

AN ANALYSIS OF TECHNOLOGICAL CONTENT KNOWLEDGE (TCK) OF ENGLISH TEACHERS IN VOCATIONAL HIGH SCHOOL

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Abstract: Technological Content Knowledge (TCK) is the knowledge of integrating technology into learning materials. The previous research examined TCK in many fields of education, such as history, elementary school teacher education, mathematics, biology, and science. However, TCK study in the English field is still under-researched. Therefore, this study aims to find the English teacher's knowledge of TCK. This study employed a qualitative approach with narrative inquiry design. The researchers used interviews, observation, and documentation to collect the data. The samples of this study are three English teachers in vocational high schools recruited based on several criteria determined by researchers. The finding showed that all participants mastered various technologies to deliver learning and could combine the two things well to achieve learning objectives. It can be concluded that all participants have a good level of knowledge of TCK.

Keywords: *narrative inquiry, TCK, technology integration*

INTRODUCTION

As it is now in the era of the industrial revolution 4.0, technology is advancing quickly and playing an increasingly significant role in everyday life, including education. In a study by Astini (2019), it was explained that in education, this problem has the effect of shifting the role of the teachers as the only facilitator of knowledge. A teacher is required to improve the quality of teaching and abilities in the realm of

technology, which is a challenge for a teacher in the classroom to have high creativity. This is make a teacher is expected to be able to utilize technology and increase creativity in learning activities to improve the quality of teaching in class. The integration of technological innovations in education can improve the process of teaching and learning and pique students' interest in learning materials (Halili, 2019).

Integrating technology in schools is important to make learning activities well-organized, effective and efficient. Integrating technology can also support school goals (Davies & West, 2014). In addition, teachers need to have a deep understanding of the technology that is suitable for delivering learning content to students, and this ability can be realized by improving the quality of Technological Content Knowledge. Harris et al., (2009) stated that Technological Content Knowledge (TCK) is knowledge that contains a close relationship between technology and learning material content. To be effective in educating in the classroom, a teacher must be able to use knowledge of technological content.

Many previous studies discussed Technological Content Knowledge (TCK) in many fields, such as history, elementary school teacher education PGSD, mathematics, biology, and science. The research on the use of TCK in the history field conducted by Hidayah et al. (2020). Fuada et al. (2020) was analyzed TCK of elementary school teacher education PGSD students. Mulyanti & Rahmat (2019) also researched the use of TCK by mathematics students. The other study of TCK used in biology studies to make lesson plans was held by Oktamarsetyani & Paidi (2019). Meanwhile, Hayati (2019) did research in the science field to make integrated science digital modules. However, it is uncommon to discover TCK research in English learning, moreover in vocational high schools, therefore this study urgent to be conducted.

Based on the description above, the researchers was interested in conducting research by analyzing English teachers' Technological Content Knowledge (TCK). The objective of this research is to find out how the knowledge of English teachers towards Technological Content Knowledge in vocational high schools. The researchers hope that the results of this study will provide an overview of the mastery of Technological Content Knowledge by English teachers in vocational high schools.

REVIEW OF LITERATURE

Technology Integration

Technology integration is an effort to incorporate or use technology in the various aspects of teaching (Davies & West, 2014). The concept of technology integration mainly refers to the efficient application of technology in the educational system and the advantages of technology in the process of teaching and learning. The usefulness of technology in the educational system and the advantages of technology in the teaching and learning process are the core concepts behind technology integration.

Technological Content Knowledge

TCK is very important for teachers to master in now era because teachers are required to have the ability to involve technology in learning. Koehler et al., (2014) defined Technological Content Knowledge as knowledge about the reciprocal relationship between technology and content. It can also said that TCK is the knowledge of integrate technology into learning materials. Thus, teachers need to have qualified skills in using technology and in choosing subject matter that is appropriate to the technology to be used in learning.

Correlation of Vocational High School and English for Specific Purposes (ESP)

The focus at the Vocational High School is to prepare students to be able to take part in the world of work. Based on Government Regulation RI (PP RI) No. 29 in 1990 about secondary school, vocational high school is secondary education that focuses mainly on preparing students for specific fields of work. The fact it was found that the English learning in SMK is general English learning, not specific for students major. In Cahyati et al. (2015), research discovered that English textbooks of SMK students majoring in TKJ more described English material in general and not directed with TKJ majors.

