THE PERCEPTIONS OF PRE-SERVICE ENGLISH TEACHERS TO TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE IN EFL CLASSROOM

THESIS

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i

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ii

ABSTRACT

Hana, Jihannailal. 2020. *The Perceptions of Pre-Service English Teachers to Technological Pedagogical Content Knowledge in EFL Classroom*. A Thesis. English Language Education Department, Faculty of Tarbiyah and Teacher Training, State Islamic University of Sunan Ampel Surabaya. Advisor: Rizka Safriyani, M.Pd and Dr. Mohamad Salik, M.Ag.

Key Words: *Technological Pedagogical Content Knowledge (TPACK), Pre-Service Teachers, Perception*

Technology is one of the most important part which cannot be separated from people daily life especially in the educational field. Thus, implementing technology in teaching is needed in this digital era especially for EFL classrooms because learning language needs to have an attractive learning activity to produce an effective learning to make students understand the material well. In implementing technology, teachers need a strategy how to use it in their practices to obtain effective result. However, many teachers still cannot implement appropriate technology combined with the strategy that is used. As future teachers, pre-service teachers have to know well. Technological pedagogical content knowledge (TPACK) can be applied in the classroom. This study investigated pre-service teachers' perceptions of technological pedagogical content knowledge (TPACK) in EFL classrooms. This study used descriptive qualitative design by administering open-ended questionnaire to 14 participant of pre-service teachers who taken teaching practice in Mojokerto. The result of this study showed that TPACK was beneficial for pre-service teachers to teach English in the classroom. They could combine both appropriate technology and strategy. Also, the knowledge of the subject itself can make students interested in the learning process and understand the material easily.

ABSTRAK

Hana, Jihannailal. 2020, *The Perceptions of Pre-Service English Teachers to Technological Pedagogical Content Knowledge in EFL Classroom*. Skripsi. Pendidikan Bahasa Inggris, Fakultas Tarbiyah dan Kegurua, UIN Sunan Ampel Surabaya. Pembimbing: Rizka Safriyani, M.Pd dan Dr. Mohamad Salik, M.Ag.

Kata Kunci: *Pengetahuan Kontent Pedagogi Teknologi, Guru PPL, Persepsi*

Teknologi merupakan salah satu bagian terpenting yang tidak dapat dipisahkan dari kehidupan sehari-hari khususnya di bidang pendidikan. Oleh karena itu, penerapan teknologi dalam pengajaran sangat diperlukan di era digital ini terutama untuk kelas bahasa Inggris, karena pembelajaran bahasa memerlukan kegiatan pembelajaran yang menarik untuk menghasilkan pembelajaran yang efektif agar siswa dapat memahami materi dengan baik. Dalam mengimplementasikan teknologi, guru membutuhkan strategi bagaimana menggunakannya dalam praktiknya untuk mendapatkan hasil yang efektif. Namun demikian, masih banyak guru yang belum dapat menerapkan teknologi yang tepat yang dipadukan dengan strategi yang digunakan. Sebagai calon guru, guru PPL harus tahu betul mengenai hal tersebut. Pengetahuan konten pedagogis dan teknologi (TPACK) dapat diterapkan di kelas. Studi ini menyelidiki persepsi guru PPL tentang pengetahuan konten pedagogis dan teknologi (TPACK) di kelas bahasa Inggris. Penelitian ini menggunakan desain deskriptif kualitatif dengan pemberian angket terbuka kepada 14 peserta yaitu guru PPL yang mengikuti praktik mengajar di Mojokerto. Hasil penelitian ini menunjukkan bahwa TPACK bermanfaat bagi guru PPL untuk mengajar bahasa Inggris di kelas. Mereka dapat menggabungkan teknologi dan strategi yang tepat. Selain itu, pengetahuan tentang mata pelajaran itu sendiri dapat membuat siswa tertarik pada proses pembelajaran dan memahami materi dengan mudah.

TABLE OF CONTENT

viii

LIST OF TABLES

ix

LIST OF PICTURE

LIST OF APPENDICES

Appendix 1 Instrument of Open-Ended Questionnaire

Appendix 2 Result of Open-Ended Questionnaire

Appendix 3 Surat Validasi

Appendix 3 Surat Tugas

Appendix 4 Surat Persetujuan Munaqosah

Appendix 5 Kartu Bimbingan Skripsi

LIST OF ABBREVIATION

EFL	English as Foreign Language
ESL	English as Second Language
ICT	Information Communication and Technology
TK	Technological Knowledge
CK	Content Knowledge
PK	Pedagogical Knowledge
PCK	Pedagogical Content Knowledge
TCK	Technological Content Knowledge
TPK	Technological Pedagogical Knowledge
TPACK	Technological Pedagogical Content Knowledge
UNRWA	United Nation Relief and Works Agency for Palestine Refugees in The Near East
NCBTS	National Competency Based Teacher Standard

CHAPTER I

INTRODUCTION

The section gives several views of why the research is conducted with one research question and the purpose of the research, this section also gives the illustration of key terms which facilitate the readers to understand the term for the variable used.

A. Background of the Study

Technology is widely considered to be the most important part of people life which may influence the needs of people especially in education which arise the concept of educational technology. It covers the design, creation, use, management, assessment of learning process and resources[1]. Mastered and experienced in technology skills is also needed because it is one of the important part of skills which should be expanded in teaching and learning in the 21st century[2]. Therefore, nowadays technology cannot be separated from people daily life especially in EFL activities. However, many teachers still have low competence and less experience in utilizing ICT in teaching[3]. Teachers who have higher level of technological skills are more willing to use technology in teaching and learning[4]. In fact, study from Sylvianti and Yusuf showed in Aceh only a few schools in the biggest cities which can easily access and utilize it although ICT for teaching English are useful to enhance students' language skills[5]. Asnawi, Yunisrina, and Rena found that English teachers of senior high school in Banda Aceh have low knowledge and experience[6]. Integrating technology in the classroom is needed to have an effective learning[7]. Nonetheless, integrating effective learning by using technology is still low and rarely use because technology cannot lead to change[8]. The one who can make changes is the teacher themself to take advantages of technology in learning process for example, linked the pedagogical context in the learning activity. Teachers are required to develop technical awareness that will complement the awareness of pedagogy and content. Therefore, technological pedagogical content knowledge (TPACK) will be an accurate framework that can be applied. Knowledge of technological pedagogic content (TPACK) is a theoretical concept that defines a

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[1] Rocci Luppicini, "A Systems Definition of Educational Technology in Society". *Journal of Educational Technology & Society,* vol. 8, 2005, 3.

[2] Muhammad Imam Farisi, "Developing the 21st-century Social Studies Skills through Technology Integration". *Turkish Online Journal of Distance Education*, vol. 17, no. 1, 2016, 16-30

[3] Siti Hadijah, Shalawati, "Investigating Teachers' Barriers to ICT Integration in Teaching English at Senior High Schools in Pekan Baru". *ISELT-S,* vol. 5, 2017

[4] Michael Hammond, Elpiniki Fragkouli, Ida Suandi, Soe Crosson, Jennifer Ingram, Petter Johnston-Wilder. "What happens as student teachers who made very good use of ICT during pre-service training enter their first year of teaching?" *An International Journal of Teacher Development,* vol. 13, July 16 2009, 93–106

[5] Tengku Maya Sylvianti, "Looking into EFL students' perceptions in listening by using English movie videos on YouTube". *Studies in English Language and Education*, vol. 1, no. 1, 2014, 45-63.

[6] Asnawi Moslem, Yusrina, Qismullah, Rena, Juliana, "Perceptions And Barriers To ICT Use Among English Teachers in Indonesia". *Teaching English with Technology,* vol. 18, no. 1, 2017, 3-23

[7] Maulidya, Lo, "E-learning readiness in senior high school in Banda Aceh, Indonesia". *Information Technology and Applications*, vol. 7, no. 4, Banda Aceh, 2013, 122-132.

[8] Matthew J Kohler, Punyashloke Mishra. "What happens when teachers design educational technology? The development of technological pedagogical content knowledge". *Journal of Educational Computing Research*, vol. 32, no. 2, 2005, 131-152.

systematic view of teachers about knowledge needs to get an effective implementation of technology in teaching[9].

Several studies have been carried out to explore teachers integrating technological pedagogical content knowledge in the classroom. Bambang, Oktavira, and Ira conducted study entitled *"Indonesian EFL Teachers' Application of TPACK in In-Service Education Teaching Practices"* examined the implementation of TPACK that offers Indonesian EFL teachers benefit from improving the effectiveness of their EFL instructional materials and teaching methods. The finding of this research showed that using TPACK was very beneficial for teachers, the instructional materials and the teaching methods succeeded to prepare by the teachers through applying TPACK framework[10].

Dev Raj Paneru, in his study entitled *"Information Communication Technologies in Teaching English as a Foreign Language: Analyzing EFL Teachers' TPACK in Czech Elementary Schools"* examined EFL teachers' competences and perspectives to implement ICT in the classroom through Technology, Pedagogy, and Content Knowledge (TPACK) in action model in elementary schools in Czech Republic[11]. The result showed that teacher with interactive digital pedagogical educational background and experience are different from a formal technological education in developing TPACK comprehensive and integrating it into EFL classes in significant and interactive ways. Czech EFL teachers in functional practices of teaching with ICT are represented positively.

Another research done by Wilson M. R. Bugueño entitled *"Using TPACK to promote effective language teaching in an ESL/EFL classroom"* explored the use of digital technologies for EFL teaching based on the use of TPACK in EFL/ESL classroom, base foundations of TPACK, activities, and the application in all of subject areas include EFL/ESL area. The finding concluded that TPACK's application in English teaching was not investigated in extent[12].

