

Implementation of Technological Pedagogical and Content Knowledge (TPACK) in English Teaching and Learning (Case Study at SDIT Al Hasna Klaten in the 2024/2025 Academic Year)

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Abstract

This study aims to: Describe the implementation of TPACK in the English learning process for students of SDIT Al Hasna Klaten Describe the obstacles experienced by English subject teachers at SDIT Al Hasna Klaten students in implementing TPACK and describe the solutions to the obstacles experienced by English subject teachers at SDIT Al Hasna Klaten students in implementing TPACK; and 4. Elaborate the reasons for the solutions made in implementing TPACK by English subject teachers at SDIT Al Hasna Klaten students. This study uses a qualitative descriptive research method that aims to explain the problems that arise and describe data in the form of sentences according to the facts during the study in order to understand the phenomenon of the implementation of TPACK in English learning at SDIT AlHasna. The results of the study show that the Technological Pedagogical and Content Knowledge (TPACK) Indicator, namely the suitability between strategy and technology with the material taught by Al Hasna Klaten English Teachers, has combined three basic components, namely technological knowledge, pedagogical knowledge and content knowledge in learning carried out by English Teachers so that learning takes place smoothly, comfortably, focused and enjoyable. The obstacles faced by the implementation of TPACK in the English learning process for students of SDIT Al Hasna Klaten are generally non-existent and insignificant. If these types of obstacles occur, their nature is only to increase the capacity of existing facilities and always improve teacher competence, especially the latest technology, intensifying things that are lacking that are adjusted to developments in the world of education. The solution to overcome the obstacles faced by the implementation of TPACK in the English learning process for students of SDIT Al Hasna Klaten in principle has been adjusted to the types of obstacles or weaknesses of the existing and occurring problems. The reason for choosing problem solving in overcoming the obstacles faced from the implementation of TPACK in the English learning process for students of SDIT Al Hasna Klaten, is basically right because it has been adjusted to the abilities, situations and conditions that exist at SDIT Al Hasna Klaten. Support from related agencies, for example from the Department of Education and Culture, also needs to be optimized.

Keywords: Implementation, English Learning, TPACK

1. Introduction

The 21st century is an era of developing knowledge and technology. The 21st century affects all aspects of life, including the field of education. Technology, which was originally only a tool, has played a further role in its development, so that the way students learn has also changed (Tarbiyatuna, Sumarni, and Muslim 2022). On the other hand, the presence of technology currently has an important role in every aspect of education, including the learning process (Santoso, In'am, et al. 2024). English learning plays an important role in preparing Indonesia's young generation to compete globally. In the era of globalization, English language skills are a key asset in communicating effectively at an international level. The implementation of the Merdeka Curriculum which is integrated with the use of media in learning English can help improve the quality of education in Indonesia. This not only develops students' language skills but also develops a deeper understanding of global culture and knowledge, preparing them to face future challenges and opportunities.

The challenges of 21st century learning and changes to the independent learning curriculum require teachers' pedagogical abilities as educators to be better able to design effective and innovative learning. The development of various information technology media is one of the main foundations in the development of 21st century learning (Risdiyani et al. 2023; Bwarnirun and Santoso 2021). This requires human resources, namely teachers who have the ability to respond to developments in science and technology, especially their application in the learning process (Santoso, Mukhlis Triono, et al. 2024). Apart from that, teachers are required to improve their ability to master ICT to facilitate learning and improve learning outcomes (Rahmadi, 2019). The demands in developing this assignment are increasingly complex, not only regarding intellectual abilities, but also skills to use and utilize technology in the learning process (Triono and Santoso 2024).