The English for Specific Purposes (ESP) approach is arranged based on the reasons why a learner wants to learn English (Hutchinson & Waters, 1987). Donough (1984) stated that ESP is a concept that contains material, syllabus, and specific objectives that are designed and developed based on certain needs. Based on that, English learning in vocational high school needs to be based on the ESP approach to improve student's English skills matching with their major.

The Use of Technology in Teaching English

In this digital era, education is required to integrate technology into all subjects, including English. English teachers can use technology in a variety of different approaches and methods to improve language quality (Akele, 2014). Therefore, an English teacher needs to master and understand the use of technology that is relevant to the learning material. This aims to get good results based on the goals and expectations of the learning process.

METHOD

This study employed a qualitative approach to conduct the research and used narrative inquiry as a research design that involves narrative stories as data. In a narrative inquiry research design, researchers describe individual lives, collect stories about people's lives, and write stories of individual experiences (Connelly & Clandinin, 1990). By using a narrative inquiry research design aims to explore and understand the meaningful stories owned by an individual.

The researchers used interviews, observation, and documentation to collect the data. The researchers used semi-structured to find out more in-depth information about participants knowledge in technological content. Documentation activities in the form of video recordings of interview activities and then the researchers write the transcripts from it. The results of classroom observations were used to confirm the claims made by participants in interviews. After that, the researchers analyzed the data using thematic analysis technique by identifying themes and patterns that emerged from the transcripts of the participants' oral narratives. The last, to check the validity of the data, researchers used the triangulation technique.

This study was conducted in a vocational high schools in Banjarmasin and the participants were recruited using purposive sampling technique. Based on several criteria determined by the researchers, three English teachers were recruited as participants in this study. The first criteria: (a) a Bachelor of English Language Education; (b) had five years or more of teaching experience; (c) familiar with technology in teaching and learning process. The researchers gave each participant a name tag based on the characteristics of each participant, an infinity person as first

participant, a cheerful person as second participant, and an enthusiastic person as third participant.

FINDINGS AND DISCUSSION

In this section the researchers combine the finding and discussion because this is a narrative inquiry research. The results and discussion in this study refer to the concept of TCK by Mishra & Koehler (2009) that teachers need to have qualified skills in using technology and in choosing subject matter that is suitable for the technology to be used in learning. The researchers found that each participant had different characteristics and they have a good knowledge of technological content. Based on the results of class observations, the participants also certainly master the learning materials and can deliver them well. There are no obstacles that occur when participants operate a web or application during learning. All of these results are described through themes to clarify all of that and it will be described in the explanation below.

A burning passion that knows no age -

Many changes have occurred in the world of education, one of which is the way of learning. Like the experience of the first participant who has more than twenty years of experience as a teacher. She has a lot of experience in teaching English and said that she have faced many changes in education, especially in the technology development.

"You could say that I am a senior teacher with almost 20 years of teaching experience. Of course, there are many changes from entering the classroom to deliver material face-to-face to now delivering material only by phone."
(Participant 1)

The participants' opinions are in line with Nasrullah & Asrimawati (2023) that technology is changing the face-to-face learning style to a combination of online and face-to-face learning. The first participant also added that teachers must keep up with the times to compete. The statements from the participants below are supported by previous research conducted by Vachkova et al. (2022). The study mentioned that in order to remain competitive in this digital era teachers must continue to develop technological skills.

“Now teachers are required to be able to use technology to remain competitive in provide the best to students. I began to slowly learn to use technology from younger colleagues, by my son and even assisted by students. Now Alhamdulillah, my mastery of technology is quite a lot and I can integrate it into my class”. (Participant 1)

Putri & Nasrullah (2023) said that development of technology over time, students are able to participate in various online activities. The first participant has implemented the technology into her teaching. She has a passion for learning about technology and continues to compete in the digital era to provide the best for her students. Based on the reality in the field, she is quite good at operating technology for learning materials and can apply the TCK concept well.