Sami Saad Alghani have investigated level of the knowledge of technical pedagogy and content (TPACK) of teachers of English as a Foreign Language (EFL) in Public Secondary Schools in Saudi Arabia. The study which focused on the knowledge, skill, and attitude in implementing technology in EFL classrooms[13]. The finding showed that EFL teachers could use technology in several different ways in teaching English and the use of technology was strongly linked to their knowledge and attitudes toward technology and their understanding of TPACK.

The previous studies mainly focused on integrating technological pedagogical content knowledge in teaching process and its effect to prepare instructional designs and teaching practices. The participants involved in previous studies were also EFL English teachers. Previous studies did not focus on the perception of pre-service teachers and

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[9] Joyce Hwe Ling Koh, Ching Sing Chai, Chin-Chung Tsai, "Examining practicing teachers' perceptions of technological pedagogical content knowledge (TPACK) pathways: a structural equation modeling approach". *Instructional Science*, vol. 41, no. 4, 2013, 793-809.

[10] Bambang Yudi Cahyono, Oktavina Dwi K, Ira Mutiaraningrum, "Indonesian EFL Teachers' Application of TPACK in In-Service Education Teaching Practices". *International Journal of English Language Teaching,* vol. 4, no. 5, 2016, 16-30

[11] Dev, Raj Paneru. Information Communication Technologies in Teaching English as a Foreign Language: Analyzing EFL Teachers' TPACK in Czech Elementary Schools. *C.E.P.S Journal*, vol. 8, 2018, 3.

[12] Wilson M. R. Bugueño. Using TPACK to promote effective language teaching in an ESL/EFL classroom. *https://scholarworks.uni.edu/grp/150,* (University of Northern Iowa, 2013), 150.

[13] Sami Saad Alghamdi, Doctoral Dissertation: *"The Effect of EFL teachers' Technological Pedagogical Content Knowledge (TPACK) on EFL teaching in Saudi Arabian Secondary School"* (England: University of England, 2017)

this study involved pre-service teachers. There is a study from Dev Raj Paneru which almost similar with this research but the subject of the study is EFL teachers and the focus do not only on the perception but also on the teachers' TPACK competency and this study only focus on the perception.

In teaching activity, knowing and experiencing about the method or strategy, media that use, and also the process of teaching and learning is needed. Thus, teachers perception is also important because perception is the process of observe, sense, remember, experiencing something around[14] include everything during the teaching and learning process, that is sensory motoric indirectly work. Besides, teacher should well prepared in integrating effective teaching and learning activities as well as to understanding the content of what they want to teach to create and to have an effective learning which concern technology also. Therefore, the goals of this study is to investigate the perceptions of pre-service English teachers about technological pedagogical content knowledge in EFL classroom.

B. Research Questions

Related to the background of this research, the research question is:
What are the perceptions of pre-service English teachers to technological pedagogical content knowledge in secondary schools in Mojokerto?

C. Objectives of the Research

The objective of this research is to investigate the perceptions of pre-service English teachers to technological pedagogical content knowledge in secondary schools in Mojokerto.

D. Significance of the Research

This study is intended to help students, teachers and lecturers, and the prospective researcher.

a. For students/pre-service English teachers, this research also include some information on the importance of technology in EFL classrooms for pre-service English teachers. Students can develop their teaching competence by applying various kinds of technology through technological pedagogical content knowledge.
b. For teachers/lecturers, this research is fully informed of the technological needs for developing effective learning through the use of knowledge of technological pedagogical content.
c. For future researcher, this research investigates the perceptions of pre-service English teachers regarding knowledge of technical pedagogical content in EFL classroom. Hence, future research may explore the implementation of technical pedagogical content knowledge into the EFL classroom or technology competence of teachers through technological pedagogical content (TPACK) framework.

E. Scope and Limit of the Study

The scope of this study is pre-service English teachers' perceptions to technological pedagogical content knowledge (TPACK) in EFL classroom. There are some aspects that can be discussed about technological pedagogical content knowledge in EFL classroom including students/ teachers' mastery of TPACK, students/ teachers'

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[14] Philip Kotler. Analysis, Planning, implementation, and Control 9th Edition. (New Yersey: Prentice Hall International, Int, 2000).

perceptions of TPACK, developing students/teachers technological knowledge through TPACK. However, this study will focus on pre-service English teachers' perceptions of TPACK in the EFL classroom. This study collected the data only on the pre-service English teachers II of the 2018-2019 academic year of the Department of English Language Education of the State Islamic University of Sunan Ampel Surabaya, which is trained in the secondary schools of Mojokerto because it is the most teaching practice of English major in Mojokerto in the academic year 2018-2019 of English Language Education.

F. Definition of Key Term

Here in this study, there are several definitions of key words to help readers understand this research easily.

a. Technological Pedagogical Content Knowledge (TPACK)

Technological Pedagogical Content Knowledge (TPACK) is an information derived from the combination of technology, pedagogy, and content[15]. In this research, knowledge of technical pedagogic and content (TPACK) means a knowledge that integrates the appropriate technology into the cycle of teaching and learning by combining pedagogical knowledge with content knowledge to achieve successful learning.

b. Pre-service English teacher

Pre-service teacher is a teacher preparation program who is preparing to be a teacher but does not teach directly in the class[16]. In this research pre-service teacher means English student teacher who are conducting teaching program in the school based on the faculty's policy toward diploma and teaching in the academic year 2018-2019.

c. Perceptions

Perception is the way in which people choose, manage, and perceive sensory input into concrete knowledge about their work activities[17]. Perception also defines as the way of someone thinking about anything in their environment by using sensory[18]. In this research, based on the definition above, perception is the process of pre-service English teachers thinking about the knowledge of technical pedagogic and content that applies in the EFL classroom based on their opinion.

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[15] Punya Mishra & Matthew J Koehler. Technological pedagogical content knowledge: A framework for teacher knowledge. *The Teachers College Record*, vol. 108, no. 6, (2006) 1017-1054.
[16] Julie Amador, Royce, K., Brant G, et.al. "Preparing Pre-service teachers to become self-reflective of their technology integration practices". *Research on teacher education in digital age*, 2015.
[17] V, Rao.SP. and Narayana, P.S. *Organization Theory an Behavior,* Delhi: Konark Publishing Company, (329-330)
[18] Jerry Anak Ahen., Students' Perception toward English for Self-Expression.

CHAPTER II

REVIEW OF RELATED LITERATURE

The section illustrate some theories that concerned to the study about pre-service English teachers' perceptions of the knowledge of technological pedagogical content in EFL classroom which obtained from some literatures. These include: the definition of perception, knowledge of technological pedagogical content framework, the use of knowledge of technological pedagogical content in teaching, teacher qualification and teacher competence, and the challenges of using information communication and technology in teaching. Several previous studies also provides in this chapter.

A. Theoretical Framework

This theoretical framework describes the theories that related to the study. More explanation about the theories is explained below.

1. Definition of Perception

Perception is the way how people choose, manage, and interpret sensory stimulations into the main information on their work activities[19]. Perception also means the way of someone thinking about anything in their environment by using sensory[20]. Kotler defines perception as the process of the way how someone chooses, organizes, and interprets the information to have a main conception[21]. According to Gibson et al, perception is the cognitive mechanism that individuals use to perceive and understand the current situation[22]. Moreover, perception can also from the previous experience of someone. It can also defines as the way of people thinking about something from the world around or it can be from their experience. From the statement above, perception in this research is the way how pre-service English teachers interpreted knowledge of technical pedagogic and content in EFL classroom.

Furthermore, the basic for the perception is that there is an experienced person of the perceiver; secondly, something is perceived; thirdly, the sense in which things, events or individuals are perceived, and finally the actual essence of perception starts with experience of multiple sensory stimuli and concludes with the creation of perceptions[23].

When perceiving people build strategies or shortcuts and the strategies it selves are needed to simplify the process. According to Johnson, there are three strategies when people perceiving[24]. Those are:

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[19] V, Rao.SP. and Narayana, P.S. *Organization Theory an Behavior,* Delhi: Konark Publishing Company, (329-330)

[20] Jerry Anak Ahen., Students' Perception toward English for Self-Expression.

[21] Philip Kotler. Analysis, Planning, implementation, and Control 9th Edition. (New Yersey: Prentice Hall International, Int, 2000).

[22] Gibson, J. L., Ivancevich, J. M., and Donnelly, J. H., "Teacher efficacy: A construct validation". *Journal of Educational Psychology*. Vol. 7, 1996

[23] W, Jordan., Jordaan. Man in Context Second Edition. (Isando: Lexicon, 1996)

[24] N, Johnson, "The Pervasive, Persuasive Power of Perceptions". *The Alberta Journal of Educational Research.* Vol, 7: 475-497, 1994

a. Stereotyping

Stereotyping is a generalized belief that applies actual and imagined identical characteristic to something, to all members of the category or class to which individuals belong. It can either be positive or negative.

b. Projection

Projection happens when the characteristics, features, feelings and dispositions of the perceivers are compared to those of certain individuals or something. It suggests that the interpretation of people about someone or something is more affected by what the observer is like than by what the person or object being observed is like.

c. Selective Perceptions

Selective perceptions arise when people interpret what they perceive selectively, based on their own desires, context, experience and attitudes.

Based on the description of the strategy used when perceiving, the strategies that lead to this research is selective perceptions, because this research shows the pre-service English teachers perceptions to TPACK based on their experience, their thought, and also the context.

By understanding the perception of teachers about TPACK in the EFL classrooms, information on how teachers could use TPACK in classroom practices.