Conceptually, teachers as professionals must fulfill competency requirements to carry out their duties and authority professionally, while the real conditions in the field are still very worrying, both in terms of quantity, quality and professionalism of teachers (Hidayah, Simatupang, and Belladonna 2022). The importance of integrating technology in learning so that learning can continue to develop along with the times. The teacher, who in this case is the spearhead, determines the direction of learning so that learning takes place in accordance with the context of the material being taught. Technology and information will comprehensively influence human activities in utilizing the information and knowledge needed in learning activities and improving competence or abilities. This is proven by the birth of new forms of learning such as online learning, blended learning, and distance learning systems. By utilizing information and communication technology (ICT) such as computers or laptops, smartphones, and internet networks as learning resources and media, because learning today is not only limited to the classroom but can be carried out remotely, and learning can be done anywhere (Aka, 2017). According to Shulman in (Septipane 2024) educators must have an understanding of the material and knowledge about pedagogy or how to teach as well as knowledge about the relationship between the two which is called pedagogical content knowledge (PCK). In its development, educators must also have knowledge about technology and the relationship between the three. This opinion is in line with that expressed by Mishra and Koehler in (Imam, 2019) to be able to teach well, apart from understanding the material to be taught and pedagogical knowledge, teachers must also have knowledge about the use of technology and knowledge resulting from a combination of these three knowledge, namely technological content knowledge (TCK), technological pedagogical knowledge (TPK), technological pedagogical and content knowledge (TPACK).

According to Mishra, P. (2016), TPACK is the basis for good teaching related to technology in learning about content or material pedagogically. TPACK is often related to the teacher's ability or way of teaching in classroom learning. There are 3 (three) main aspects of knowledge in TPACK, namely technological knowledge, pedagogy, and content or materials. These three aspects of knowledge are collaborated in a system where all three influence each other without any aspect being the most dominant (Muzakki, Santoso, and Alim 2023). Teachers are required to master these three aspects of knowledge and apply them in implementing classroom learning effectively (Risdiyani et al. 2023).

TPACK aims to develop teachers' creativity and skills in using technology in learning and to improve students' learning experiences (Santoso, Mukhlis Triono, and Jaharudin 2024). According to Mishra and Koehler (2016), having an understanding of TPACK enables educators to have the

following abilities: first, educators are able to utilize knowledge (various languages, images, videos, equations) as a creative learning resource. Both educators are able to deliver material flexibly and adapt to learning resources so that the material can be delivered both educationally and communicatively. The three educators are able to realize that the knowledge system is not absolute but is a human creation that can be redesigned by educators according to the circumstances and needs of themselves and their students. The fourth understanding of TPACK emphasizes educators' expertise in designing learning because to create change educators must understand the rules of the game, which ones must be adjusted and which ones must still be followed. These five understandings emphasize the creativity of educators.

According to Raiser in (Latifah and Ngalimun 2023) the development of educational technology has developed towards solving learning problems, this paradigm has been adapted to describe educational technology as an effort to solve learning problems in a planned and orderly manner. TPACK is a new understanding that has become a framework that can be used to analyze educators' knowledge about the use of technology in learning. Therefore, educators must master TPACK to be able to integrate technology in learning well (Abdulatif and Dewi 2021) This statement is in line with what was stated by Nevrita, et al (2020) that implementing TPACK in learning is very in line with 21st century learning that utilizes technology. Based on this, educators' understanding of TPACK and implementing it in learning makes it possible to be more effective in achieving learning goals. A teacher's ability to master TPACK in teaching is very necessary, especially in relation to English language learning because English language learning is generally complex (Santoso and Triono 2024).

The facts in the field are that many schools and educators have not been able to design TPACK-based learning plans, including at SDIT Al Hasna, this can be seen from the many problems such as less professional standards for educators and lack of mastery of the material. This is proven by the fact that students' English language skills at SDIT Al Hasna are generally not optimal. This is based on the average of the new English scores reaching 62.58 on a scale of 100. So the ability of educators to design teacher competency development plans or TPACK is a challenge that must be faced by the world of education, especially at SDIT Al Hasna.

