



Original Research

TPACK Based: A Need Analysis for ELT Materials Development

Ravena Devi & Ikhsanudin Ikhsanudin

Universitas Tanjungpura Pontianak, Pontianak, Indonesia

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Abstract

Maintaining current levels of knowledge necessitates putting learning into daily life. Currently, the development of technology and information has been very rapid, so it is possible to carry out technology-based learning. The term "TPACK" refers to the integration of conceptual frameworks related to technology, pedagogy, and content knowledge. The aim of this study was to determine if one of Kalimantan Barat schools was prepared to use TPACK in its teaching methodology. Descriptive analysis is the research method that is implemented. The techniques used to collect the data are observation of the school's infrastructure and amenities, interviews with a number of students and one of the English teachers, and student questionnaire responses. The findings revealed that the school and teachers were not prepared to include TPACK in learning and teaching activities. Even though the students were prepared enough for TPACK-based teaching and learning, it could be difficult because the school and teachers were not prepared. The observation reveals a scarcity of learning resources. The interview findings revealed that there are impediments to the use of TPACK in teaching and learning activities, such as a lack of technological skills, difficulty adapting to existing technology, and student indiscipline while utilizing technology in learning activities. Based on the study's findings, it is possible to conclude that certain demands must still be satisfied in order to accomplish TPACK-based learning.

Corresponding Author: Devi, ravena22@student.untan.ac.id

1. Introduction

Technological innovation has had a great impact on human lives in this century. The existence of technology is now seen as highly vital in human life as a support in carrying out various activities, both in terms of employment and education (Agustian & Salsabila, 2021). The purpose of technology development in education is to make the teaching and learning process in the classroom easier for educators and learners. The learning process can be carried out through technology, such as face-to-face or online learning. Currently, technology is rapidly evolving, coupled with increasingly advanced science and technological habits (Sinsuw & Sambul, 2017). English is one of the most widely utilized languages for worldwide communication. Making it a subject of study in school. A number of factors play a role in the effectiveness of teaching English to learners, including teaching materials, teaching styles, learning styles, the selection of appropriate instructional media, and several more. According to Bartolomé & Cebrian-de-la-Serna (2017), with the advancement of science and technology, English teachers must be capable of incorporating technology into the classroom. To improve learning outcomes, an engaging medium is required to increase the excitement, interest, and activation of students in the process of teaching and learning activities in class.

Teachers can achieve this through mastering technical, pedagogical, and content knowledge or science, sometimes known as TPACK or technological pedagogical and content knowledge. TPACK (technological, pedagogical, and content knowledge) is a framework for developing new learning models that combine three major components: technological, pedagogical, and knowledge components. A learning model that may maximize learning activities is one of the many components needed in the field of education to support the teaching and learning process. Since TPACK is a component of a teacher's four primary competencies—

pedagogic competence, personality competence, social competence, and professional competence—professional instructors need to possess a sufficient level of TPACK proficiency. According to [Doering et al. \(2009\)](#), including TPACK can boost self-confidence and teacher content, pedagogical, and technological competence in developing learning. In order to guarantee that learning is applied in line with the demands and changes that arise, the pattern of teacher competency development using TPACK is a suitable technique.

Several previous research on the development of TPACK-based teaching materials have been conducted. [Triwahyudi et al. \(2021\)](#) believes that students require a comprehensive multimedia learning environment for chemistry that includes photos/pictures, teaching videos, animations, and practice problems. According to studies, 57.6% of students have difficulties grasping the material's premise, and 72.7% have problems answering the questions. As a result, learning aids such as learning implementation plans (RPP) and teaching materials (e-LKPD) that integrate technology, pedagogy, and subject knowledge (TPACK) in chemistry education is required. The creation of TPACK-based learning films in fractional content for Grade IV students may have an impact on learning outcomes ([Afsari et al., 2021](#)). Based on this research in generating TPACK-based learning videos, it is possible to infer that TPACK-based learning films in fractional material for grade IV elementary school kids are valid, practical, and have the ability to influence learning outcomes.

According to observations made during the implementation of PLP II activities at a junior high school in Kalimantan Barat, many students do not understand the teacher while he or she is explaining the material. Only a few students appear to be interested in and excited about the material being presented. In fact, students' interest is critical to making learning in the classroom enjoyable. The researcher was interested in conducting this research because of the problem that occurred at a junior high school in Kalimantan Barat. The researcher decided to conduct a study on the needs analysis in running TPACK for ELT and whether there is enough content for the presentation of ELT using TPACK.

2. Literature Review

2.1 TPACK

A framework known as Technological Pedagogical Content Knowledge (TPACK) describes the knowledge that teachers need to know in order to use technology in the classroom. According to [Mishra and Koehler \(2006\)](#), teachers need to grasp a TPACK in order to use technology in the classroom efficiently. TPACK is a framework concept that evolved from the convergence of content, pedagogy, and technology. Kocoglu as cited in Muhammad Subhan, stated that Technological Pedagogical Content Knowledge (TPACK) is the amalgamation of three knowledge components: content knowledge, pedagogy, and technology. Its objective is to cultivate foundational knowledge when a teacher gains subject-matter expertise and comprehends how technology can enhance students' learning while recognizing the appropriate pedagogical approach to enhance the previously mentioned learning content.

[Merliana \(2018\)](#) asserts that modern communication is now combined with technology and communication in the form of mobile phones such as smartphones, androids, teleconferences, and other forms of communication tools. Quality improvement in the field of education can be aided by technical developments in both information technology and communication technology. According to [Kwartolo \(2010\)](#), using technology in English language learning can assist teachers in performing student learning interactions, one of which is using computer technology. Pedagogic competence is a competency that must be thoroughly investigated within the context of teacher implementation during the teaching and learning process ([Selvi, 2010](#)). This pedagogical competency includes the skills required for a teacher to become a professional teacher. Content knowledge refers to the actual subject matter that needs to be taught or learned. According to [Mishra and Koehler \(2006\)](#), content knowledge includes knowledge of theories, concepts, ideas, frameworks, and proofs in addition to methods and strategies for acquiring such information. In addition to having a solid understanding of the fundamental facts, theories, and procedures in a particular field, teachers also need to be familiar with explanatory frameworks, which help organize and connect ideas, and the principles of evidence and evidence ([Shulman, 1986](#)).

2.2 Teaching Material

Teaching materials include all types of learning materials for teaching, including information, tools, and texts that have been organized systematically to assist teachers and students in achieving predetermined competencies. According to [Tomlinson \(2012\)](#), Materials are defined as "anything that can be used to

facilitate language learning, such as coursebooks, videos, graded readers, flashcards, games, websites, and mobile phone interactions." Materials act as a crucial purpose in making knowledge accessible to students and in encouraging students to engage with knowledge in plenty of ways. Materials in language teaching refer to anything that teachers and students can use to help them learn a language (Richards & Schmidt, 2013). Richards (2001) divides three categories of teaching materials: (1) printed teaching materials, (2) non-printed teaching materials, and (3) mixed teaching materials that blend printed and non-printed resources. In this situation, Tomlinson (2011) argues that educational materials can be created using online digital literacy technologies that can be accessible from anywhere.

2.3 Material Development

Sometimes teachers have to explore beyond textbooks for classroom materials and modify them to fulfil the demands and preferences of certain students. The process of creating, assessing, modifying, and utilizing materials intended to support language learning and development is known as materials development (Tomlinson, 2016). Therefore, every course that aims to train, educate, or develop new or practicing teachers needs to prioritize materials creation. Applied linguists and teacher trainers who conduct these courses and/or write articles, chapters, and books to be used on them should make this a priority. According to Tomlinson (2011), one of the fundamental concepts for developing language learning materials is that the materials should have an impact. Impact is achieved when learners are interested, curious, and pay full attention to the material.