2. Technological Pedagogical Content Knowledge (TPACK) Framework

Technological pedagogical content knowledge (TPACK) leads to an expansion of knowledge about pedagogic and content (PCK). Only teachers' pedagogical knowledge or teachers' content knowledge is inadequate to describe their teaching knowledge and the purpose for teaching students cannot arise[25]. Therefore, both of pedagogical knowledge or content knowledge should be combined[26]. Technological pedagogical content knowledge (TPACK) is found by Mishra and Kohler which derived from Shulman's knowledge of pedagogic and content (PCK) framework to describe an understanding of teachers on learning technology to have an interaction between one to another to build an effective teaching by using technology[27]. Some researchers have been defined technological pedagogical content knowledge (TPACK) in various ways. Technological pedagogical content knowledge defined as a draft framework that defines teachers' capability in integrating information and communication[28]. Another definition, knowledge of technical pedagogic and content is integrating technical advancement and teaching and learning skills[29]. Technological pedagogical content knowledge also describes how teachers are thinking about the

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[25] Lee S, Shulman, "Those who understand: Knowledge growth in teaching". *Educational Researcher,* vol. 15, no. 2, 1986, 4–14

[26] Punyashloke Mishra, Mathew J Koehler, "Technological pedagogical content knowledge: A framework for teacher knowledge". *The Teachers College Record*, vol. 108, no. 6, 2006, 1017-1054

[27] Matthew J Kohler and Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?" *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009

[28] Joyce Hwe Ling Koh, Ching Sing Chai, Chin-Chung Tsai, "Examining practicing teachers' perceptions of technological pedagogical content knowledge (TPACK) pathways: a structural equation modeling approach". *Instructional Science*, vol. 41, no. 4, 2013, 793-809.

[29] M.L. Nies, "Preparing teachers to teach science and mathematics with technology: Developing a technology pedagogical content knowledge". *Teaching and Teacher Education,* vol. 21, 2005, 509-523.

skill they will need learn to apply technology successfully in their classroom[30]. From the definition above, it can be concluded that technological pedagogical content knowledge (TPACK) is teachers' knowledge in integrating technology in teaching to create an effective learning.

Technological pedagogical contain knowledge (TPACK) is made up of three main components of teacher knowledge: knowledge of content, knowledge of pedagogy, and technical knowledge. Besides, there are also other components in technological pedagogical content knowledge (TPACK) framework built as the interaction of three teacher information domains within the knowledge of technical pedagogical content (TPACK) framework. These three components include: TCK (Knowledge of Technical Content), PCK (Knowledge of Pedagogic Content), TPK (Knowledge of Technical Pedagogic), and TPACK (Technological Pedagogical Content Knowledge). Thus, have the same important part of TPACK framework[31].

Picture 2.1. TPACK Framework

According to the Mishra and Kohler, there are 7 dimensions of technological pedagogical content knowledge (TPACK); technical knowledge (TK), Knowledge of Pedagogy (PK), Knowledge of Content (CK), Knowledge of Pedagogical Content (PCK), Knowledge of Technical Pedagogy (TPK), Knowledge of Technical Pedagogy (TCK), Technological Pedagogical Content Knowledge (TPACK)[32]. These are the definition about seven dimensions of TPACK and its examples:

a. Technological Knowledge (TK)

Technological Knowledge (TK) is knowledge of the technological tools both hardware or software such as computer, internet, digital videos, and commonplace technology including projector, interactive whiteboard,

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[30] Ching Sing Chai, Joyce Hwe Ling Koh, and Chin-Chung Tsai, "A Review of Technological Pedagogical Content Knowledge". *Educational Technology & Society,* vol. 16, no. 2, 2013, 31–51.
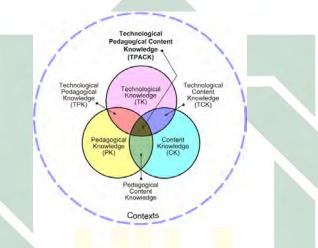
[31] Matthew J Kohler and Punya Mishra. "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60–70.

[32] Matthew J Kohler & Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

softwares program, etc[33]. Example: skills on using Web 2.0 resources like Facebook, Blog, Wiki, etc.

b. Pedagogical Knowledge (PK)

Pedagogical knowledge is a comprehensive understanding of the teaching processes, methods, strategies, and techniques learned[34]. It also means as the teaching method process that includes the knowledge of lesson plan, assessment, student learning, and classroom management[35]. In summarized, pedagogical knowledge (PK) is a knowledge that teachers have for teaching by using appropriate method, strategy, and technique. Example: how to apply problem based learning (PBL) to teach.

c. Content Knowledge (CK)

According to Shulman, content knowledge known as a subject proficiency[36]. Content knowledge (CK) is the skill of the particular subject to be learned or taught[37]. The content of every subject matter is different. Therefore, it is important to know the knowledge of the content of the subject matter. As Shulman stated, the knowledge include the concept of knowledge, theories, ideas, organizational framewrok, and also the approaches and the practices in developing such knowledge[38]. In addition, content knowledge (CK) is teachers' in-depth subject matter understanding that includes theories, concepts, structures, etc. Example: competence about English or Mathematic subjects.

d. Pedagogical Content Knowledge (PCK)

Pedagogical knowledge of content (PCK) is a knowledge of how the subject is taught that includes teaching strategies or methods of teaching and teaching activites to deliver a specific content. Pedagogical content knowledge supports the learning subject that provides the way of managing, representing, and adjusting the difference interest and skills of learners[39]. From the definition above, knowledge of pedagogical content (PCK) is the information that teachers have to provide the knowledge of content and to follow pedagogical strategy to make the content easy to understand. Example: a knowledge of teaching electricity using analogies.

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[33] Matthew J Kohler & Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[34] Matthew J Kohler & Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[35] Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., Shin, T. S., "Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers". *Journal of Research on Technology in Education*, vol. 42, no. 2, 2009, 123-149.

[36] Lee S, Shulman, "Those who understand: Knowledge growth in teaching". *Teaching and learning in the secondary school,* 1994, 125-133.

[37] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[38] Lee S, Shulman, "Those who understand: Knowledge growth in teaching". *Educational Researcher, vol.* 15, no. 2, 1986, 4-14

[39] Lee S, Shulman, "Those who understand: Knowledge growth in teaching". *Teaching and learning in the secondary school,* 1994

e. Technological Pedagogical Knowledge (TPK)

Technological Pedagogical Knowledge (TPK) is the skill to use technology in the learning and teaching processes[40]. Technical Pedagogic Knowledge (TPK) is teachers who understand how the various methods are applied in the process of teaching and learning using ttechnology. Example: Using ICT to help students recieve the material easily and using computer that supported collaborative learning.

f. Technological Content Knowledge (TCK)

Technological Content Knowledge (TCK) is an understanding of how technology is used to deliver the subject matter. This also means the effcet of the view of technology in representing the content that is flexible to use to the educational purpose to influence students in understanding the main definition of the subject matter[41]. Example: knowledge of how to use online dictionary.

g. Technological Pedagogical Content Knowledge (TPACK)

Technological Pedagogical Content Knowledge (TPACK) seems to be the combination of skills that includes technology, teaching, and material. Teachers who use technology to conduct the teaching method in any subject matter need this knowledge[42]. It will help teachers to have an effective learning and having creative thinking[43]. In addition, knowledge of the technical pedagogic content is the teachers' ability to use the appropriate technology by using any method towards effective learning. Example: understand how and when to use Google Docs as a means of communication to improve collaborative writing in teaching writing.

3. **The Use of Technological Pedagogical Content Knowledge (TPACK) in Teaching**

The industrial revolution has brought people to well known about technology. Integrating technology is also the most important part which cannot be separated in people life. Through technology people or a person can communicate with other around the world, and search for any information easily.

The integration of technology has been developed in several aspects especially in the educational field. Technology is very important in education because technology may give many impacts for teaching and learning. Technology is very important in the field of education because they can foster the enthusiasm of the environment of the classroom and can facilitate the students to access the material easily[44]. Additionally, implementing technology in teaching and learning process not only affect teachers but also students. It may give students several effects such as to be more interest in learning

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[40] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?" *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[41] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[42] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[43] Kazu, I. Y., Erten, P, "Teachers' Technological Pedagogical Content Knowledge Self-Efficacies". *Journal of Education and Training Studies*, vol. 2, no. 2, 2014, 126-144.

[44] Punya Mishra, Matthew J Koehler, "Technological pedagogical content knowledge: A framework for teacher knowledge". *The Teachers College Record*, vol. 108, no. 6, 2006, 1017-1054.

and also to be more to motivate in learning. For that statement explained, teacher should consider how and why not to use technology in the classroom.

However, having an effective teaching and learning process is important for teachers. By having knowledge of the subject matters, the knowledge of pedagogy, and the knowledge of using technological tools, the effective teaching and learning process can be applied. Therefore, integrating technical pedagogical content knowledge (TPACK) into teaching may thus one of the best solution. Technological pedagogical content knowledge itself means teachers knowledge in using the appropriate technology to implement method or the learning process in any subject matter to have an effective learning.

Nonetheless, there are still many teachers who cannot apply TPACK because of some factors. Some studied about knowledge of technical pedagogic and content (TPACK) in teaching are conducted. First studied is from Jun-Jie Tseng entitled *"Investigating EFL teachers' technological pedagogical content knowledge: Students' perceptions"*. This study explored the knowledge of technical pedagogic and content of teachers based on the perceptions of the students. 257 EFL Taiwanese Junior High School participated this research. The result showed that teachers illustrated their knowledge of the content rather than their TPACK implementation[45].

Second is a studied by Wilson M, entitled *"Using TPACK to promote effective language teaching in an ESL/EFL classroom"*. This research was aimed at exploring the use of TPACK in EFL/ESL classrooms. This research is not only explore the basis of TPACK, kinds of activities, and their applications in other areas, but also in area EFL / ESL. This research gained the information from the articles, books, and journals that revealed that TPACK was not used to teach English[46].

The third is studied from Dina Al-Jamal entitled *"UNWRA EFL In-Service Teachers' Perception of the Application of TPACK in Teaching Listening and Speaking"*. The aim of this research is to investigate TPACK's perception of English language teachers in teaching listening and speaking within UNRWA (United Nation Relief and Works Agency for Palestine Refugees in The Near East). The result showed a lack of Technical Knowledge (TK), a dissociation of Technical Knowledge (TK) with Knowledge of Content (CK), a lack of Knowledge of Pedagogy (PK) and a lack of Knowledge of Pedagogy and Knowledge of Content (TPACK)[47].