A hobby and pleasure

The second participant claimed that using technology as learning media is her hobby and pleasure even though she often uses technology whenever teaching. She has a lot of knowledge of technology and the way to operate it in content materials. Besides her hobby and pleasure, the students also fell happy when learning with technology such as with their phones.

“Well, using media in teaching is important. Teaching with technology-based is my hobby and almost every time I teach, I use it. There are many applications and websites that I have used and I am so happy to use technology when teaching in class”. (Participant 2)

In a lesson, it certainly requires teaching media as a tool for teachers. This agrees with Fauziah & Nasrullah (2023) that the media is needed to support an activity in learning. That is what makes the media have an essential role in learning.

“I also make my own learning videos and upload them to my personal YouTube channel as teaching materials. I think my video make students more interesting to learn and I also create questions and upload them to Quizizz and Kahoot for students to answer on their phones”. (Participant 2)

Not only that, she was also diligent in making learning video materials and created questions on her own. She said that the learning videos she made were very useful to make students interest in learning. Ljubojevic et al. (2014) said that putting videos into teaching materials increases student activity and the efficiency of the teaching process.

An enthusiastic in learning new things

The third participant was very enthusiastic about learning various technologies to deliver his learning materials. He seemed thirsty for knowledge to learn new things, especially about learning technology. He said that he has actually used some technology in teaching English and he can operate it nicely. Then, he felt that his knowledge about it should be increased because of the many websites and applications that keep popping up.

“I only used familiar ones such as WhatsApp, Youtube, Zoom, and various services provided by Google. However, I feel that my technology mastery must be increased and I have big motivation to be able to operate more various kinds of applications or websites like Quizizz, Kahoot, Padlet, Edmodo, etc., and make the best to support my students learning activities.” (Participant 3)

For teachers, improving technological capabilities is important because it makes the teaching and learning process more precise, effective, and efficient (Kouser & Majid, 2021). The third participant’s desire to improve his technological content knowledge in learning is his basis and motivation, intending to support student learning activities.

Awareness of applying ESP concepts

The location taken as a place to conduct this research is one of the vocational high schools in Banjarmasin. This vocational high school offers a wide range of majors that students can take based on their interests. These majors include:

- a. Office Management and Business Services
- b. Institutional Financial Accounting
- c. Online Business and Marketing
- d. Visual Communication Design
- e. Computer Network and Telecommunication Engineering

The focus at the vocational high School is to prepare students to be able to take part in the world of work. Based on Government Regulation RI (PP RI) No. 29 in 1990 about secondary school, vocational high school is secondary education that focuses mainly on preparing students for specific fields of work.

Although many majors are offered, all participants said that English learning in vocational high schools is English in general and not specific to the majors that students

take. This statement is similar to the previous research conducted by Cahyati et al. (2015), who found that English textbooks of SMK students majoring in TKJ described English material in general and were not directed toward TKJ majors. Supposedly, the primary purpose of teaching English at vocational high schools is to prepare students to master English skills in their major field.

“Actually, I had the initiative to search teaching materials related to the students' major based on ESP concept, because the English books provided are for general English learning and not for ESP”. (Participant 1, 2, 3)

The English for Specific Purposes (ESP) approach is arranged based on the reasons why a learner wants to learn English (Hutchinson & Waters, 1987). Donough (1984) stated that ESP is a concept that contains material, syllabus, and specific objectives that are designed and developed based on certain needs. Based on that, English learning in vocational high school needs to be based on the ESP approach to improve student's English skills matching with their major.

“ESP is very important to help students to know the kinds of English vocabulary related to their majors, how to make a job application letter in English, and conversations in English that might be used when they are working”. (Participant 1, 2, 3)

The participants added that ESP has many benefits for vocational school students. The main function of ESP is for students to understand English related to their major in order to improve their competency skills (Bensafa, 2017). Therefore, vocational high schools need to provide English for Specific Purposes (ESP) for students.

The easiness of integrating technology into learning content

This research was conducted at a vocational high school in Banjarmasin which is known for its advanced technology where the school has facilitated technology-based learning facilities, such as computers, laptops, LCDs, and speakers that teachers can use in order to support teaching and learning activities.