2.4 Need Analysis in ELT

Collecting data is the first step in starting a study. Need analysis is carried out through interviews with a teacher and the distribution of questionnaires to students in order to collect data that will subsequently be utilized as a guide for developing PowerPoint as a teaching media. The goal of need analysis is to identify potential causes of a performance gap, which includes (1) confirming a performance gap (2) identifying instructional goals (3) analysing students (4) reviewing available resources, and (5) organizing a project management plan (Branch, 2009). Iwai et al. (1999) define "needs analysis" as the procedures used to collect data in order to create a curriculum that would meet the needs of a particular group of students. Clearly, the importance of requirements analysis in any ESP training cannot be overstated. The needs analysis process in ESP learning is considered to be a complicated activity including two significant components, namely learners in target contexts and learning needs.

3. Methodology

Observation, interview, and questionnaire were techniques used to collect data. Data was gathered through school's facilities and infrastructures observation, an interview with one of the English teachers at a junior high school in Kalimantan Barat, and distribution of questionnaires to ninth-grade students at a junior high school in Kalimantan Barat.

Data collection instruments include observation, questionnaire, and interview. Observation is a research technique that involves directly or indirectly viewing objects. Observation can be defined as a search for data that can be used to reach a judgment or make a diagnosis (Uhar, 2012). Taking notes on observational data is not the same as making considerations and then giving graded judgements. Data on current school infrastructure and facilities, particularly those pertaining to lessons using technology, were gathered through observations for this research. The observation table that used in this research was modified from *Pengelolaan Sarana dan Prasarana Sekolah* by Sambodo (2019). See Appendix 1.1 for the observation organization.

A questionnaire is a data collecting approach that involves submitting or delivering a list of questions for respondents to fill out (Mahmud, 2011). The questionnaire can be considered as a research tool that shares many characteristics with interviews, with the exception of its implementation, which is done in writing, whereas the interview is done verbally. There were 28 students who participated as responses. This student is in one of junior high school in Kalimantan Barat and is in the ninth grade. Students were given a questionnaire containing sixteen questions related to the research topic. See Appendix 1.4 for students' questionnaire organization. The purpose of the questionnaire in this research is to get data from students according to students' behavior towards technology in teaching and learning activities. This questionnaire is made up of sixteen close-ended questions intended to collect information from students about their behavior towards using technology in teaching and learning activities. Question number 1 and 2 focus on

the gadget that students' have, while question number 3 and 4 focus on students' ability to use the gadget independently. Question number 5 is focus on students' interest in reading, while question number 6 to 8 focus on the use of technology in learning according to the students. Questions number 9 to 14 focus on students' perception about using technology in teaching and learning activities. Question number 15 focus on students' collective culture in learning while question number 16 focus on parents' involvement in supervising their children's usage of technology for learning.

According to [Mahmud \(2011\)](#), an interview is a data collection strategy that involves asking respondents questions and documenting or recording their responses. An 'interview,' is a face-to-face dialogue between a writer and a participant in which information is transferred to the interviewer ([Creswell, 2005](#)). Interviews with data sources might be performed directly or indirectly. The researcher performed direct interviews with the participant for this study. The participant of this interview is one of the English teachers of junior high school and three students of ninth-class of junior high school. Similar to the questionnaires given to students. This face-to-face interview lasted around fifteen to twenty minutes. The purpose of the teacher interview sheet questions is to collect data regarding the types of programs that are used to build teacher competency in the use of information technology in the classroom, how this is implemented, and what factors help and hinder the use of ICT in the classroom. The interview sheet questions for students have the purpose of the form of teacher competence in the use of information and communication technology in teaching and learning. Interview used open-ended questions to get the needed information. All the questions in interview sheet are adapted and modified from Permendiknas No 16 tahun 2007 by Republik Indonesia (2007b). See [Appendix 1.2](#) show the organization of teacher's interview questions and [Appendix 1.3](#) show the organization of students' interview questions.

4. Results

4.1 School Support to TPACK

Support in TPACK implementation is critical since without it, the TPACK process cannot be correctly implemented. Support from schools is a crucial aspect in the effectiveness of TPACK use in teaching and learning activities. The observations reveal that this school already has infrastructure in line with the provisions of *Pengelolaan Sarana dan Prasarana Sekolah* by [Sambodo \(2019\)](#). Classrooms, a library, a computer laboratory, and a science laboratory are examples of infrastructure associated with the application of TPACK learning. However, the present infrastructural facilities are insufficient, causing the TPACK implementation to fail. See [Appendix 2](#) for the results of the observations.

This school's classrooms can be used for regular teaching and learning activities. However, the existing facilities in this institution do not have enough classrooms. Since there are no computers or LCD projectors in the classroom for technological learning, the classrooms at this institution do not enable technological learning. The computer laboratory contains computers that students can utilize. Computers in the principal's room and the administration area can also be used.

This school's library is good for reading because it contains a variety of books and applicable rules. However, this school's library has certain deficiencies in its facilities. There is no E-book, no E-library, no computer for students, no LCD projector, and insufficient space to accommodate a large number of students. The current computer is intended for librarians' job. There is no alternative source of knowledge to extend students' horizons, according to a review of observational data connected to library facilities and infrastructure, and the library cannot enhance learning with technology.

Computer laboratories are often where technological learning takes place. According to observations at this school, the present computer laboratory features computers that children can use and that work properly. All visitors to this computer laboratory must follow the computer laboratory rules. However, observations revealed that, with the exception of ICT teachers, students rarely use computers in ICT sessions. Other than for ICT lessons, computers are not used. This is supported by the findings of interviews with several students about the use of technology in learning. As a result, lab computer availability is not optimized, and lab computers are not significant when using TPACK.

This school has a science laboratory in addition to a computer laboratory. This school's science laboratory is equipped in compliance with Permendiknas No. 24 tahun 2007 by Republik Indonesia (2007a). However, this science laboratory has flaws in its technological learning application. This laboratory does

not have computers and LCD projectors. This school's science laboratory only includes practical tools that are typically used in science classes. As a result, the science laboratory is unable to support learning through technology.

The absence of resources in the form of technology tools is an obstacle to getting ready for TPACK. One of the obstacles to TPACK-based learning is shortage of facilities in libraries for developing student insight and teacher content knowledge. In addition to technological and subject knowledge assistance, the application of TPACK necessitates teacher pedagogical support. Based on the findings of an interview with one of the teachers, the school has provided teacher pedagogical support by providing training. The training was held in order to develop teacher competency and to have a beneficial impact on prior learning activities. Despite gaining assistance from schools through teacher competency training, the biggest obstacle to TPACK implementation is a lack of technological educational tools. As a result, it is possible to conclude that the school is not prepared for an implementation of TPACK-based learning.

4.2 Students' Readiness to TPACK

In addition to school preparation, student willingness is essential for successful implementation of TPACK-based teaching and learning activities. Table 1 displays the findings of the questionnaire on the use of technology in teaching and learning activities.