Based on the studies that have been carried out, it can be concluded that TPACK integration into teaching can be strengthened by improving teachers' perceived knowledge of TPACK then apply it in a row.

4. Teacher Qualification and Teacher Competence

Teacher recruitment itself means the process of providing an equal number of quality applicant. While, teacher selection is the process of selecting only high quality employees from all of the applicant[48]. Teacher qualification is include on the both of teacher recruitment and teacher selection. There will be teacher quality at the teacher selection which means there are some criteria that have to cover for whom who want

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[45] Jun-Jie Tseng, "Investigating EFL teachers' technological pedagogical content knowledge: Students' perceptions". *EUROCALL* (Research-publishing.net, presented on Aug 2014)

[46] Wilson M, "Using TPACK to promote effective language teaching in an ESL/EFL classroom". (Schoolarworks.uni.edu, August 2013), 150

[47] Dina Al-Jamal, "UNRWA EFL In-Service Teachers' Perception of The Application of TPACK in Teaching Listening and Speaking". *IUG Journal of Educational Psychological Science,* vol. 27, no. 2, 2018, 56-72

[48] James H Stronge and Jennifer L Hindman, *The Teacher Quality Index A Protocol for Teacher Selection*. Virginia: Association for Supervision and Curriculum Development

to join the teacher recruitment. Maintaining effective teacher is one of the most important responsibility of the leader of the school. There are some requirements of effective teaching: verbal knowledge, content knowledge, teacher certification, and teaching experience. These are the qualities of effective teachers: teacher as a person, good in manage and organize the class, able to create instructional design, can implement the instruction well, and monitoring students' progress and potential[49].

Competency based means standard or criteria for categorizing teaching in a good way regarding to what the teacher is competent to do. The competencies in the NCBTS (National Competency Based Teacher Standard) were came from (a) the characteristics of the learning environment and the teaching practices which lead to effective learning of students and (b) the successful school practices and programs[50].

From the explanation above, it can be concluded that teachers not only expected to have ability in teaching yet, teachers should have good quality and competence to build an effective teaching and learning in English classroom.

5. **The Challenges in Using Information Communication and Technology (ICT) in teaching**

As we know that ICT has several positive effect if it is utilizing in teaching. However, ICT may give some challenges in utilizing it. There are certain factors that affect the decision of teachers to use ICT in teaching are educational level, age, gender, educational experience, computer experience for educational purpose and attitude towards computer can influence the adaptation of technology[51]. The study from Jihan Rabah entitled *"Benefits and Challenges of Information and Communication Technologies (ICT) Integration in Québec English Schools"* investigated that the integration of ICT in classrooms faced some challenges; loss of confidence, lack of access to resources, lack of funding for school facilities, and lack of financial support for ICT tools[52].

Study from Douglas Kunda, Christhoper Cembe, and George Mukupa conducted study entitled *"Factors that Influence Zambian Higher Education Lecturers Attitude towards Integrating Information Communication Technologies (ICTs) in Teaching and Research"[53]*. The result showed there are several factors affecting implementation of Information Communication and Technology (ICT) in teaching:

a. Lack of in-service and re-training in ICT
b. Lack of technical and appropriate administrative support
c. Lack of adequate hardware/software
d. Lack of basic knowledge/skill in ICT's usage and integrating ICT in teaching
e. Lack of appropriate ICT infrastructure
f. Insufficient lecturer/teacher time

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[49] James H Stronge and Jennifer L Hindman. *The Teacher Quality Index A Protocol for Teacher Selection*. Virginia: Association for Supervision and Curriculum Development

[50] National Competency Based Teachers Standard. *A Professional Development Guide for Filipino Teachers*. Department of Education, (2006)

[51] Schiller, "Working with ICT Perception of Australian Principles". *Journal of Educational Administration*, vol. 41, no. 2, 171-185

[52] Jihan Rabah, "Benefits and Challenges of Information and Communication Technologies (ICT) Integration in Québec English Schools". *TOJET*, vol. 14, no. 2

[53] Dogulas Kunda, Christhoper Cembe, George Mukupa, "Factors that Influence Zambian Higher Education Lecturers Attitude towards Integrating ICTS in Teaching and Research". *Journal of Technology and Teaching*. vol. 8, no. 4, 2018, 360-384

Another challenge that can be faced in applying ICT in teaching and learning process is about students' mood. For example when the teacher asks the students to access the website related to the material then the website are down or broken while the students already to utilize it[54].

h. Review of Previous Studies

Several findings which have similar topic with this research *"Pre-service Teachers' Perceived Knowledge of Technological Pedagogical Content Knowledge in EFL Classroom"*. A study by Musliadi Bakri entitled *"Analysis on Computer Assisted Language Learning (Call) Class in Developing Students' Technological Pedagogical Content Knowledge"* This research described the learning activity of Computer Assisted Language Learning (CALL) class, which developed the knowledge of technical pedagogy and content in teaching and learning processes, and also the mastery of students' knowledge of technological pedagogical content. The findings of this research found that CALL class used Schoology in learning process as the implementation of technical pedagogic and content knowledge. TPACK also helped students in improving their technical skills[55].

Dev Raj Paneru, in his study entitled *"Information Communication Technologies in Teaching English as a Foreign Language: Analyzing EFL Teachers' TPACK in Czech Elementary Schools"* examined EFL teachers' competences and perspectives to implement ICT in the classroom through Technology, Pedagogy, and Content Knowledge (TPACK) in action model in elementary schools in Czech Republic[56]. The result showed that teacher with interactive digital pedagogical educational background and experience are different from a formal technological education in developing TPACK comprehensive and integrating it into EFL classes in significant and interactive ways. Czech EFL teachers in functional practices of teaching with ICT are represented positively.

A study from I.W.A. Prasetya, I.N.A.J. Putra, and I.G. Budasi entitled *"Teachers' Perception in Using Technological Pedagogical Content Knowledge in Teaching English at Senior High School in Buleleng Sub District"*. This study examined the perception of English teachers in using the model of technical pedagogic and content knowledge (TPACK) in the teaching and learning process at Buleleng Sub District Senior High Schools[57]. Questionnaire and interview used as the instrument of this research. 27 English teachers at Senior High School in Buleleng Sub District are participated in this research. The result showed that teachers had good view of the use of the TPACK framework in the learning process and teachers feel greatly helped by the use of technology that integrated material content with teaching strategy.

Another study from Lailatun Nurul A. & Nur Arifah D. entitled *"Investigating EFL teachers' perceptions on their TPACK development: how EFL teachers view seven domains on TPACK framework"*. This study investigated the perceptions of EFL teachers regarding their teaching skills at seven dimensions of TPACK in the classroom. 20 EFL teachers are as the sample to gather the data. The data collected through semi-structured online interviews. The result showed that in their teaching and learning process, based on

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[54] Tony Erben, et.al., *Teaching English Language Learners through Technology* (Routledge, 2009)

[55] Muliadi Bakri. Thesis: "*Analysis on Computer Assisted Language Learning (Call) Class in Developing Students' Technological Pedagogical Content Knowledge*" (Surabaya: State Islamic University of Sunan Ampel Surabaya, 2018)

[56] Dev, Raj Paneru. Information Communication Technologies in Teaching English as a Foreign Language: Analyzing EFL Teachers' TPACK in Czech Elementary Schools. *C.E.P.S Journal*, vol. 8, 2018, 3.

[57] I.W.A. W Prasetya, I.N.A.J. Putra, I.G. Budasi. Teachers' Perceptions in Using Technological Pedagogical Content Knowledge in Teaching English at Senior High Schools in Buleleng Sub District. *LEJU,* vol. 2, No.1, February 2019

their perception most of EFL teachers displayed their higher domain on the CK, PK, and PCK instead of TK, TCK, TPK, and TPACK in teaching[58].

All the studies of literature mostly similar with this study but there are some differences. The first study deals with the growth of TPACK in the CALL class learning process and the knowledge of technical content pedagogic of the students, which has provided great results for their TPACK skills, is excellent. The second study described EFL teachers' competency and their perspective in implementing technology in the classroom through TPACK. The third study focused on the teachers' perception to the implementation of TPACK framework in the process of teaching and learning in the senior high school. And the last is about teachers' perceptions to seven domains of technological pedagogical content knowledge regarding to their teaching skills in the classroom.

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[58] Laikatun, N.A, Nur Arifah, D, "Investigating EFL teachers' perceptions on their TPACK development: how EFL teachers view seven domains on TPACK framework". *Leksika*. Vol. 13, August 2019, 95-101.

CHAPTER III

RESEARCH METHOD

The section gives some examples of how the research has been conducted in investigating perceptions of pre-service English teachers to technological pedagogical content knowledge in EFL classroom. The detail explanations will be discussed below.

A. Research Design

This study employed a qualitative research approach to assess the result of the research question based on the purpose of investigating the perceptions of pre-service English teachers of knowledge of technical pedagogic and content in secondary schools in Mojokerto. This study took the actual data from open-ended questionnaire which meant the data could not be manipulated by the researcher to assess how far pre-service English teachers' perceptions of knowledge of technical pedagogic and content in the EFL classroom. Qualitative research is a research design that appears when the researcher discovers the information in the proper experiences[59].

B. Subject of research

The subject of this research is pre-service English teachers II in academic year 2018-2019 of the Department of English Language Education of state Islamic University of Sunan Ampel Surabaya. There might be around 100 students who took the teaching practice in that semester but this study selected 14 pre-service English teachers who took teaching practice in Mojokerto. There 5 regions in East Java for pre-service teachers to practice their teachingSurabaya, Sidoarjo, Mojokerto, Gresik, and Lamongan, and the highest number of pre-service teachers was in Mojokerto. Therefore, this study only involved pre-service teachers who did their teaching practice in Mojokerto.

