analysis before constructing lesson plan which integrates ICT tools are necessary (Dewi et al, 2023). Similarly, Weidlich & Kalz (2023) believed that a teacher's mastery of the TPACK is determined by their ability to teach subject matter using various methodologies and appropriate technology, tailored to the specific learning objectives. It can be concluded that, beyond the problems of appropriate technology infrastructure, teachers have claimed that the use of technology in the classroom has been effective and successful although not yet optimized.

b) SAMR

Their ability to operate ICT tools were demonstrated on their planning stage, implementation stage and assessment stage (Yildiz, 2017). From the three levels that have been observed, the five participants have integrated ICT tools at each step. From the perspective of the SAMR model, in integrating ICT tools at **the planning stage**, teachers utilize Google Form as a substitute for distributing paper-based surveys. This shows that teachers only change traditional ways into digital technology without causing changes in teaching practice (Bicalho, 2023). In searching for teaching materials and references, the use of search engines plays an important role in bringing teachers to websites that will be useful, such as ilmuguru.org that provides lesson plans and YouTube that provides authentic materials. This internet search, as explained by Bicalho (2023), helps finding any form of updated resources, such as articles, pictures, videos, applications etc., and does not simply substitute the existence of a book library. Therefore, these integrations are interpreted as enhancement levels (Puentedura, 2014 & Drugova et al, 2021).

Teachers have reached the redefinition level in the development of teaching modules with the aid of Google Docs. They make use of the platform's existing features to collaborate with peers or mentors, provide feedback to each other, and save their work in a cloud-based system. The feature to collaborate with others was also highlighted and became the alternative for conducting peer-review (Sholihah, 2018). More importantly, the teaching module has been saved in the cloud, serving as a valuable resource for other teachers within the school and colleagues.

The Canva platform is used as a tool for creating teaching media, including presentation slides for delivering materials and producing media like flashcards. In addition to designing, teachers employ further features such as taking part in collaborative activities with their colleagues and providing feedback while preparing this media. Canva is also used by teachers in facilitating students to create writing projects (Anwar, 2021). The task required students to produce a collaborative infographic, mind map, or brochure using a range of tools provided by Canva platform. In accordance with Anwar (2021), the students' interests were highly valued as they were given the opportunity to make decisions regarding project activities and have their individual needs fulfilled. Compared to Bloom Taxonomy, this represents the final stage of higher thinking, where students are expected to produce, elaborate, formulate, or design tasks based on the teacher's instructions (Bicalho; 2023 and Puentedura; 2006, 2014, 2020).

At the **implementation stage**, Canva, Blookit, WordWall, and Bamboozle were used to modify the quiz in the form of a game. The teaching practices, which generally give students quizzes, were redesigned into interactive online game activity to apply and evaluate the topic they were learning. These games offered real-time, engaging, and transparent gameplay, as well as additional elements such as points, bonuses, penalties, and other features that make them interesting. In using SAMR to reflect on the integration of platform to create a quiz in the form of gamification, based on Hilton (2016), modifications enable significant change to be made to existing tasks that would be impossible without the use of technology. It proved that the modified activities were beyond the confines of the classroom (Bicalho, 2023 and Muslimin, 2023). This modification level links to Bloom's Taxonomy in which these activities come before creation level activities.

Meanwhile Kahoot and Quizizz were categorized as Augmentation, as it was offering regular quizzes that are conducted online but can be monitored in real-time. This is in line with Goksum & Gursoy (2019), who discovered that employing Kahoot and Quizizz as a formative assessment affects the level of student understanding based on Bloom's revised taxonomy, but has no effect on the application level. From those reasons, it illustrates that the use of both platforms is at the level of augmentation as it did not change the teaching practice (Bicalho, 2023 and Muslimin, 2023).

At the **assessment stage**, Google forms is frequently used to share quiz and reflection form. In line with previous research claims that the use of Google Form for spreading quiz is effective (Ngafifah, 2020). No activity that showed technologies added more value to teaching practice is found, since these only substitutes the paper-based form. This indicated that the use of this tool was considered at the substitution level (Bicalho, 2023). Yet, the teacher who employed GimKit platform to evaluate the students understanding, it demonstrates that modification level is implemented. GimKit offers a unique feature where quiz are presented as interactive games that can be played individually or in groups. Students have the opportunity to compete against each other in real-time, fostering engagement and interactivity (Feldee & Faresi, 2022).