Table 1. Result of students' questionnaire

No.	Questions	Yes		No	
		Frequency	Percentage	Frequency	Percentage
1.	Students have a personal smartphone.	27	96,4%	1	3,6%
2.	Students have a laptop or personal computer.	11	39%	17	67%
3.	Students are able to operate smartphones independently.	28	100%	-	-
4.	Students are able to operate a laptop or computer independently.	14	50%	14	50%
5.	Students love to read books.	15	53,5%	13	46,4%
6.	Students use the internet to find answers to difficult questions.	28	100%	-	-
7.	Students use the internet as a learning resource.	24	85,7%	4	14,2%
8.	Students use the internet to find additional material to study.	24	85,7%	4	14,2%
9.	Students often use information and communication technology devices in a computer lab.	8	28,5%	20	71,4%
10.	Students better understand the material explained using existing information and communication technology devices (LCD, laptops, computers, projectors, internet).	20	71,4%	8	28,5%
11.	Students are interested in teachers who use existing information and communication technology devices (LCDs, laptops, computers, projectors, internet) when explaining a learning material.	25	89,2%	3	10,7%
12.	The learning process carried out using existing information and communication technology devices (LCD, laptops, computers, projectors, internet) increases student learning motivation.	26	93%	2	7%
13.	Teachers deliver material in a sequence and clearly when using existing information and	23	82%	5	18%

	communication technology devices (LCD, laptops, computers, projectors, internet) in a learning material.				
14.	The use of information and communication technology is beneficial for learning.	28	100%	-	-
15.	Students like to discuss or do schoolwork in groups.	26	93%	2	7%
16.	Students are accompanied by parents when operating information and communication technology devices such as smartphones as learning media.	12	43%	16	57%

Based on the results of a questionnaire on the use of technology in teaching and learning activities at this school, researchers discovered that practically each student have personal smartphones, as evidenced by item 1. In terms of laptops or personal computers in item 2, just 39% of all students are in one class. Based on the findings of the questionnaires in items 3 and 4, all students can operate their personal smartphones independently, and up to 50% of the total students in one class can operate computers or laptops independently.

Based on the results of questionnaires relating to the use of technology in learning in items 6–8, all students who completed the questionnaire answered yes to questions about using technology to find answers to tough problems. As many as 85.7% of all students use the internet as a learning resource and a source of additional learning material. In terms of self-reading interest in item 5, 53.5% of pupils loved to read and 46.4% did not. As for the frequency with which students utilize technological gadgets in school, as many as 71.4% do not. This is also supported by the findings of interviews with various students, who stated that they rarely use technology devices at school. Items 10 to 14 are concerned with students' perceptions of the use of technology in teaching and learning activities.

According to the questionnaire's results, up to 71.4% of students said they understood the material better when it was delivered in a technologically enhanced manner; 89.2% of students expressed interest in learning from teachers who used these tools; 93% of students believed that the use of these tools in the classroom increased student motivation for learning; 82% of students stated that teachers employed these tools to deliver the material in a clear and sequential manner; and all of the students who completed the questionnaire agreed that using technology to enhance learning is beneficial. On item 15, 93% of students stated that they were interested in discussing and doing group assignments, whereas 7% did not. This indicates that nearly all students participate in collective culture in learning and teaching activities. In item 16, as many as 57% of students are not supervised by their parents when using technology such as smartphones for studying, while 43% of other children are supervised by their parents when using technology as a learning medium.

The final results of the interview, which serves as data reinforcement, are similar. Appendix 4 contains the results of the interview with the students. Based on the findings of the interviews and questionnaires, it can be stated that students are ready for TPACK-based learning, albeit some students require assistance and instruction in using various technological devices. This is demonstrated by the amount of students who can operate gadgets such as smartphones independently, students' view of using technology in teaching and learning activities, which receives the most votes, and students' enthusiasm in using technology in learning activities. Furthermore, the use of technology nearly completely controls student learning activities by providing learning resources, places for discovering new information to learn, and places to find answers to difficult questions.

4.3 Teacher's Readiness to TPACK

For the implementation of TPACK-based teaching and learning activities, teacher readiness is just as important as student and school readiness. In terms of data collection from the teacher, an interview was conducted in order to get information about the use of technology in teaching and learning activities. Appendix 3 show the result of an interview with the teacher. Based on Permendiknas Nomor 16 Tahun 2007 by Republik Indonesia (2007b) about criteria of academic credentials and teaching competency, the current

questions were chosen and amended. The program to increase teacher competency in the use of information technology in learning, the implementation of ICT in learning, and supporting and inhibiting factors in the use of ICT in learning are the aspects that are asked about, based on Permendiknas Nomor 16 Tahun 2007 by Republik Indonesia (2007b). The researcher received multiple points pertaining to the research topic from the interview.

Although there are currently not enough technological resources in these schools, the use of technology in the classroom is carried out frequently because the school encourages and supports its usage. Activities for teacher competency in the use of technology in the classroom demonstrate the school's support. There is also an evaluation to find out whether there is an improvement in teacher skills in teaching using technology. The interview results also showed that the inhibiting factors for the use of technology came from the internal and external teachers. The internal inhibiting factor comes from the teacher's technological ability which is still quite low even though she has received training and evaluation. This is reinforced by the results of interviews with several students who said that when teaching, the ability to operate technology owned by teachers is not very good.

Lack of technological skills causes difficulties in developing technology-based teaching materials such as PowerPoint presentations. Developing presentation materials using PowerPoint applications is generally easy but will be very difficult and time-consuming if the user is not too familiar with the application. The external inhibiting factor itself comes from the student's response to the use of technology in learning. There are still students who do not follow classroom rules when using technology so it becomes one of the inhibiting factors in using technology in teaching and learning activities. Based on the information obtained, it can be concluded that the teachers at the school are not ready for TPACK-based teaching and learning activities.

5. Discussion

The influence of technology has an impact not only on the job environment but also on the educational environment. As a result, it is not surprising that today's youngsters are entering the period of Industrial Revolution Education 4.0, in which developments in science and technology have promoted progress in all areas of life, including advances in information technology. Early childhood growth in knowledge and technology allows them to operate technology such as mobile phones, iPads, laptops, and others (Irsyadillah et al., 2022). Quality improvement in the field of education can be aided by technical developments in both information technology and communication technology. Learning skills via digital technology will considerably assist students in obtaining and improving life skills, and educators will be able to readily design learning materials (Hidayat et al., 2020).

In today's world, one of the most significant criteria in using the TPACK approach in teaching and learning activities is school preparation. To assess a school's readiness to use TPACK, observations of school facilities and infrastructure are required. Whether or not the infrastructure and facilities of the school allow the TPACK approach to be used in teaching and learning activities. Sambodo (2019) states that one of the most important and fundamental resources for assisting the educational process in schools is the infrastructure and amenities related to education. Educational facilities and infrastructure play a critical part in efforts to develop a conducive environment. Learning will therefore be impacted by both excellent and poor management of educational facilities and infrastructure (Ellong, 2018).

The operations of purchasing, distributing, using and maintaining, inventorying, and getting rid of educational equipment and infrastructure are all strongly tied to the management of educational facilities and infrastructure in schools. This demonstrates the requirement for a process and skill in its management. Because if it is not controlled effectively and appropriately, school employees will be unable to use it optimally in the learning process (Udin & Sutisna, 2020). Based on observation and interview, the facilities and infrastructure in one of the junior high schools where this research was done can be considered to be quite complete, despite the absence of some facilities. Observation also found that one of this school's problems is the lack of a crucial tool in adopting the TPACK approach, namely projectors. The unavailability of this projector may be one of the problems preventing schools from implementing the TPACK strategy. The lack of facilities in the form of E-Books and E-Libraries in this school's library based on observation also makes it difficult for students and teachers to find additional material to broaden their horizons.