C. Data and Sources of Data

1. Data

The research used the data about perceptions to technological pedagogical content knowledge (TPACK) in EFL classroom of pre-service English teachers in the secondary schools in Mojokerto. This research analyzed the open-ended questionnaire.

2. Sources of Data

To obtain the result of the research based on the research question, the source of data will be from pre-service English teachers' perceptions of the online questionnaire answered. 14 pre-service English teachers are participated this research. The subject was selected from the highest number of pre-service English teachers from 5 regions of the teaching practice are taken and the highest number was in Mojokerto. This research is collected by distributing questionnaire adapted from Joshua Emeka which is about pre-service English teachers' perceptions of knowledge of technical pedagogic and content (TPACK).

D. Data Collection Technique

The researcher used an open-ended online questionnaire to collect the data. The online open-ended questionnaire is used to gain pre-service English teachers' technical skill, pedagogical proficiency, and the content literacy through perceptions. The online

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[59] John W. Creswell. *Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (Lincoln: Pearson)

14

questionnaire was administered to pre-service English teachers II of UIN Sunan Ampel Surabaya at the secondary schools in Mojokerto. Participants were asked to access the link, fill their identity and answer the questions about their perceptions of the seven dimensions of technological pedagogical content knowledge (TPACK) based on their opinion and experience since teaching practices.

E. Instrument of the Research

This study used questionnaire as the instrument. The questionnaire is open-ended questionnaire that contained 7 dimensions of technical pedagogy and content knowledge (TPACK) including Technical Knowledge (TK), Knowledge of Pedagogy (PK), Knowledge of Content (CK), Knowledge of Pedagogical Content (PCK), Knowledge of Technical Pedagogic Content (TPK), Knowledge of Technical Content (TCK), and Technological Pedagogical Content Knowledge (TPACK) adapted from the study of Joshua Emeka which used Kohler, et al. The online questionnaire consist of 28 open ended questions of the seven dimensions Technological Pedagogical Content Knowledge (TPACK).

F. Data Analysis Technique

After collecting the data, there are some techniques that researcher analyzed the data based on the information that have been collected. The first step is preparing the data. Here, pre-service English teachers' response from the questionnaire answered are prepared to analyze. The second step is read all of the pre-service answers. The third is grouped the answers based on the questions and highlighted to the important answers that support to answer the research question. Then, labeled the questionnaire answered to the specific theme then, calculate the percentage of the number of answers by using descriptive statistic in the SPSS application to find the frequency of the data. The last step is present the data. The data will be presented in form of descriptive explanation which correlate with the theory.

CHAPTER IV

RESEARCH FINDING AND DISCUSSION

The section elaborates the finding and discussion which is about the perceptions of pre-service English teachers to technological pedagogical content knowledge (TPACK) in EFL classrooms in the secondary schools in Mojokerto. The research finding provides the data and for the discussion presents the analysis of the research finding. Detail information about this chapter as followed:

A. Research Finding

In this chapter, the finding is explained based on the research question in chapter I. The data conducted online from 10th April – 20th April 2020. The online questionnaire was administer to the pre-service English teachers of English language education department in the academic year 2018-2019 to explore the perceptions of pre-service English teachers to TPACK in the EFL classroom. There were 14 pre-service English teachers filled out the online questionnaire. This research used an open-ended questionnaire. The result of pre-service English teachers' perceptions in every dimension of TPACK will be described below.

1. Technological Knowledge (TK)

Technical skill itself defined as technological knowledge that pre-service English teachers need to have to integrate technology effectively in the classroom. To give the explanation of pre-service English teachers' perception to TPACK the first dimension that the researcher should explore is the technological knowledge of pre-service English teachers. The researcher found some aspects of technological knowledge. The result summarized in the table below.

Table 4.1

Pre-service English teachers' perceptions of technological knowledge (TK)

Perception	Aspect	Answered	Not Answered
The Importance of Having Technological Skill	1. Having an interesting learning activity	7,1%	92,9%
	2. Increasing students interest	7,1%	92,9%
	3. Having good technological knowledge	57,1%	42,9%
Challenges of using technology in teaching	1. Internet connection	35,7%	64,3%
	2. Technical problem	50%	50%
	3. Lack of facilities support	14,3%	85,7%
	4. Finding suitable technology	14,3%	85,7%

16

Technological Knowledge	1. Operating computer software	28,6%	71,4%
	2. Operating social media	21,4%	78,6%
	3. Creating and using online media	92,9%	7,1%
	4. Creating a multimedia presentation	35,7%	64,3%

Table 4.1 is from pre-service English teachers' online questionnaire filled. Based on the table, there are some aspects: the importance of having the technological skill, the challenges in using technologies, and technological knowledge. Pre-service English teachers mentioned three importance of having the technological skill, those have an interesting learning activity, increase students' interest, and have good technical knowledge.

a. The importance of having technological skill

Having technological skill is important to make the learning activity interesting. In this aspect, there is a view of the statement from participants, he/she accepted that technology is important to empower learning activity became more interesting, as he/she stated *"For students learning activity, technology can make learning activity to be more interesting"*. From the answer, it can be concluded that by technology the learning activity can be more interesting so, students can get easily the attention of the teacher. Students can also increase their interest in the learning activity. There is a statement from the participant, he/she asserted *"Students can get interested if we use technology in teaching"*. The statement showed that having the technological skill or technological knowledge is important because by having that skill pre-service English teachers can add and also use technology in the process of teaching and learning. Pre-service English teachers should have technical knowledge which means they should capable to use technology well because if the technology will be used in the classroom, they should have technological knowledge first. It was supported by some participants.

"As a teacher, it must master on how they used the media that using technology / operate it"

"We have to be able to operate computer well"

"The teachers should have the skill to operate the technology itself and know how to integrated into teaching and learning"

"Teacher will be replaced if the teacher doesn't know How to use technology"

"Have a good skill in the operating computer helps the teacher make an interesting media"

From the statement above, it can be concluded that having technological knowledge is very important for pre-service English teachers in this digital era if we

do not want to be replaced by technology so we have to be able to operate it. Besides, pre-service English teachers can improve their teaching skill by creating interactive media by using technology.

b. Challenges of using technology in teaching

In applying technology in the classroom, it will not be running well there will be a problem that can be faced by pre-service English teachers. Based on table 4.1 shows that there are 4 main points of pre-service English teachers' challenges that most faced in using technology. The 4 points are: internet connection, technical problem, lack of facilities support, finding suitable technology. The detailed explanation will be described below.

The first challenge is a technical problem. This is the most often challenges faced by pre-service English teacher. They have already prepared well the technology they used before applied it in the classroom yet, the technical problem happened in the process of teaching and learning process. Some of them mentioned that they had to make another plan to solve the technical problem suddenly came.

"Sometimes yes, like, video material that should be played in class, but suddenly can't be played. To overcome this, I usually prepare Plan B before entering class, bringing a print out of the video material."

"Yes. I found trouble with technology I used sometimes, then I change with others not using technology"

"I solve the problem by pending the activity which needs to use technology. Then I continue to next activity or I will change the activity directly in the class which can cover the materials".

On the other hand, there is one participant who stated when the problem faced by him/her, he/she could handle it by him/herself through the internet or asked for her/his friend. As he/she stated

"Yes sometimes, but I can handle the problems by asking my friends or search through internet how to solve my problems", "Not really, even if I have I try to simply solve it"

The second challenge is the internet connection. Based on the questionnaire filled, pre-service English teachers argued that internet connection was one of the problems which happened from the school that has low internet access. He/she stated

"The common challenges is about the internet connection while using the learning tools"

"The most common challenge I faced is the internet connection supported"

Besides, it is also caused due to the schools do not facilitate the internet connection so, they cannot implement technology to the teaching and learning activity. Some of them stated that the technology that they wanted to implement need an internet connection and the school condition could not support.

"When I was in a real school, I can't do what my lecturer taught, because in that school do not have facilities that provide the technology that I want to use"

"The challenges when I use technology in teaching is such as signal/connection no support to apply technology in teaching"

The third challenge is the lack of facilities support. Delivering the material by using LCD and another supporting tool is a common way that pre-service English teachers did. Some of them argued that the challenge they faced is when they wanted to deliver the material through PowerPoint or another media but there was no facility support like there was no LCD permanent in the class or even there was no LCD in the school.

"There is no LCD in each class, so we need to prepare it first, and it takes a long time"

"I can't do what my lecturer taught, because in that school do not have facilities that provide the technology that I want to use"

"There are no tools (laptop, projector) to support in apply technology in teaching"

The fourth challenge is finding suitable technology. To have an effective learning by adding technology inside, can be difficult for pre-service English teachers. Some argued that they have to match the technology itself with the material as the material and the technology is sustainable.

"Yes, finding a suitable technology that is matched with my teaching"

"The problem is how to make creative and interesting media by using technology"

c. Technological Knowledge

Technological knowledge defines pre-service English teachers' skill to use and operate technology. Based on table 4.1 indicates that there are 4 technical skills that pre-service English teachers have. Those technical skills are: operating computer software, operating social media, creating and using online media, and creating a multimedia presentation. The explanation will be described in detail below.

The first pre-service English teachers' technological knowledge is creating and using online media. Creating online media is the most knowledge that need to have by pre-service English teachers. In delivering the material, interesting media is needed especially online media to build students interest and have an active learning in the class. Most participants stated they have technical knowledge in creating and using online media.

"I ever made a blog and YouTube channel"

"Using HP reveal to teach vocabulary. Then, find the quiz online. It is more practice than printout"

"Yes, creating web pages includes technology knowledge that I can, besides using LMS"

"Create web pages, make an animation in some app, making digital comics"

"I think to create a new media using technology, like AR"

"Yeah I can create web pages, make an online animation video"

"Yes, making a website, making an online media flash, making an online game"

"I can create an animation video and quiz application that have provided on the internet"

The second technological knowledge that pre-service English teachers have is creating the media presentation. These are the tools that can help to represent the material that produce interesting media. 5 participants stated, they could create a multimedia presentation.