2. Methods

Research methods are defined as a scientific way to obtain valid data with the aim of finding, developing and proving certain knowledge and uses so that in turn it can be used to understand, solve and anticipate problems (Rasid, Djafar, and Santoso 2021) This research is a type of qualitative research. Carrying out research requires data collection techniques. Data collection techniques are a stage that really determines the process and results of the research to be carried out. The techniques for collecting data sources in this research are through: observation, interview and documentation. The data analysis technique in this research is a qualitative data analysis technique used by researchers as stated by Miles, Huberman and Saldana (2014): Data Collection, Data Condensation, data display and Conclusion Drawing/Verifying.

3. Result and Discussion

A. Result

Technological Knowledge (TK)

Based on the data obtained, it can be discussed about the implementation, obstacles/constraints, alternatives and elaboration of alternative solutions taken from the implementation of TPACK in the English learning process for SDIT Al Hasna Klaten students.

From interviews conducted with 2 English teachers and the principal at SDIT Al Hasna Klaten, it was found that all had used technology in providing learning, and would immediately solve problems by choosing the best way if there were obstacles from the technology used. This is done so that learning can continue to run smoothly. Starting from simple technology, namely with pens, paper and whiteboards to using technology in the form of laptop projectors and software such as PowerPoint, YouTube, Email, WhatsApp, Instagram and hardware such as laptops, projectors. In the learning process, the application of technology can be categorized as good. English teachers are able to utilize Information and Communication Technology (ICT) in learning. Informants are

also able to use the latest technology and some of its features even though they have only just operated it. This is in line with the theory of Matthew J. Koehler and Punya Mishra, stating that the way of thinking and working using technology can be applied to all technological tools and resources (Matthew, 2009).

Pedagogical Knowledge (PK)

The indicator of kindergarten ability is knowing various forms of technology that can be used in learning and being able to use technology in providing learning. This is supported by the research results of Wardani et al., (2022), namely that good implementation of TPACK requires teachers to use learning media that is in accordance with the latest technology. The Technological Knowledge skills of English teachers at SDIT Al Hasna Klaten are categorized as quite good and still need to be improved. As stated in the Regulation of the Minister of National Education of the Republic of Indonesia Number 16 of 2007 concerning Academic Qualification Standards and Teacher Competencies, it explains that the competence of subject teachers utilizes information and communication technology in the learning they teach, this explains that teachers must be able to create effective and efficient learning.

A teacher is expected to be able to master the class well and be able to choose teaching strategies/methods that are appropriate to the conditions of the children and the material to be taught. This ability is called pedagogical knowledge. Pedagogical Knowledge is the teacher's knowledge in the teaching and learning process, which includes the process and practice or methods or strategies used in the teaching process. A teacher who masters pedagogical knowledge can understand how student can absorb learning and develop student skills (Matthew, 2009).

The indicator of PK ability is knowing and being able to determine the learning strategy that will be used in the classroom. From the research data, it can be seen that the pedagogical knowledge of English Teachers at SDIT Al Hasna has met the pedagogical indicators. English teachers at SDIT Al Hasna Klaten have mastered good pedagogical knowledge and applied it in the learning process, such as choosing learning strategies that are appropriate to the material and conditions of students, managing and controlling the class well and immediately solving problems if there is a lack of harmony from the applied pedagogy. This is done so that learning remains comfortable and runs smoothly. This is in line with the research results of Wardani et al., (2022), that good implementation of TPACK is by implementing a fun learning process according to the students' abilities. English teachers at SDIT Al Hasna Klaten in implementing learning strategies/methods have met the indicators. Showing that informants are able to choose and adjust strategies/methods that are appropriate to the learning material and conditions of students. Learning strategies/models used by informants such as Role Play, Small Group Discussion, Information Search, Everyone Is A Teacher. The models used such as Problem Based Learning, Project Based Learning and using lecture, Snowball and Demonstration methods.

Content Knowledge (CK)

In addition, another important thing is the teacher's ability to master the material to be taught. Teachers who master the material to be taught will be able to apply the material flexibly, so that the learning that takes place does not seem rigid and monotonous. Because rigid and monotonous learning will create a less-than-optimal classroom atmosphere and less interesting for students to learn. If the teacher does not master the material to be taught, it will create misinformation in learning.