Preparation in learning refers to all aspects that must be prepared by a teacher prior to carrying out the learning process. This preparation includes preparing yourself before implementing an approach in teaching and learning activities. The ability of the teaching individuals is the self-preparation in question. When referring to TPACK, which stands for Technology Pedagogy and Content Knowledge, teachers are able to integrate subject matter professional talents, pedagogical abilities, and technology in learning. Since teachers are integral to the delivery of the teaching and learning process, it is now beneficial for them to possess the knowledge, abilities, and mastery of information and communication technology to support the learning process (Tekege, 2017). The results of an interview with a teacher who took part in the research show that the school has provided support for teachers' competency in utilizing technology in classroom activities. Assistance includes workshops and training on using technology in classroom activities.

Similar statements are made by Government Regulation No. 19/2005, Article 28 paragraph 3, and Law on Teachers and Lecturers No. 14/2005, Article 10 paragraph 1. Suprihatiningrum (2013) claimed that teacher competence encompasses pedagogic competence, personality competence, social competence, and professional competence. One of the absolute competencies that distinguishes teachers from other professions is pedagogic competence. This pedagogic competence contains the skills that a teacher needs to become a professional teacher. Having a thorough understanding of both the psychology and the features of students is considered pedagogic competency. Teachers that understand this ability are believed to be able to handle students' problems and communicate with students more effectively and efficiently.

TPACK can also be enhanced in the preparation of learning tools provided by teachers so that planned learning is adjusted to the teacher's competence to handle technology as well as the material (Ismail et al., 2022). Teachers can choose the correct material and technology for learning so that it is easily comprehended by students and clearly mentioned in their learning tools. Furthermore, the demands and characteristics of students or pupils must be considered when selecting technology to be used in learning activities (Harris & Hofer, 2011). One of the key components of TPACK is content knowledge. Components of teaching materials that will be used in the classroom. The production of teaching materials with the TPACK component will provide opportunities for students to develop their talents in technological elements (Purnawati et al., 2020). According to the interview results, one of the reasons teachers have difficulties creating technology-based teaching materials is a lack of technological abilities. Even after receiving training from the school, they can still be challenging and take time to acclimate.

It is too beforehand for an assumption that the school where this study was done is not prepared to apply TPACK in learning. When using technology in teaching and learning, there is no instructor observation. However, based on inspections of school buildings and infrastructure, discussions with instructors, and responses from student surveys, there are deficiencies that make the school unprepared to implement the TPACK strategy. In order to help teachers become competent in using technology in classroom activities, the school has offered teacher competency training. However, a lack of technological resources and student disruption in the classroom when teachers use technology are two obstacles to applying the TPACK approach in teaching and learning activities.

6. Conclusion

The results of the research show that the school is unprepared to use TPACK in its instructional strategies. These results are based on an observation, interviews, and questionnaires undertaken by the researcher. The researcher offers recommendations for schools and teachers addressing the use of TPACK in learning and teaching activities. Schools are obliged to improve their facilities for using technology in teaching and learning. Schools are also required to be able to revitalize the technology culture in their surroundings and adopt technological discipline for both teachers and students. Teachers need to be more comfortable with technology so that they can adjust to it more easily. Furthermore, teachers are required to be more capable of disciplining students about the use of technology during teaching and learning activities in order to create a more pleasant and tranquil environment in the classroom. It is recommended that autonomous activities be used for their own learning and teaching activities. It is described as the students' capacity to take charge of their own education and make judgments about different aspects of the learning process. Examples include assigning homework with straightforward instructions, having discussions in teams, and working on technology-based projects.

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Appendix

Appendix 1. Table of School Observation, Teacher Interview Questions, Students Interview Questions, and Students Questionnaire Organization

Appendix 1.1 Table of School Observation

No.	Observation	Analysis	Remark
1.			
2.			
3.			

(Modified from *Pengelolaan Sarana dan Prasarana Sekolah (2021)* by Kemendikbud)

Appendix 1.2 Teacher Interview Questions Organization

No.	Pertanyaan	Jawaban
1.	Sudah berapa lama ibu mengajar disekolah ini?	
2.	Apa yang ibu ketahui tentang pendidikan era revolusi industri 4.0?	
3.	Apa yang sudah dilakukan sekolah untuk menyokong pendidikan di era revolusi industri 4.0?	
4.	Apa yang ibu ketahui tentang kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran?	
5.	Apa yang akan dilaksanakan sekolah untuk mendukung kompetensi guru pada pendidikan di era revolusi industri 4.0?	
6.	Menurut ibu, bagaimana pemanfaatan teknologi informasi dan komunikasi pada pembelajaran di sekolah ini?	
7.	Sejak kapan sekolah mulai memfasilitasi penggunaan teknologi informasi dan komunikasi pada pembelajaran?	
8.	Sejak kapan sekolah mulai mendukung kompetensi guru yang berkaitan dengan penggunaan teknologi informasi dan komunikasi pada pembelajaran?	
9.	Apakah dukungan sekolah terhadap kompetensi guru yang berkaitan dengan penggunaan teknologi informasi dan komunikasi disambut baik oleh para guru?	
10.	Adakah program sekolah yang diadakan sebagai bentuk dukungan terhadap pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?	
11.	Apakah program yang ada berjalan dengan baik?	
12.	Apa saja manfaat dari diterapkannya kompetensi guru terhadap penggunaan teknologi informasi dan komunikasi pada pembelajaran?	
13.	Adakah waktu khusus bagi para guru untuk mengembangkan kompetensinya dalam pemanfaatan dan penggunaan teknologi informasi dan komunikasi pada pembelajaran?	
14.	Apakah ibu sudah memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?	
15.	Apa yang menjadi alasan ibu ketika memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?	
16.	Apakah terdapat perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang mendukung pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?	

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17. Berapa banyak perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki oleh sekolah yang mampu mendukung pemanfaatan teknologi informasi dan komunikasi dalam pembelajaran?
 18. Bagaimana kondisi perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki oleh sekolah?
 19. Adakah perawatan khusus yang dibutuhkan untuk menjaga kondisi perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki sekolah?
 20. Berasal dari manakah perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki oleh sekolah?
 21. Apakah terdapat perangkat lunak (software) yang mendukung pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
 22. Berapa banyak perangkat lunak (software) yang dimiliki oleh sekolah yang mampu mendukung pemanfaatan teknologi informasi dan komunikasi dalam pembelajaran?
 23. Bagaimana kondisi perangkat lunak (software) yang dimiliki oleh sekolah?
 24. Adakah perawatan khusus yang dibutuhkan untuk menjaga kondisi perangkat lunak (software) yang dimiliki sekolah?
 25. Berasal dari manakah perangkat lunak (software) yang dimiliki oleh sekolah?
 26. Adakah kegiatan pelatihan yang diperoleh ibu terkait pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
 27. Seberapa sering frekuensi pelatihan yang diperoleh ibu terkait pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
 28. Menurut anda, apa yang menjadi faktor pendukung kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran?
 29. Menurut anda, apa yang menjadi faktor penghambat kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran?
 30. Apakah guru rutin memanfaatkan penggunaan teknologi informasi dan komunikasi dalam pembelajaran?
 31. Adakah evaluasi ketika guru telah melaksanakan penggunaan teknologi informasi dan komunikasi pada pembelajaran?
 32. Seberapa sering frekuensi pelaksanaan evaluasi tersebut?
 33. Menurut anda, apakah evaluasi yang dilaksanakan berdampak baik pada penggunaan teknologi informasi dan komunikasi pada pembelajaran berikutnya?
 34. Apakah sarana dan prasarana yang ada sudah mendukung guru dalam penggunaan dan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
 35. Apakah terdapat akses internet yang menjangkau menyeluruh kepada kepala sekolah, guru maupun peserta didik?
 36. Apakah ibu sudah mengikuti tata tertib berteknologi yang ada saat menggunakan teknologi informasi dan komunikasi pada pembelajaran?
 37. Bagaimana sifat ibu saat sekolah memperkenalkan teknologi untuk kegiatan pembelajaran?
 38. Menurut ibu bagaimana kemampuan berteknologi yang ibu miliki?
-