"I can create a video/graphic design, basic coding based tool or what so-called such as adobe flash"

"Graphic design, video editing, make an animation in some app, and managing PowerPoint in the creative ways"

"I can make an animation video"

"Make a video and also design"

"I can create an animation video"

The third technological knowledge that pre-service English teachers have is operating computer software. 3 participants argued that they could operate the computer software.

"Operating Microsoft Office (word, excel, PPT)"

"Managing PowerPoint in creative ways"

"I can operate a computer, LCD, sound system, etc."

The fourth technological knowledge that pre-service English teachers have is operating social media. Social media cannot be separated from people's daily life. Nowadays social media can also be one of the media to teach. Based on the questionnaire filled, 3 participants mentioned that they could use and operate social media.

"I made a YouTube channel"

"I can create a YouTube Channel, able to create Facebook fan page"

2. Content Knowledge (CK)

To gain pre-service English teachers' perceptions to technological pedagogical content knowledge (TPACK), as there are 7 dimensions of TPACK itself so, it must be explained the other dimensions first before TPACK. The second dimension of TPACK is content knowledge. In this part, the researcher found there are 3 points and some aspects of the content knowledge. The information will be described below.

Table 4.2.

Pre-service English teachers' perceptions of content knowledge (CK)

Perception	Aspect	Answered	Not Answered
Basis of English knowledge	1. Macro skill of language: Speaking, reading, writing, and listening	78,6%	21,4%
	2. Micro skill of language: Grammar, pronunciation, and vocabulary mastery	35,7%	64,3%
Developing an understanding of the content in teaching	1. Read and analyze the content	71,4%	28,6%
	2. Practicing	28,6%	71,4%
	3. Looking for some references	35,3%	47,1%
Combining other subject matters with English	1. Depends on the context	92,9%	7,1%
	2. Math and Science	14,7%	85,7%
	3. Art and technology	21,4%	78,6%

Based on table 4.2 there are three responses and some aspects. Those three responses are: basic knowledge in English, develop an understanding of the content in teaching, and combining other subject matters with English. Every response has some aspects. Those will be described below.

a. Basic English Knowledge

The first is basic English knowledge. table 4.2, shows 2 aspects of basic English knowledge. Those 2 basic English knowledge are the Macro skill of language and micro skill of language. Most pre-service English teachers have the macro skill of language. Eight students mentioned they have a macro skill of knowledge.

"Spoken, written, method", "Writing", "Yes, grammar, listening, writing, and speaking", "Speaking and writing but those are basic", "4 skills in English knowledge", "I can teach English skills", "Reading", "Speaking, Listening, Writing, Reading"

Besides, they also argued that they have micro skill of language. Same as macro skill most of them also have the micro skill of language. Eight participants argued that they have a micro skill of language.

"Yes, there are Vocabulary and grammar", "Grammar", "Yes, grammar and vocabulary mastery", "Grammar but those are basic", "I have it, like vocabulary and pronunciation and the others still learn more (especially grammar-deeper)", "Grammar", "Yes especially in grammar, understanding 16 tenses (Passive voice and active voice), understanding modal (active and Passive voice) and understanding question tag"

b. Developing an understanding of the content in teaching

The second is developing an understanding of the content in teaching. Based on the questionnaire filled, there are three aspects. Those are: read and analyze the content, practicing, and looking for some references. Most of them mentioned that they developed their understanding of the content in teaching English is by reading and analyzing the content.

"Reading the content and analyzing it", "Read an English material", "I learn from reading books", "Learn more and read a lot", "By reading the contents seriously till I understand well", "By reading a book or watching a video", "If My English teaching about grammar then I read Betty book and English in use", "By keeping studying and reading a lot of references"

They also stated that they developed their understanding of the content in teaching English by looking for some sources through the internet such as on YouTube and search engines.

"I learn from YouTube, web search engines", "I learn from online media", "Looking for some reference in YouTube"

Besides, they also argued that practicing can also help to develop an understanding of the content in teaching English. One of them stated that he/she practiced in the mirror, another said that he/she practicing with his/her neighbors' child.

"Practice in front of a mirror", "Sometimes I apply in my house with my neighbors' child"

One of them also combined reading and practicing in developing the understanding of the content to teach English, *"Balancing both practice and reading"*

On the other hand, there is one participant who stated that he/she just evaluated her/his teaching then looked for a way to solve the problem, *"Evaluate the lacks of me in teaching. Try to solve the problem"*

c. Combining other subject matters with English in teaching

The third point of content knowledge is combining other subject matters with English in teaching. According to the data, there are three aspects. Those are: depends on the context, math and science, and art and technology. Three participants mentioned that they ever combined the other subject matters with English in teaching but it depends on the context and also the situation and the condition at that time.

"I use it when the material is related to our life"

"Yes. Religion and also depends on the case"

"When I teach a material that is related to the number in English, I combined with math. However, when I teach a material that is related to science, I combined with science"

They also combined English with science and math. One participant stated he/she combined with both science and math and another participant combined with math.

"Yes. Sometimes, I combined my English teaching with both math and science"

"Yeah I have, that is math subject, for example when I explain about the number, if my students have already known about the numbers so I usually combine the subject matters with mathematic"

Besides, there is also participant which combine English with art and technology, *"I have. Probably English and art or technology, in the unplanned situation, when I want to have something new, students uninterested in learning"*

However, most of the pre-service English teachers never combined English with other subject matters in teaching.
"No, I never combined", "Not yet, maybe in the future when I teach again", "No, I haven't", "No, I ever combine it", "I think I have not", "No, I haven't try to combine"

3. Pedagogical Knowledge (PK)

The third dimension of TPACK is pedagogical knowledge (PK). Pre-service English teachers' perceptions of TPACK in the pedagogical knowledge (PK) defines as the teaching skills of pre-service English teachers.

Table 4.3.
Pre-service English teachers' perceptions pedagogical knowledge (PK)

Perception	Aspect	Answered	Not Answered
Importance of giving a task	1. Measure students understanding	14,3%	85,7%
	2. Improve their knowledge	7,1%	92,9%
Implementing any strategy in teaching	1. Having a group discussion	35,7%	64,3%
	2. Create fun learning activities	57,1%	42,9%
Build group discussion effectively	1. Good classroom management	28,6%	71,4%
	2. Well instructions	71,4%	28,6%
	3. Control the discussion	71,4%	28,6%

Based on table 4.3, shows that there are 3 points of pre-service English teachers' perceptions of pedagogical skill. Those 3 points are the importance of giving tasks,

implementing any strategy in teaching, and build group discussion effectively. The completed information of three points of pre-service English teachers' perceptions of pedagogical skill will be explained below.

a. Importance of giving the task

The first point of pre-service English teachers' perceptions of pedagogical skill is the importance of giving tasks. This point defined the two aspects. Those are measure students' understanding and improving their knowledge. Giving tasks for students can help pre-service English teachers knowing students' understanding of the material itself and also easy to have an assessment of students. Some students argued that giving tasks is important to measure students' understanding of the material of their teaching.

"Yeah, because that is the way to know the ability or the understanding of the materials that I taught before"

"Basically yes, but not too much because to know the students' understanding and easy to measure the students' score"

"Yes, it is important. Usually giving tasks to students like the assignment that already provided in their textbook"

"Yes, to measure How far do my students understand with my teaching"

Moreover, there is a participant stated that giving the task is important to improve students' knowledge and also can explore more any information by themself, *"Yes. A task that can make the students study and find the information by themselves and those that can improve their interests and knowledge in English"*.

b. Implementing any strategy in teaching

The second point of pre-service English teachers' perceptions of pedagogical knowledge is implementing any strategy in teaching. Based on the questionnaire, there are 2 aspects of implementing any strategy in teaching. Those 2 aspects are: having a group discussion and create a fun learning activity. Creating fun learning activity is the most common strategies that pre-service English teachers applied. The fun learning activity is needed in teaching because it is beneficial for pre-service English teachers to get students' attention easily and indirectly can control the class. Some of them stated that by creating learning activities such as by using more than one strategy and also add a game or attention grabber in the teaching process. Another participant also stated that by having fun learning activity students could not be bored.

"It is very exciting, especially by applying games in a big class. That's so fun. Then when I applied attention grabber, they followed the teaching and learning process and made students be quite"

"Share a PowerPoint that contains videography, so the students can listen, watch and try to imitate the content"

"I try to implement when I teach in the class, in one day I must have a variety of strategies. If I just use one strategy the students will bore"

"Most of the strategies that I applied in the class were running well. But sometimes if the students directly feel bored in the class, I will give them a strategy which can have a good"

"Before teaching, usually I think how can I make my class more interesting and enjoyable. So I try to explore some strategies. Then I implemented any learning strategies in my teaching. And God bless my students to look more interesting and enjoyable while learning process. And it can help me to control my class well"

"I used mnemonic strategies to help students memorize content like facts or terms. For example, they are useful for remembering capital cities, important dates, vocabulary, etc."

"I played games in class to get additional scores for the students and by that students were working in groups to play the games. The games were online"

The next strategy that is used by pre-service English teachers in teaching is having a group discussion. Group discussion is part of the student center in the learning activity. By having a group discussion, they let students explore their knowledge and also let them speak up but they still controlled. Three participants stated that they applied group discussion and let them speak up but they still manage and control the discussion.