In short, it is seen from the findings that their use of technology is more accurately described as matching the needs or possibilities of the technology to specific learning activities or objectives. Concluded from the discussion, the SAMR level does not function in hierarchal of Bloom Taxonomy cognitive level. This analysis is acceptable as previous research also found the same case, which argued that the levels do not require a transition from a lower level to a higher one, but rather the selection of a level that is most applicable to the task (Hilton, 2016). This conclusion is linked to a more general idea in education beforehand, which is that SAMR functions similarly to Bloom's taxonomy, in that teachers will strive to reach higher levels but not neglect lower levels in the process. Therefore, the levels of the SAMR model do not mandate a progression from lower to a higher one, but instead, they allow for the selection of the most suitable level for a given task. Additionally, it should be noted that the assigned tasks have been customized to accommodate the learning needs and students' preferences.

In another perspective, the sequential progress through the SAMR model can be used to empower teachers to improve their TPACK. Drugova (2021) and Hilliard (2015) claimed that fostering teachers' TPACK to progress through the SAMR level is found to be very important, which correlates with claims highlighting the importance of continuous professional development of teachers, support this view. Therefore, although SAMR levels do not require progression from a lower to a higher one, teachers can still utilize this framework as a basis for developing their TPACK competence according to their detected difficulties.

3. The Obstacles

a) Technical Problems

The technical problems, based on Lubis (2018) and Hafifah & Sulisty (2020), are still the major problems to conduct ICT integration in teaching and learning in Indonesia. Illustrated by the research finding, internet access and inconsistent connectivity were faced. The problems were caused by the lack of data quota and the class being located at quite a distance from the WiFi source. The teachers' innovative approaches, such as using personal hotspots or employing traditional methods when internet access is unavailable, highlight their ability to adapt and willingness to overcome connectivity obstacles. These findings are consistent with previous research by Ghavifekr & Rosdy (2015) that highlights the significance of dependable internet access for successful integration of ICT in classrooms.

The lack of compatibility with devices presents another significant technical problem, particularly for students who do not have smartphones or make use of outdated devices. Teachers underlined the importance of having commonly accessible platforms, standardised tools, and preventive strategies to ensure the successful integration process. This goes along with the current literature proposed by Rahiem (2020) that focuses on the importance of taking into account device compatibility and ensuring accessible access to technology for every student.

In terms of schools' regulation in using smartphones in the classroom, only one out of five schools has this restriction rule. This indicates that the awareness of the necessity of integrating technology in classrooms is already possessed by Indonesian schools. Regarding its usage, which is known to disrupt focus during the learning process (Calderón-Garrido et al, 2022), this issue can be resolved by granting permission to use smartphones in class strictly when they are necessary for learning purposes.

b) Teacher's Problem

The primary challenge faced by the teacher is the complexity related to selecting suitable platforms for integrating ICT technology into teaching languages. The challenges are matching chosen media with students' needs as determined by diagnostic assessments, innovatively converting learning resources into quizzes, and dealing with difficulties in finding references for updated platforms. These barriers demonstrate the importance of careful platform selection processes, considering learning needs and the accessibility of additional resources, which reflects on the TPACK skill that teachers must master. As stated by Mishra and Koehler (2006), successful incorporation of technology requires a comprehension of how technology matches with the subject content and pedagogical strategies. In this scenario, teachers must depend on their ability to adapt and be creative, as indicated by the TPACK framework, which highlights the rapid technology development and integrates them in education.

The second challenge for one of five teachers is the difficulty in efficiently managing time while integrating ICT devices into the classroom. Teachers note that students have a willingness to become fully engaged, which can lead to the duration being longer than planned. This finding resonates with Lubis (2018) who argue that the allocated time on the lesson plan forces them to carry out ICT-based learning as thoroughly yet simple as possible. Possible strategies to overcome are conditioning, developing awareness, and using timers as visual aids to manage time during the class efficiently.