39.	Menurut ibu, apakah ibu siap dalam penggunaan dan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
40.	Apakah murid diizinkan membawa dan memakai alat teknologi seperti smartphone saat berada didalam kelas?
41.	Apakah ibu sebagai guru mengizinkan siswa membawa dan memakai alat teknologi seperti smartphone saat berada didalam kelas terutama pada jam Pelajaran Bahasa Inggris?
42.	Apakah siswa menaati peraturan yang ibu berikan saat memakai alat teknologi seperti smartphone saat berada didalam kelas terutama pada jam Pelajaran Bahasa Inggris?
43.	Berdasarkan pengalaman ibu mengajar mata Pelajaran Bahasa inggris bagaimana respon para siswa saat ibu menggunakan teknologi dalam pembelajaran?
44.	Apakah siswa sering mengunjungi dan menggunakan computer di laboratorium computer?

(Modified from Permendiknas No 16 tahun 2007)

Appendix 1.3 Students Interview Questions Organization

No	Pertanyaan	Jawaban
1.	Pelajaran mana saja yang menggunakan teknologi informasi dan komunikasi dalam pembelajaran?	
2.	Apakah diperbolehkan menggunakan perangkat teknologi (gadget berupa handphone android, ios, atau lainnya yang sejenis) baik diluar maupun didalam kelas?	
3.	Seberapa sering guru memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?	
4.	Menurut kamu, apakah guru ahli dalam pengoperasian piranti teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?	
5.	Apakah kamu lebih memahami materi yang diterangkan menggunakan piranti teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?	
6.	Apakah kamu tertarik pada guru yang menggunakan piranti teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) pada saat menjelaskan suatu materi pembelajaran?	
7.	Apakah guru memberikan pekerjaan rumah (PR) yang melibatkan penggunaan piranti teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?	
8.	Menurut kamu, apakah penggunaan teknologi informasi dan komunikasi bermanfaat bagi pembelajaran?	
9.	Seberapa besar ketertarikan kamu pada teknologi informasi dan komunikasi?	
10.	Apakah kamu memiliki perangkat sendiri?	
11.	Apakah perangkat teknologi (Gadget /smartphone/ handphone/ android/ iphone/ ios) yang adik miliki digunakan dalam proses pembelajaran?	

No	Pertanyaan	Jawaban
12.	Apakah perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) bisa diakses dengan mudah?	
13.	Apakah guru memberikan pemahaman terkait penggunaan aplikasi atau media pembelajaran?	
14.	Adakah ekstrakurikuler TIK disekolah ini?	
15.	Apa yang dipelajari pada ekstrakurikuler TIK tersebut?	
16.	Apakah ekstrakurikuler TIK memiliki manfaat yang besar pada pelajaran lain di dalam kelas?	

(Modified from Permendiknas No 16 tahun 2007)

Appendix 1.4 Students Questionnaire Organization

No	Pertanyaan	Jawaban	
		Ya	Tidak
1.	Siswa memiliki smartphone pribadi.		
2.	Siswa memiliki laptop atau komputer pribadi.		
3.	Siswa mampu mengoperasikan smartphone secara mandiri.		
4.	Siswa mampu mengoperasikan laptop atau komputer secara mandiri.		
5.	Siswa suka membaca buku.		
6.	Siswa menggunakan internet untuk mencari jawaban dari pertanyaan yang sulit.		
7.	Siswa menggunakan internet untuk mencari sumber belajar.		
8.	Siswa menggunakan internet untuk mencari materi tambahan untuk belajar.		
9.	Siswa sering menggunakan perangkat teknologi informasi dan komunikasi di lab computer.		
10.	Siswa lebih memahami materi yang diterangkan menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet). Siswa tertarik pada guru yang menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) pada saat menjelaskan suatu materi pembelajaran.		
11.	Proses pembelajaran yang dilakukan menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) meningkatkan motivasi belajar siswa.		
12.	Guru menyampaikan materi secara runtun dan jelas saat menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) pada suatu materi pembelajaran.		
13.	Penggunaan teknologi informasi dan komunikasi bermanfaat bagi pembelajaran.		
14.	Siswa senang berdiskusi atau mengerjakan tugas sekolah secara berkelompok.		
15.	Siswa didampingi orang tua saat mengoperasikan perangkat teknologi informasi dan komunikasi seperti smartphone sebagai media pembelajaran.		
16.			

(Modified from Permendiknas No 16 tahun 2007)

Appendix 2. School's Observation Result

No.	Observation	Analysis	Remark
1.	Classroom There are: • 15 classrooms. • 28-30 desks and chairs for students. • 14 Study group (grade 7 have 4, grade 8 have 5, and grade 9 have 5 studyg roup) • 1 teacher's desk and chair • Whiteboard • Power socket • Trash can	There are no computers or laptops and LCD projectors for technological learning. The computers are in the computer laboratory. Computers are also in the principal's room and administration room.	Classrooms are not conducive to technological learning.
	Library There are: • Has rules • Globe • Dictionary • Textbooks • Fairy tale books • Other books related to general knowledge • A low table that students use to read books • Television	There are: • No E-book • No E-library • No computer for students • No LCD projector • Not enough space to accommodate many students • There is a computer for the library officer's work.	There is no other source of knowledge that can extend students' horizons. The library cannot assist learning using technology.
3.	Lab computer There are • 28 computers that can be used • 1 teacher computer • Lcd projector • All computers work properly Good internet connection • The schedule of using the computer lab is ICT lessons and for teacher work. • Computer laboratorium rules for users.	Except for ICT teachers, students rarely utilize computers in ICT lessons. Other than ICT lessons, laboratory are not used in the learning environment. The availability of a computer laboratory is insufficient.	The computer laboratory is not significant in using TPACK.