In accordance with the theory of Matthew J Koehler and Mishra, the result of not mastering the basic knowledge of comprehensive content can be a barrier to providing learning materials. For example, students receive inappropriate or incorrect information and result in misunderstandings about a content area, Matthew J. Koehler and Punya Mishra (2009). Indicators of CK ability are mastering sufficient material about the material to be taught and using the latest references to add to the knowledge of the material to be taught.

Based on the research conducted, it can be seen that English Teachers' mastery of the material has met the indicators of Content Knowledge, and immediately seek solutions if there is material that has not been mastered, especially what will be taught. This is done so that the learning material is more comprehensive during learning. This is based on the results of interviews and observations conducted. The material to be taught has been mastered well by English Teachers.

English Teachers are also quite good at following developments related to English language skills. This is in line with the research results of Wardani et al., (2022), that good implementation of TPACK requires teachers to master the material to be taught. It is known that English Teachers use the internet as a medium to follow developments in English language skills, besides also getting other sources of information such as from seminars/webinars and training conducted by the government or from institutions.

Technological Pedagogical Knowledge (TPK)

Technological Pedagogical Knowledge (TPK) refers to knowledge about how various technologies can be used in teaching and can provide an understanding that the use of technology can change the way teachers teach (Denise A. Schmidt, et al. 2011). The indicator of TPK capability is being able to integrate technology in the implementation of learning. Based on the research results obtained, it is known that English teachers are quite good at integrating technology in the implementation of learning. The selection of appropriate computer applications and technological facilities and in accordance with the learning model strategy shows that teachers have integrated technology in learning and immediately overcome problems if there are obstacles from the TPK applied, so that learning can continue to run smoothly. Teachers use laptops in compiling RPP/Learning Modules. While in the implementation of learning, teachers use various technologies to adjust to the learning material. Teachers use laptops and projectors to display learning; simple technology is also not left behind such as markers and whiteboards. In the implementation of learning, presentations using PowerPoint software, YouTube, Email, WhatsApp, Instagram and so on. This is in line with the research results of Wardani et al., (2022), that good implementation of TPACK is by implementing a fun learning process and using appropriate media or learning.

Technological Content Knowledge (TCK)

Technological Content Knowledge is how teachers can describe content (material) using technology. From the research results obtained, it is known that teachers can utilize website technology or technology in presenting English material that will be taught online well. English teachers are also quite good at illustrating the material to be taught. and teachers will immediately solve problems if there are obstacles from the TCK applied, so that learning runs smoothly. In line with the theory of Matthew J Koehler and Punya Mishra, namely the use and mastery of technology is very important because it is very helpful in developing technological tools that can be used in the learning process, (Matthew, 2009).

Indicators of TCK ability are, knowing the technology to create content or design more interesting teaching materials. Teachers' knowledge regarding websites or applications can be seen from the teaching and learning process that uses PowerPoint slides, displays videos from YouTube, and also utilizes other applications such as Instagram social media which is used to upload assignments. This application is used by English teachers to help understand learning materials. Teachers' knowledge in illustrating learning materials is also good, as can be seen from teachers who use projectors to display learning materials. This is supported by the research results of Wardani et al., (2022), that the implementation of good TPACK by using learning media and matching it with students' abilities and teachers mastering the material being taught. PCK according to Shulman is the knowledge that a teacher must have about how to convey content to students with the right strategy to direct them towards understanding (Shulman, L. S, 2017). Pedagogical Content Knowledge (PCK) includes aspects of teacher knowledge related to content mastery and knowledge in managing the classroom.

Pedagogical Content Knowledge (PCK)

From the research results obtained, the PCK ability of English Teachers has met the Pedagogical Content Knowledge indicator, this is because teachers use various strategies/methods in providing learning according to the material to be taught. According to Shulman's opinion, PCK according to Shulman is the knowledge that a teacher must have about how to convey content to students with the right strategy to direct them towards understanding. Shulman stated that this PCK ability is very important for teachers to master, because it helps teachers to create learning that is beneficial for students (Shulman, L. S, 2017).