In this digital era, teachers are required to be able to integrate technology into all subjects, including English. English teachers can use technology in a variety of different approaches and methods to improve language quality (Esther, 2013). Therefore, an English teacher needs to master and understand the use of technology that is relevant to

the learning material. This aims to get good results in accordance with the goals and expectations of the learning process.

“Actually, a teacher must be able to master the learning materials and operating technology into the material well to achieve learning objectives.”

(Participant 1, 2, 3)

As said by all participants that it is not difficult to integrate technology when delivering material. The important thing to know first is know the function and learn how to operate the technology that you want to apply into the learning activity in the class. If you have done these two things, you can easily integrate technology into your learning materials and be ready to practice.

“The challenge is that teachers are required to be able to combine technology into learning materials. In reality, it is not as difficult as imagined, because almost all technologies can be used for learning. First you must know the function and how to operate the technology that you want to use. I think I can use technology in my English class well.” (Participant 1, 2, 3)

The role of technology in learning cannot be denied because now is the digital era. All educational programs including English education programs cannot escape the role of technology. The emergence of various websites and applications in learning English indicates the current technological advances (Nasrullah, 2021).

Benefits of integrating technology into the learning

There are many benefits of integrating technology into learning. Dockstader's (1999) theory of technology integration shows that the use of digital technology during learning is to achieve learning objectives. Below are the statements from all participants regarding the benefits of integrating technology into learning.

“The direct impact of using technology during learning is that it can easily achieve learning objectives and make classroom atmosphere becomes lively, because it makes students active in asking questions and discussing. Besides that, it makes students interested in learning.” (Participant 1, 2, 3)

Angers & Machtmes (2005) claimed that the availability of technology makes students interested in learning, rather than learning with books. All participants said that the benefit of using technology in learning activities is to make the classroom atmosphere lively, and this is argued by (Rintaningrum, 2023; Mu'in et al., 2023).

“Technology also makes students more creative, such as when assigning to making video in visual design and communication class because related to their major’s.”
(Participant 1, 2, 3)

All participants also said that another impact that arose was that it could improve students’ skills in English and make students more creative. In a study by Tang et al. (2022), using digital technology can increase student creativity. In addition to increasing creativity, students can also sharpen their skills based on their majors.

There is a way for every difficulty

“God gives a problem because he knows you can deal with it”. The proverb is familiar, that problems are things that everyone must have, but there must be a way to solve them. Such is the case in incorporating technology into learning.

“In some classes, the network was unstable and it was also found that some students did not have internet quotas.” (Participant 1, 2, 3)

The problem claimed by all participants was network constraints and students not having internet quota and this problem also faced by researchers in previous studies (Rosalina et al., 2020; Yuliejantiningasih, 2020; Muthuprasad et al., 2021). Of course, these problems cannot be denied, but the problem can be overcome.

“There should be assistance from the government, such as being provided with WiFi, but so far, I anticipate this is by making study groups or asking students to share quotas with their friends who do not have quotas so that they can still study together.” (Participant 1, 2, 3)

In order to minimize and even overcome the obstacles that exist in the use of technology, assistance from the government is needed. As said by Sofianto & Zuhri (2021), to deal with the technology constraints used during school learning to subsidize internet access to support learning activities. If these obstacles are handled, learning can proceed as expected.

CONCLUSIONS AND SUGGESTIONS

This research recognizes that the narrative inquiry research design can more deeply explore research about individual experiences. The interviews presented in the discussion section were analyzed, and it can be concluded that all participants have a good knowledge of TCK. All participants can apply the concept of TCK, which is the

knowledge of applying technology to learning content. All participants recognize many websites and applications that can be used to deliver English learning material content. All participants can also use technology well in learning.

Based on the results of class observations, all participants certainly master the learning materials and can deliver them well. There are no obstacles that occur when participants operate a web or application during learning. However, there are still found the problem such as the network and quota. Therefore, the researchers suggest that these obstacles can be followed up by the school and government by facilitate the internet access so that learning runs smoothly and learning objectives are achieved. The researchers also hope that teachers maintain their TCK knowledge and would be better off improving it.

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