Science Laboratory

There are:

4.	- Science equipment based on Permendiknas No. 24 tahun 2007 (For example human skeleton models, magnifying glasses, and others) - All science equipment can be used properly - The science lab space is quite large when compared to the library and the computer laboratory. - There are rules for using the science laboratory. - Chairs and tables for students. Chairs and tables for teachers.	- When there are practicum activities in science topics, the science lab is used. - It lacks an LCD projector and a computer.	The science laboratory does not support TPACK-based learning.
	5. School Principal room (Not observed)	-	-
	6. Teacher room (Not observed)	-	-
	7. Administration room (Not observed)	-	-
8.	Place of worship (Not observed)	-	-
9.	Counseling room (Not observed)	-	-
10.	Infirmity room (Not observed)	-	-
11.	Student council room (Not observed)	-	-
12.	Toilet (Not observed)	-	-
13.	Warehouse (Not observed)	-	-
14.	Circulation space (Not observed)	-	-
15.	Places to play/exercise (Not observed)	-	-

Appendix 3. Teacher's Interview Result

A. Identitas Narasumber

1. Nama : Mairita, S. Pd
2. Jenis Kelamin : Perempuan
3. Jabatan : Guru Bahasa Inggris

B. Waktu Wawancara

1. Hari, tanggal : Jumat, 22 September 2023
2. Pukul : 09.00 WIB
3. Tempat : Ruang UKS

C. Pertanyaan

1. Sudah berapa lama ibu mengajar disekolah ini?
Jawaban: Saya mengajar disekolah ini sudah 20 tahun.
2. Apa yang ibu ketahui tentang pendidikan era revolusi industri 4.0?
Jawaban: Menurut saya, pendidikan era revolusi industri 4.0 merupakan era dimana kegiatan belajar mengajar memakai teknologi.
3. Apa yang sudah dilakukan sekolah untuk menyokong pendidikan di era revolusi industri 4.0?
Jawaban: Untuk menyokong pendidikan di era revolusi industri 4.0 pihak sekolah menyediakan sarana dan prasarana yang diperlukan seperti lab komputer, internet, Lcd projector, dan speaker. Serta mengadakan pelatihan terkait penggunaan teknologi dalam pembelajaran.
4. Apa yang ibu ketahui tentang kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Menurut saya, kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran merupakan tuntutan yang harus guru miliki.
5. Apa yang akan dilaksanakan sekolah untuk mendukung kompetensi guru pada pendidikan di era revolusi industri 4.0?
Jawaban: Demi mendukung kompetensi guru pada pendidikan di era revolusi industri 4.0, sekolah memperbaharui perangkat teknologi yang ada serta diadakannya pelatihan terkait penggunaan teknologi dalam pembelajaran.
6. Menurut ibu, bagaimana pemanfaatan teknologi informasi dan komunikasi pada pembelajaran di sekolah ini?
Jawaban: Pemanfaatan teknologi dalam pembelajaran dilakukan hampir setiap mapel.
7. Sejak kapan sekolah mulai memfasilitasi penggunaan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Sekolah mulai memfasilitasi penggunaan teknologi sejak tahun 2018.
8. Sejak kapan sekolah mulai mendukung kompetensi guru yang berkaitan dengan penggunaan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Sekolah mulai mendukung kompetensi guru dalam penggunaan teknologi informasi dan komunikasi semenjak kurikulum 13.
9. Apakah dukungan sekolah terhadap kompetensi guru yang berkaitan dengan penggunaan teknologi informasi dan komunikasi disambut baik oleh para guru?
Jawaban: Iya, dukungan sekolah terhadap kompetensi guru yang berkaitan dengan penggunaan teknologi informasi dan komunikasi disambut baik oleh para guru.
10. Adakah program sekolah yang diadakan sebagai bentuk dukungan terhadap pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Terdapat pelatihan dan workshop terkait penggunaan teknologi informasi dan komunikasi dalam pembelajaran seperti contoh pelatihan menggunakan Canva.
11. Apakah program yang ada berjalan dengan baik?

Jawaban: Iya, program sekolah yang diadakan sebagai bentuk dukungan terhadap pemanfaatan teknologi informasi dan komunikasi pada pembelajaran berjalan dengan lancar.

12. Apa saja manfaat dari diterapkannya kompetensi guru terhadap penggunaan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Manfaat dari diterapkannya kompetensi guru terhadap penggunaan teknologi informasi dan komunikasi dalam pembelajaran adalah untuk mempermudah penyesuaian kurikulum.

13. Adakah waktu khusus bagi para guru untuk mengembangkan kompetensinya dalam pemanfaatan dan penggunaan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Menurut saya, waktu bagi para guru untuk mengembangkan kompetensinya dalam pemanfaatan dan penggunaan teknologi informasi dan komunikasi pada pembelajaran adalah waktu pribadi masing-masing.

14. Apakah ibu sudah memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Iya, sudah. Saya menggunakan speaker saat ada materi listening dan kadang menggunakan PowerPoint sebagai alat bantu.

15. Apa yang menjadi alasan ibu ketika memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Yang menjadi alasan ketika memanfaatkan teknologi informasi dan komunikasi pada pembelajaran adalah demi menyesuaikan perkembangan zaman.

16. Apakah terdapat perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang mendukung pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Sekolah memiliki perangkat keras yang mendukung pemanfaatan teknologi informasi dan komunikasi dalam pembelajaran. Perangkat keras tersebut berupa komputer, LCD, Projector, Speaker dan internet.

17. Berapa banyak perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki oleh sekolah yang mampu mendukung pemanfaatan teknologi informasi dan komunikasi dalam pembelajaran?

Jawaban: Terdapat lab komputer dan untuk Projector hanya ada 3 buah.

18. Bagaimana kondisi perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki oleh sekolah?

Jawaban: Kondisi perangkat keras yang ada pada sekolah baik dan bisa digunakan dengan semestinya.

19. Adakah perawatan khusus yang dibutuhkan untuk menjaga kondisi perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki sekolah?

Jawaban: Untuk penjagaan perangkat keras yang ada disekolah, terdapat salah satu guru yang menjaga kondisi perangkat keras tersebut.

20. Berasal dari manakah perangkat keras (hardware) (LCD, proyektor, laptop, komputer, internet) yang dimiliki oleh sekolah?

Jawaban: Perangkat keras yang ada di sekolah berasal dari uang sekolah.

21. Apakah terdapat perangkat lunak (software) yang mendukung pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Disini tidak ada perangkat lunak yang mendukung pemanfaatan teknologi informasi dan komunikasi pada pembelajaran.

22. Berapa banyak perangkat lunak (software) yang dimiliki oleh sekolah yang mampu mendukung pemanfaatan teknologi informasi dan komunikasi dalam pembelajaran?

Jawaban: -

23. Bagaimana kondisi perangkat lunak (software) yang dimiliki oleh sekolah?

Jawaban: -

24. Adakah perawatan khusus yang dibutuhkan untuk menjaga kondisi perangkat lunak (software) yang dimiliki sekolah?
Jawaban: -
25. Berasal dari manakah perangkat lunak (software) yang dimiliki oleh sekolah?
Jawaban: -
26. Adakah kegiatan pelatihan yang diperoleh ibu terkait pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Iya, ada.
27. Seberapa sering frekuensi pelatihan yang diperoleh ibu terkait pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Pelatihan terkait dengan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran dilakukan seminggu dua kali.
28. Menurut anda, apa yang menjadi faktor pendukung kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Menurut saya, salah satu faktor pendukung kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran adalah mempermudah guru dalam mengelola pembelajaran dan menyampaikan informasi secara tepat dan akurat terhadap siswa.
29. Menurut anda, apa yang menjadi faktor penghambat kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Menurut saya, salah satu faktor penghambat kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran adalah kurangnya pengetahuan dan kemampuan dalam menggunakan teknologi.
30. Apakah guru rutin memanfaatkan penggunaan teknologi informasi dan komunikasi dalam pembelajaran?
Jawaban: Iya, cukup rutin.
31. Adakah evaluasi ketika guru telah melaksanakan penggunaan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Iya, terdapat evaluasi.
32. Seberapa sering frekuensi pelaksanaan evaluasi tersebut?
Jawaban: Terdapat evaluasi ketika guru telah melaksanakan penggunaan teknologi informasi dan komunikasi pada pembelajaran yang biasanya dilakukan setahun 2x.
33. Menurut anda, apakah evaluasi yang dilaksanakan berdampak baik pada penggunaan teknologi informasi dan komunikasi pada pembelajaran berikutnya?
Jawaban: Evaluasi yang dilaksanakan berdampak positif pada penggunaan teknologi informasi dan komunikasi pada pembelajaran berikutnya.
34. Apakah sarana dan prasarana yang ada sudah mendukung guru dalam penggunaan dan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Menurut saya, sarana dan prasarana yang ada sudah mendukung guru dalam penggunaan dan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran.
35. Apakah terdapat akses internet yang menjangkau menyeluruh kepada kepala sekolah, guru maupun peserta didik?
Jawaban: Terdapat akses internet yang menjangkau menyeluruh kepada sekolah, guru dan peserta didik.
36. Apakah ibu sudah mengikuti tata tertib berteknologi yang ada saat menggunakan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Iya, saya mengikutinya.
37. Bagaimana sifat ibu saat sekolah memperkenalkan teknologi untuk kegiatan pembelajaran?