The third issue refers to the absence of subjects that particularly discuss technology for teaching English. Teachers emphasize the necessity for further practical knowledge and highlight their active effort on independent learning to keep updated with the rapid development of technology which is beneficial to their teaching practice. Through accessible platforms, webinars, and sharing best practice with peers are

the teachers' response to this problem, those already in line with Ghavifeks & Rosdy (2015) related to support teachers. This is consistent with the literature that highlights the significance of teacher professional development in integrating technology.

c) Students' Problem

There is no significant problem faced by students in terms of the use of ICT, other than technical problems. Students did not experience much difficulty in operating ICT tools in learning. The technology integration models must have a quality of being simple and easily comprehensible both in theory and in practical application" (Kimmons & Hall, 2016). Initially, they were confused about using tools such as Bamboozle, Gimkit, Canva, and Blooket. However, once the teacher provided an explanation and demonstrated the process, students were quickly able to operate the devices. This reinforced by high school learners nowadays, are categorized as digital natives. Explained by Smith (2020) digital natives are naturally possessing digital literacy skills and innate proficiency in using technology. Considering that, today's students are a generation that has grown up in the rapid development of digital technology, such as smartphones, tablets, and other digital platforms.

A little problem that arises is that there are some students who are too attached to playing quiz in the form of games, leading them to neglect their assigned work. However, the teacher through reminders and support can effectively manage the issue.

In spite of these difficulties, the majority of teachers reported that students have an excellent understanding of using ICT tools. The positive perception implies that, although there are certain worries, students, as a whole, show understanding in employing technology for learning purposes.

Conclusions and Suggestions

Based on the findings and discussions, this study concludes some main points. The first is the ICT tools used by the teacher in teaching practicum. Personal Computer (PC) or laptop and LCD projector are hardware tools which are used in their daily teaching practice. Additionally, the use of speakers and smartphones were also observed but optional depending on the activities carried out. In the planning stage, the ICT tools used are Google Form, Google Docs, WhatsApp, and Canva. While in the implementation stage, Canva, Blooket, Bamboozle, WordWall, Kahoot, YouTube, Quizizz are employed. Lastly, the ICT tools used in assessment stage are Google Forms and GimKit.

The teachers' TPACK can be concluded that they have already possessed that competency, although some difficulties are still found. It is shown in the application of ICT tools in their teaching practicum. From the three stages of teaching learning process, which are planning, implementing, and evaluating, the teachers showed proficiency in integrating ICT tools with the learning methods and the content. However, several teachers still encounter difficulties in selecting ICT tools that align with their needs and available facilities. In addition, some teachers also find it difficult to find references that explain the latest platforms for language teaching. The observed challenges indicate that the material acquired in PPG program is insufficient since requiring more optimization in its implementation. Meanwhile, the proficiency observed is inseparable from their efforts to learn independently outside the PPG Program, such as participating in webinars, best practice sharing groups, and free training because in PPG lectures there is no subjects specifically teaching this issue.

Meanwhile, when viewed through the lens of the SAMR framework, it is noticeable that particular teachers tend to implement ICT tools in the augmented level. There are 12 activities that integrate ICT tools in augmented level, 7 activities in substitution and redefinition level, and 5 activities in modification level. Therefore, it can be inferred that the majority of activities carried out are still in the

enhancement stage. If this enhancement level is linked to the level of Blooms taxonomy, it indicates that it remains at the lower three levels of learning, namely in the cognitive process of remembering, understanding, and applying.

The ICT tools selected integrated are based on the students' learning needs, student preferences, student learning styles, technical supports and possible obstacles. In achieving the learning goals, the function of ICT tools selected is also tailored to the needs. Although the tools offer many features that can be used, teachers prioritize the purpose of their use.

This finding is in line with previous findings which state that the levels of the SAMR model do not mandate a progression from lower to a higher one, but instead, they allow for the selection of the most suitable level for a given task. However, the sequential progress through the SAMR model can be used to empower teachers to improve their TPACK. Teacher can self-assess their TPACK competence through their integration of ICT tools viewed by SAMR model. SAMR functions similarly to Bloom's taxonomy, in that teachers will strive to reach higher levels but not neglect lower levels in the process.

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