"I ever applied group discussion activity into students, I manage the activity by extra attention to them. I created clear instructions and give them time to come up with their opinions while discussing in a group. I control it any time during the group activity by asking and giving understanding to them. This activity can run well and they participating more active"

"One of the strategies that I used is cooperative, so every student work together to solve the problem that was given by the teacher, and they have to talk"

"In my experience in teaching, I think the students prefer to learn in a group, so in every teaching material I always ask them to work in a group"

However, there is one participant stated that when he/she applied group discussion, there are some students who did not involve in the discussion, *"When I use a discussion strategy, there are some students who don't have a discussion"*

c. Build group discussion effectively

The third point is how to build group discussion effectively. As the previous explanation that some students did not involve in the discussion. Here, is the role of pre-service English teachers to have group discussions effectively. Based on the questionnaire, there are two aspects of how to build group discussion effectively. Those aspects are good classroom management, and well instructions. Have good classroom management in group discussion means pre-service English teachers can apply the group discussion well such as knowing the students' condition, the class,

and also the situation. One participant stated they built group discussions also depend on the condition and the situation of the class and also the students itself.

" Look at the class first. If using a bench that is difficult to move and is rather narrow in class, it is enough to create a group with friends or four of them (with front and back). But if he is cross-legged, like in the place where he teaches 2 classes are cross-legged. It's possible to make random, or can be from counting"

Besides, good classroom management also includes how to control the class effectively during the group discussion. Some participants stated that they sometimes controlled the discussion by asking them sometimes and also walked around.

"I created clear instruction and give them time to come up with their opinions while discussing in a group. I control it any time during the group activity by asking and giving understanding to them"

"I couldn't make sure if it's effective or not since I teach a big class with a big number of students but to at least make every student work, just simply walk around the class during the discussion"

"Walk around to checking their discussion, gave the chance in each group, give each group appreciation, and support them"

"By monitoring students"

Giving well instructions is also one of the most important things because through having well instructions, indirectly students can be controlled. Some participants stated by giving clear instructions such as not by dividing the group by themselves.

"Mostly, I ask the students to say numbers in sequence, and ask them to make a group which related with the numbers that they have already said, and giving them some cases that related with materials"

"I divided the students based on the students' daily scores where those who have high scores are together with those who are lower so that they can work together"

"I divide the students not more than 5 students in each group and I always hook them who are active in the group will get more score"

There are also some students argued that having group discussion effectively by controlling the discussion and also have well instructions.

"Tell the rules of the discussion. Making a group and dividing a group. Then, ask the students opinion from each group (1 student). Give the conclusion of the discussion in the class"

"Use encouraging body language and tone of voice, as well as words, Give positive feedback for joining the discussion, Become aware of people reactions and feelings, and try to respond appropriately"

"I played video following the learning material, I ask them to watch the video, then ask each group to give their opinions, and responses toward the video"

"I divide the students not more than 5 students in each group and I always hook them who are active in the group will get more score"

4. Pedagogical Content Knowledge (PCK)

The fourth dimension is pedagogical content knowledge (PCK). Knowledge of pedagogical content means how pre-service English teachers deliver the subject by using pre-service English teachers' skills in teaching and the knowledge of the subject matter.

Table 4.4.

Pre-service English teachers' perceptions of pedagogical content knowledge (PCK)

Perception	Aspect	Answered	Not Answered
Teaching without technology	1. Not interesting	78,6%	21,4%
	2. Still can be running well	28,6%	71,4%
Teaching without technology effectively	1. Creating an attractive learning	64,3%	35,7%
	2. Giving a clear explanation	21,4%	78,6%
Techniques in teaching to deliver material without Technology	1. Applying game	57,1%	42,9%
	2. Students center technique	42,9%	57,1%
	3. Lecturing	35,7%	64,3%

Based on table 4.4 indicates that there are 3 points of pre-service English teachers' perceptions. Those are teaching without technology, teaching effectively without technology, and techniques in teaching to deliver material without technology and there are some aspects in every point of pedagogical content knowledge (PCK). More explanation will be described below.

a. Teaching without technology

According to the questionnaire, there are two aspects of teaching without technology. Those aspects are: not interesting and still can be running well. Technology is still needed in teaching. By adding technology in teaching, students can be more interested but, if teaching without technology it will be not interesting but students can get bored. This is the same as some of the students' arguments that they stated teaching without technology would be not interesting.

"It's empty"

"In my opinion, teaching should use technology. If only by using the lecture method, students might get bored and not listen, less attractive to millennial generation students, like today's generation"

"With technology, the teaching will be fun and challenging than before, and the last, our student in the present or future is the generation of technology because the life in the age that technology becomes a public's consumption"

"That's fun"

"Less interesting then students will feel bored"

"For me, it is easier but less interesting"

Moreover, there is a participant who argued that teaching without technology still can be running well as long as it used attractive media, *"Yes, it still effective using manual media. Manual media still needed because it can involve the students"*

And also there is one participant who stated that teaching with technology still can be running well but students will get bored, *"I think it just runs well but, sometimes the students feel bored. So technology is still needed"*

There is also a participant who argued that the learning process can still run well as long as students can understand the material delivered by the pre-service English teachers, *"I think it is almost good if the students can get the point of the materials and they enjoy the learning process"*

Manual media is still effective to use if the learning process did not involve technology. As supported by a participant, *"Yes, it still effective using manual media. Manual media still needed because it can involve the students"*

b. Teaching without technology effectively

The second point is teaching without technology effectively. There are two aspects to this part. Those two aspects are: creating attractive learning and giving a clear explanation. Creating attractive learning is the most common strategy that pre-service English teachers use to teach without technology. By adding games or using manual media and appropriate techniques, pre-service English teachers argued that they still could teach effectively because it depends on their creativity.

"Possible by including games in teaching"

"With the game, making the class more fun and challenging even without technology, because the reason how we can teach effectively, it depends on our creativity in teaching"

"I use the offline media, make an ice-breaking or warming up"

"I can use the strategies that can stimulate students to be active in the class"

"Using an interesting manual"

"By giving a game and task"

"Using games and giving some ice-breaking"

"By using interesting handmade media"

"Creating creative and interesting media"

Besides, there is also a participant who only used their knowledge during the learning process. Some participants explained through whiteboard and giving a clear explanation.

"I need to create clear instruction but simple so they can understand and I need to give more attention to their habit while learning"

"Only use my brain and the reality as much as I can. Ps: I'm not sure if it is a hundred percent effective since I can't live without IT"

"By repetition and by writing on the whiteboard"

c. The technique in teaching to deliver the material without technology

The third point is the technique in teaching to deliver the material without using technology. There are three aspects of techniques in teaching to deliver the material without technology. Those are: applying game, student center technique, and lecturing. Applying game is the most common techniques that pre-service English teachers used.

"Integrating game", "Manual game"

They have also used the combination of student center techniques and applying game. Students have group discussion and also play a game so, playing while learning,

"Discussing, besides, playing while learning"

"How the solve the problems and play some games"

"Explaining the subject, as usual, divide the students into groups to discuss then ask them and playing card games"

Some participants combined lecturing and gaming, *"Lecturing and using games"*.

5. **Technological Content Knowledge (TCK)**

The fifth dimension to know pre-service English teachers' perceptions of TPACK is technological content knowledge (TCK). TCK means pre-service English teachers' knowledge to use technology to teach combine with the content knowledge. More information provided in the table.

Table 4.5.

Pre-service English teachers' perceptions technological content knowledge (TCK)

Perception	Aspect	Answered	Not Answered
Software to teach English	1. Online application:	71,4%	28,6%

	Animaker, HP Reveal, Kahoot, Hot Potatoes, Powtoon, and TikiToki		
	2. Computer software	57,1%	42,9%
Use appropriate technology to deliver the material	1. Can use the technology well	50%	50%
	2. The technology used should be matched with the material	42,9%	57,1%
	3. Good supporting facilities	21,4%	78,6%
The role of technology in improving teaching skills	1. For teaching media	50%	50%
	2. For developing teaching skill	42,9%	57,1%
	3. As sources	35,7%	64,3%

Based on the table above, there are three main points of pre-service English teachers' perceptions of TCK. Those three points are software to teach English, use appropriate technology, and the role of technology in improving teaching skills. The information will be described below.

a. Software to teach English

The first point is the software to teach English. There are two aspects: online application and computer software. Most participants stated that they used online applications to teach English. There is also a participant who could develop his/her knowledge of other software from the online application itself.

"I just used dictionary software on the smartphone"

"Google and YouTube and you can get everything you want because I develop other software from those two heroes"

"HP reveal, Kahoot, Powtoon, online spinner, PowerPoint, hot potatoes, and tiki toki"
"Kahoot, online game, and online video"

"Hot potatoes, Aurasma, and random picker"

"Kahoot"

"Animaker and android apps"

Pre-service English teachers also used computer software to support their teaching and learning process. Some of them also used both computer software and online application include LMS.

> *"Ms. Office and friends"*

> *"PPT, Microsoft Word, Microsoft Excel, etc."*

> *"Microsoft Word and PowerPoint"*

> *"Microsoft Office, Animaker, Edmodo, and so on"*

> *"PowerPoint, HP reveal, Photoshop, Sony Vegas"*

> *"PPT, Microsoft Word, Powtoon, etc."*

> *"Microsoft offices and LMSs"*

b. Use appropriate technology to deliver the material

The second point is to use appropriate technology to deliver the material. Use appropriate technology defined in three aspects: can use technology well, the technology that is used should be matched with the material and good supporting facilities. Can use technology well is the most common aspect of how pre-service English teachers used appropriate technology to deliver the material. Some participants stated that they should prepare the technology well including their ability to operate it and also know all of the functions of the features of the technology itself. There is also a participant who prepared all of the material and uploaded it into the LMS before the class and he/she also create some materials using technology.

> *"I will try it before applying it"*

> *"By uploading the materials there, and create some materials using the technologies"*

> *"Prepare all the things that I need to use it during teaching, check the availability and efficiency before use it and try to understand all the systems of the technology that I Will use"*

> *"By making the content as interesting as I could so it can attract students in studying"*

> *"By knowing the feature of the technology first"*

Besides, selecting the technology that will be used to teach is needed because if it is not appropriate with the material, the use of the technology itself can make the learning process ineffective. It is supported by 4 participants who argued that the technology that used should be matched with the material.