Jawaban: Saya menerima inovasi tersebut dan sebisa mungkin menyesuaikan diri dengan teknologi untuk kegiatan pembelajaran.

38. Menurut ibu bagaimana kemampuan berteknologi yang ibu miliki?

Jawaban: Menurut saya, kemampuan berteknologi yang saya miliki masih kurang. Terkadang saya masih sering kesulitan saat dihadapkan dengan teknologi baru. Pelatihan yang saya dapatkan dari sekolah terkait dalam penggunaan dan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran menimbulkan efek positif dengan meningkatnya kemampuan berteknologi yang saya miliki.

39. Menurut ibu, apakah ibu siap dalam penggunaan dan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Menurut saya, semua guru harus siap karena penggunaan dan pemanfaatan teknologi informasi dan komunikasi pada pembelajaran merupakan sebuah tuntutan sebagai pengajar pada era Pendidikan saat ini.

40. Apakah murid diizinkan membawa dan memakai alat teknologi seperti smartphone saat berada didalam kelas?

Jawaban: Untuk membawa dan memakai alat teknologi seperti smartphone saat berada didalam kelas tergantung pada guru mata Pelajaran masing-masing.

41. Apakah ibu sebagai guru mengizinkan siswa membawa dan memakai alat teknologi seperti smartphone saat berada didalam kelas terutama pada jam Pelajaran Bahasa Inggris?

Jawaban: Terkadang saya mengizinkan murid untuk membawa smartphone dikarenakan ada materi listening pada buku Pelajaran yang digunakan.

42. Apakah siswa menaati peraturan yang ibu berikan saat memakai alat teknologi seperti smartphone saat berada didalam kelas terutama pada jam Pelajaran Bahasa Inggris?

Jawaban: Mereka menaati peraturan yang saya berikan namun beberapa memang tidak mengikuti peraturan. Contohnya adalah kadang ada beberapa siswa membuka dan menggunakan aplikasi Whatsapp pada saat jam Pelajaran Bahasa Inggris sedang berlangsung.

43. Berdasarkan pengalaman ibu mengajar mata Pelajaran Bahasa Inggris bagaimana respon para siswa saat ibu menggunakan teknologi dalam pembelajaran?

Jawaban: Berdasarkan pengalaman saya mengajar, para siswa menunjukkan respon positif yaitu terlihat antusias pada saat saya menggunakan teknologi dalam pembelajaran. Namun, ada beberapa juga yang terlihat tidak tertarik dan memberikan respon yang biasa saja.

44. Apakah siswa sering mengunjungi dan menggunakan computer di laboratorium computer?

Jawaban: Saya rasa tidak. Siswa diizinkan menggunakan computer di laboratorium computer pada saat mata Pelajaran TIK.

Appendix 4. Students' Interview Result

Narasumber 1

A. Identitas Narasumber

1. Nama : Jonathan
2. Jenis Kelamin : Laki-laki
3. Kelas : XI E

B. Waktu Wawancara

1. Hari, tanggal : Selasa, 3 Oktober 2023
2. Pukul : 08:00 WIB
3. Tempat : Ruang Kelas XI E

C. Pertanyaan

1. Pelajaran mana saja yang menggunakan teknologi informasi dan komunikasi dalam pembelajaran?
Jawaban: TIK, IPA, dan Bahasa Inggris.
2. Apakah diperbolehkan menggunakan perangkat teknologi (gadget berupa handphone android, ios, atau lainnya yang sejenis) baik diluar maupun didalam kelas?
Jawaban: Kami diperbolehkan menggunakan smartphone tergantung dari guru mata Pelajaran tertentu.
3. Seberapa sering guru memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?
Jawaban: Yang paling sering adalah Pelajaran TIK. Sedangkan Pelajaran lain itu adalah Bahasa Inggris dan IPA. Kalau Pelajaran TIK kami biasanya ke laboratorium komputer, guru mapel TIK biasanya pakai proyektor pas menjelaskan materi.
4. Menurut adik, apakah guru mahir dalam pengoperasian perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?
Jawaban: Menurut saya guru tidak mahir dalam pengoperasian perangkat teknologi informasi dan komunikasi yang ada kecuali guru mapel TIK.
5. Apakah adik lebih memahami materi yang diterangkan menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?
Jawaban: Iya, lebih paham jika dijelaskan menggunakan perangkat teknologi informasi dan komunikasi.
6. Apakah adik tertarik pada guru yang menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) pada saat menjelaskan suatu materi pembelajaran?
Jawaban: Iya, sangat tertarik.
7. Apakah guru memberikan pekerjaan rumah (PR) yang melibatkan penggunaan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?
Jawaban: Iya, saat covid-19 waktu itu melibatkan aplikasi Google Classroom dan internet. Kalau sekarang biasanya ada beberapa guru yang memberikan PR lewat aplikasi Whatshapp.
8. Menurut adik, apakah penggunaan teknologi informasi dan komunikasi bermanfaat bagi pembelajaran?
Jawaban: Menurut saya, penggunaan teknologi informasi dan komunikasi sangat bermanfaat bagi pembelajaran. Karena saya lebih mudah memahami materi yang disampaikan.
9. Seberapa besar ketertarikan adik pada teknologi informasi dan komunikasi?
Jawaban: Sangat tertarik.
10. Apakah adik memiliki gadget sendiri?
Jawaban: Iya punya. Saya punya smartphone, tab, dan laptop pribadi.
11. Apakah gawai (Gadget /smartphone/ handphone/ android/ iphone/ ios) yang adik miliki digunakan dalam proses pembelajaran?

Jawaban: Iya. Biasanya pada kelas Bahasa Inggris kami diizinkan membawa smartphone. Smartphone-nya dipakai untuk men-translate kata atau kalimat Bahasa Inggris yang kami tidak tahu.

12. Apakah perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) bisa diakses dengan mudah?

Jawaban: Iya. Perangkat teknologi dan komunikasi yang ada di sekolah berfungsi dengan baik.

13. Apakah guru memberikan pemahaman terkait penggunaan aplikasi atau media pembelajaran?

Jawaban: Iya. Waktu itu pernah di Pelajaran IPA kami memakai aplikasi Canva. Gurunya menjelaskan cara menggunakan Canva kepada kami terlebih dahulu.

14. Adakah ekstrakurikuler TIK di sekolah ini?

Jawaban: Tidak ada.