The indicator of PCK ability is the suitability of the learning strategy used in providing the material or content to be taught. Based on interviews conducted with English Teachers, the learning

strategies/methods used by teachers have adjusted the strategies used with the material to be taught and will immediately overcome problems if there are shortcomings in the PCK applied, so that learning can take place smoothly, focused and enjoyable. This is in line with the research results of Wardani et al., (2022), namely that good implementation of TPACK involves implementing a fun learning process and teachers mastering the material being taught.

Technological Pedagogical and Content Knowledge (TPACK)

Technological Pedagogical and Content Knowledge (TPACK) is related to teacher knowledge in combining technology in the learning process. The teaching materials presented use appropriate pedagogical and technological techniques, teachers are able to understand the relationship between the three basic components of knowledge (content, pedagogy and technology), (Matthew, 2009).

Indicators of TPACK ability are, having learning strategies and technology that are appropriate to the material to be taught. From the results of the research conducted, English Teachers have combined three basic components, namely technological knowledge, pedagogical knowledge and content knowledge in learning carried out by English Teachers and will immediately overcome problems if there are obstacles or shortcomings of the TPACK applied, so that learning takes place smoothly, comfortably, focused and enjoyable. For example, the suitability of speaking material, teachers use the Role-Playing strategy. This is in line with the research results of Wardani et al., (2022), namely that the implementation of good TPACK has enforced a fun learning process, used appropriate learning media, and teachers mastered the material being taught.

Supporting and Inhibiting Factors in Using TPACK

A teacher must be able to master the material to be taught, immediately overcome problems if there are obstacles or deficiencies in the learning process that is applied and must also be able to adapt to the times. From the results of the study obtained, it is known that the mastery of English Teachers in using ICT knowledge is quite good. This can be seen from the ability of English Teachers to create PowerPoint slides and use projectors properly. In addition, they also use learning videos and other platforms in providing learning such as YouTube applications, Canva, Quizizz and so on.

A supporting factor that is no less important is the availability of adequate facilities, with the facilities needed, it will support the sustainability of TPACK- based learning. From the observations made, each class at SDIT Al Hasna has a projector that is suitable for use. Another supporting factor is the existence of training and support in developing teacher skills. From the results of the study that the lack of training programs obtained from the government.

4. Conclusion

The implementation of Technological Pedagogical and Content Knowledge of Al Hasna Klaten English Teachers has been running well and meets the indicators. The Technological Knowledge (TK) indicator is knowing various forms of technology that can be used for learning and being able to use them and immediately solve problems if there are obstacles so that learning runs smoothly. Al Hasna Klaten English Teachers have used technology in providing learning. The technology used is software such as PowerPoint, YouTube Google, Quizizz, Google Classroom, WhatsApp and Email. For hardware such as laptops, projectors.

The indicator for Pedagogical Knowledge (PK) is that teachers are able to determine and use learning strategies/models in implementing learning and will solve problems if there are weaknesses so that learning runs smoothly and enjoyable. For example, using the Everyone Is A Teacher strategy, Small Group Discussion, Role Play and using learning models such as Problem Based Learning, Project based Learning).

Indicators in Content Knowledge (CK) are mastering the material to be taught and using the latest references to increase knowledge. Al Hasna Klaten Pedagogical Content Knowledge (PCK) indicator, namely the suitability of the learning strategy used with the material to be taught. Al Hasna Klaten English teachers have adjusted the strategy used with the material to be taught and overcome the obstacles or deficiencies applied, so that learning takes place smoothly, comfortably, and pleasantly. Technological Pedagogical And Content Knowledge (TPACK) indicator, namely the suitability between strategy and technology with the material taught. Al Hasna Klaten English

teachers have combined three basic components, namely technological knowledge, pedagogical knowledge and content knowledge in learning carried out by English teachers so that learning takes place smoothly, comfortably, focused and pleasantly.

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