15. Apa yang dipelajari pada ekstrakurikuler TIK tersebut?

Jawaban: -

16. Apakah ekstrakurikuler TIK memiliki manfaat yang besar pada pelajaran lain di dalam kelas?

Jawaban: -

Narasumber 2

A. Identitas Informan

1. Nama : Jordan
2. Jenis Kelamin : Laki - Laki
3. Kelas : XI E

B. Waktu Wawancara

1. Hari, tanggal : Selasa, 3 Oktober 2023
2. Pukul : 08:20 WIB
3. Tempat : Kelas XI E

C. Pertanyaan

1. Pelajaran mana saja yang menggunakan teknologi informasi dan komunikasi dalam pembelajaran?
Jawaban: Pelajaran Bahasa Inggris, TIK, dan IPA.

2. Apakah diperbolehkan menggunakan perangkat teknologi (gadget berupa handphone android, ios, atau lainnya yang sejenis) baik diluar maupun didalam kelas?

Jawaban: Tergantung guru mata pelajarannya.

3. Seberapa sering guru memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Paling sering itu IPA. Pas Pelajaran IPA gurunya pakai laptop, terus misalnya ada gambar gurunya memperlihatkan gambarnya lewat laptop, bukan proyektor. Kalau mata Pelajaran Bahasa Inggris sering juga, biasanya kami diizinkan bawa smartphone buat translate.

4. Menurut adik, apakah guru mahir dalam pengoperasian perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?

Jawaban: Menurut saya gurunya tidak mahir.

5. Apakah adik lebih memahami materi yang diterangkan menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?

Jawaban: Iya. Lebih paham kalau dijelaskan lewat perangkat teknologi informasi dan komunikasi.

6. Apakah adik tertarik pada guru yang menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) pada saat menjelaskan suatu materi pembelajaran?

Jawaban: Iya, sangat tertarik.

7. Apakah guru memberikan pekerjaan rumah (PR) yang melibatkan penggunaan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?

Jawaban: Pas dulu kelas 7 – 8 pakai Google Classroom karena covid-19. Kalau sekarang kadang guru memberikan PR lewat aplikasi Whatsapp. Biasanya yang memberikan PR lewat Whatsapp itu guru IPA.

8. Menurut adik, apakah penggunaan teknologi informasi dan komunikasi bermanfaat bagi pembelajaran?

Jawaban: Bermanfaat sekali. Soalnya lebih menarik dan tidak cepat bosan.

9. Seberapa besar ketertarikan adik pada teknologi informasi dan komunikasi?

Jawaban: Sangat besar.

10. Apakah adik memiliki gadget sendiri?

Jawaban: Punya. Gadget yang saya miliki pribadi itu smartphone.

11. Apakah gawai (Gadget /smartphone/ handphone/ android/ iphone/ ios) yang adik miliki digunakan dalam proses pembelajaran?

Jawaban: Iya. Biasanya dipakai untuk searching di Google.

12. Apakah perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) bisa diakses dengan mudah?

Jawaban: Bisa. Tapi kami jarang menggunakannya. Biasanya Pelajaran TIK cuman duduk di laboratorium mendengarkan guru menjelaskan materi memakai proyektor dengan metode ceramah.

13. Apakah guru memberikan pemahaman terkait penggunaan aplikasi atau media pembelajaran?

Jawaban: Iya, ada beberapa guru yang memberikan pemahaman.

14. Adakah ekstrakurikuler TIK di sekolah ini?

Jawaban: Kalau disekolah ini, tidak ada.

15. Apa yang dipelajari pada ekstrakurikuler TIK tersebut?

Jawaban: -

16. Apakah ekstrakurikuler TIK memiliki manfaat yang besar pada pelajaran lain di dalam kelas?

Jawaban: -

Narasumber 3

A. Identitas Informan

1. Nama : Dina Hardiana
2. Jenis Kelamin : Perempuan
3. Kelas : XI E

B. Waktu Wawancara

1. Hari, tanggal : Selasa, 3 Oktober 2023
2. Pukul : 08:40 WIB
3. Tempat : Kelas XI E

C. Pertanyaan

1. Pelajaran mana saja yang menggunakan teknologi informasi dan komunikasi dalam pembelajaran?

Jawaban: Yang biasanya menggunakan teknologi informasi dan komunikasi dalam pembelajaran itu biasanya mata Pelajaran TIK, Bahasa Inggris, dan IPA.

2. Apakah diperbolehkan menggunakan perangkat teknologi (gadget berupa handphone android, ios, atau lainnya yang sejenis) baik diluar maupun didalam kelas?

Jawaban: Kami diperbolehkan menggunakan perangkat teknologi seperti smartphone tergantung kesepakatan dengan guru mata Pelajaran.

3. Seberapa sering guru memanfaatkan teknologi informasi dan komunikasi pada pembelajaran?

Jawaban: Menurut saya guru jarang memanfaatkan teknologi informasi dan komunikasi pada pembelajaran. Biasanya guru mata Pelajaran IPA, TIK, dan Bahasa Inggris. Teknologi yang dipakai juga biasanya smartphone untuk translate kalau mata Pelajaran Bahasa Inggris. Kalau mata

Pelajaran TIK biasanya ke Laboratorium computer dan gurunya memakai proyektor. Guru mata Pelajaran IPA biasanya pakai laptop.

4. Menurut adik, apakah guru mahir dalam pengoperasian perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?

Jawaban: Kalau menurut saya, gurunya tidak mahir mengoperasikan perangkat teknologi. Mungkin yang mahir cuma guru mata Pelajaran TIK karena biasanya saat masuk ke laboratorium computer, proyekturnya sudah ready.

5. Apakah adik lebih memahami materi yang diterangkan menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?

Jawaban: Kalau saya kurang. Karena saya tipe belajar mandiri. Saya lebih paham jika belajar sendiri dan menggunakan buku.

6. Apakah adik tertarik pada guru yang menggunakan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) pada saat menjelaskan suatu materi pembelajaran?

Jawaban: Kurang tertarik.

7. Apakah guru memberikan pekerjaan rumah (PR) yang melibatkan penggunaan perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet)?

Jawaban: Kalau memberikan PR biasanya lewat aplikasi Whatsapp.

8. Menurut adik, apakah penggunaan teknologi informasi dan komunikasi bermanfaat bagi pembelajaran?

Jawaban: Kalau menurut saya, lebih bagus pakai buku.

9. Seberapa besar ketertarikan adik pada teknologi informasi dan komunikasi?

Jawaban: Saya kurang tertarik karena saya lebih suka membaca buku.

10. Apakah adik memiliki gadget sendiri?

Jawaban: Iya, punya. Gadget yang saya punya itu smartphone.

11. Apakah gawai (Gadget /smartphone/ handphone/ android/ iphone/ ios) yang adik miliki digunakan dalam proses pembelajaran?

Jawaban: Iya. Biasanya saya pakai untuk cari materi, cari buku, dan untuk transkrip.

12. Apakah perangkat teknologi informasi dan komunikasi yang ada (LCD, laptop, komputer, proyektor, internet) bisa diakses dengan mudah?

Jawaban: Kalau yang di laboratorium iya bisa, tapi kami jarang memakainya. Biasanya kalau di laboratorium komputer cuma duduk mendengarkan penjelasan guru.

13. Apakah guru memberikan pemahaman terkait penggunaan aplikasi atau media pembelajaran?

Jawaban: Iya, ada.

14. Adakah ekstrakurikuler TIK di sekolah ini?

Jawaban: Tidak ada.

15. Apa yang dipelajari pada ekstrakurikuler TIK tersebut?

Jawaban: -

16. Apakah ekstrakurikuler TIK memiliki manfaat yang besar pada pelajaran lain di dalam kelas?

Jawaban: -