> *"By matching the material that matches the technology used"*

> *"According to the topic"*

> *"By selecting the online platform which can be applied"*

"Adjusting the material that will be taught to students"

However, supporting facilities from school is one of the most important things. 2 participants stated that in using the technology to deliver the material, the school should support the facilities first. One participant stated besides supporting facilities from the school, he/she has to make sure the technology that uses easy to operate.

"It depends on the school and the students"

"Decide whether it is supported by the technology or not and also it will make the students interest or not"

"The school should provide the materials of the technology itself and the technology that I used it should be easy for the students for applying"

Some participants combined two aspects. The aspect can use technology well and the technology that is used should be matched with the material. Besides, the aspect of the technology that is used should be matched with the material also combined with the aspect of good supporting facilities. 2 participants stated.

"The main thing you need to use is confidence (make sure you have it first), and you can use anything properly. Besides that, fit the teaching tool with your material"

"The school should provide the materials of the technology itself and the technology that I used it should be easy for the students for applying"

c. The role of technology in improving teaching skills

The third point of pre-service English teachers' perceptions of technological content knowledge is the role of technology in improving teaching skills. There are three aspects of the role of technology in improving teaching skills. Those are: for teaching media, for developing teaching skills, and as sources. Technology as teaching media is the most role that the pre-service English teacher mentioned. Two participants stated that technology helped to facilitate the material that he/she wanted to deliver to students. Another participant stated that technology made him/her explored his/her knowledge about kinds of teaching media that can be used. Besides, a participant stated that he/she was very helpful with the technology as media to deliver the material because he/she has a problem in delivering the material orally.

"I think technology is helping me to facilitate the material that I want to share with my students"

"Because teaching using technology can make me more creative and innovative in providing material to students"

"Technology can present the main point of my lesson"
"Because I have a problem to explain the material orally that clearly, I usually use a media to help me explain the material"

Developing teaching skills is the second aspect of the role of technology in improving teaching skills. Two participants stated that flexibility could help his/her to

develop his/her teaching skills everywhere and anytime. Another participant stated that he/she became more creative in developing her/his teaching.

"With the flexibility of the technology, I can learn in everywhere and every time"

"More efficient"

"I can be more creative to develop my teaching"

Some participants stated that the role of technology in developing teaching skills is as a source. A participant mentioned that he/she used technology as sources through the online platform, *"By having many sources of the online platform"*.

Besides, there is also participant who mentioned those three aspects as the role of technology in improving teaching skill. Some participants stated two-aspect as the role of technology in improving teaching skills. Technology for teaching media and for developing teaching skills, technology for teaching media and as sources, technology for developing teaching skills, and technology as sources.

"It's really useful for my research to explore a lot of theory and it's useful for my teaching to explore more about kinds of media that I can use during a teaching in the classroom"

"For teaching media, for research theory, for sources to look for the material and to deliver the material"

"It helps me to create interesting lesson media and make my teaching techniques more attractive"

"It helps in developing the teaching skill, helping me to answer my assignments, assess students' work, etc."

6. Technological Pedagogical Knowledge (TPK)

The sixth dimension of technological pedagogical content knowledge (TPACK) is pre-service English teachers' perceptions of technological pedagogical knowledge (TPK). Technical pedagogy knowledge itself means how pre-service English teachers applied the methods with the right strategy with the technology. Pre-service English teachers' perceptions of technological content knowledge (TPK) will be summarized in the table as follow.

Table 4.6.
Pre-service English teachers' perceptions of technological pedagogical knowledge (TPK)

Perception	Aspect	Answered	Not Answered
Facilitate students in using technology	1. Send the link and recommended sources	21,4%	78,6%

to find more information	2. Group discussion	14,3%	85,7%
	3. Give well instruction	42,9%	57,1%
Facilitate students to collaborate with others using technology	1. Using online learning media	50%	50%
	2. Make a group project	35,7%	64,3%

Pre-service English teachers' perceptions of technological pedagogical knowledge (TPK) defined with the two main points. Those are: facilitate students' in using technology to find more information and facilitate students to collaborate with others using technology. Those two points have its aspect. Those are will be defined as follow.

a. Facilitate students in using technology to find more information

This is the first point of pre-service English teachers' perceptions of technological pedagogical knowledge. Facilitate students in using technology to find more information defined in the three aspects. Those are: send links and recommended sources, group discussion, and give well instruction. Giving well instructions to students is the most common aspect that pre-service English teachers did to facilitate students in using technology to find more information. A participant stated that she/he facilitated students by explaining first before let students find the information. Four participants stated that they gave clear explanations and instructions about what students have to do and also controlled until students found the information. Another participant stated he/she asked students to use their smartphone to look for the information.

"By giving the instructions before asked students to find the information"

"Give a piece of deep information about how to use the technology appropriately and give the example of how to use it"

"Doing the lessons in t lab computer, then ask them to search the material that is appropriate as instructions"

"Giving steps, what should the students do first, second until they find more information by using technology"

"By using their phone through search engine"

Giving information about the website or link that students have to visit is also needed because it will protect students to search for everything that do not relate to the topic. Two participants mentioned that they gave information about the web learning or link that students have to visit.

"Giving information (read: teaching-learning websites) on how to use technology wisely and appropriately"

"Sending link, recommend web blogs, etc."

Having group discussions also did by pre-service English teachers to facilitate students to find more information. A participant stated that by having group discussion every group can help each other. Another participant argued that finding an interesting topic then discuss it could be one of the solutions to facilitate students find more information.

"Make a group discussion, and each group must help each other and from that, I can help with giving the solution"

"By finding the interesting topic or the news information that can be discussed in the class"

Besides, other participants stated that they facilitated students to find more information by having an online assessment and also an online quiz.

"By giving online assessments"

"I don't have experience on that it may, I using quiz game"

However, there is a school that does not allow students to bring smartphones in the school. A participant stated that he/she only used the textbook did not use technology, *"Just form book because students are not allowed to use mobile phones in the class"*.

b. Facilitate students to collaborate with others using technology

The second point of pre-service English teachers' perceptions of technological pedagogical knowledge is to facilitate students to collaborate with others using technology. Facilitate students to collaborate with others using technology defined in the two aspects. Those are: using online learning media and make group discussion. Using online learning media is the most way that pre-service English teachers used to facilitate students to have collaborated with others by using technology. Some participants stated that they used online learning media to facilitate students such as by conducting games by using the online application. There is also a participant who used LMS such as Edmodo. A participant also asked students to have a project like making a video project.

"Creating learning media for them"
"They have WA"

"With the game such as augmented reality, we combine a paper or sign that we made, inserting the data in my phone or gadget it can be a laptop, and using the students' phone to apply it"

"I use the real-media like AR they can see the real things in there"

"By using an application, such as Edmodo"

The second aspect is to make group discussions to facilitate students to collaborate with others by using technology. The group discussions use online applications such as LMS. Some participants mentioned that they build group discussions and used LMS.

"Provide group discussion (google classroom, Schoology, Edmodo, etc)"

"Giving students work in a group"

"By creating group discussions"

7. Technological Pedagogical Content Knowledge (TPACK)

The last dimension which is the main point is technological pedagogical content knowledge (TPACK). This part explains pre-service English teachers' perceptions of technological pedagogical content knowledge in EFL classroom. Technological pedagogical knowledge itself means pre-service English teachers' perceptions about the integration of technology in teaching effectively in every content with applying the method and technology appropriately. Technological pedagogical content knowledge defined in the three points and some aspects of each point. Those are summarized in the table below.

Table 4.7.

Pre-service English teachers' perceptions of technological pedagogical content knowledge (TPACK)

Perception	Aspect	Answered	Not Answered
Combining technology and teaching approaches to teaching English appropriately	1. Choose appropriate technology	28,6%	71,4%
	2. Adjust to the material needs	42,9%	57,1%
Use strategies that combine the content and teaching approaches	1. Based on students need	21,4%	78,6%
	2. Using fun and appropriate teaching strategies	78,6%	21,4%
	3. Relate with the material	35,7%	64,3%
Applying the strategies which combine technology	1. Integrating technology in teaching	35,7%	64,3%
	2. Using the appropriate strategy	50%	50%

Based on the questionnaire filled, there are three main points of pre-service English teachers' perceptions of technological pedagogical content knowledge (TPACK). Those

are: combining technology and teaching approaches in teaching English appropriately, use strategies that combine the content and teaching approaches, and applying the strategies which combine technology. The more explanation will be described as follow.

a. Combining technology and teaching approaches to teaching English appropriately
    The first point of pre-service English teachers' perceptions of technological pedagogical content knowledge is combining technology and teaching approaches in teaching English appropriately. There are two aspects. Those are: choose appropriate technology, and adjusting to the material. More explanations described below.

    The most common aspects that pre-service English teachers used is adjusting to the material. A participant combined using an effective approach and adjusting the material. He/she chose an effective approach suitable to the material. Some of them mentioned used technology depend on the material. There is also a participant who stated that he/she used a game that is used technology to have fun learning activity. Another participant mentioned that he/she also combined with the use of an effective approach.

    "It depends on the material and depends on the school condition and the students also"

    "Depends on the topic"

    "Adjusting the material that will be taught to students"

    "By using games that require the use of technology to make the lesson more fun, making the lesson via PowerPoint, etc."

    "By selecting the content"

    Besides, choose appropriate technology is needed because through the appropriate technology the learning process will be effective. A participant stated that he/she used online learning by using LMS. Another participant mentioned that he/she create online media. There is also a participant who mentioned using the technology wisely.

    "I prefer to use an online class. I provide the content of materials and also the task"

    "By creating online media"

    "By using it wisely when it is necessary"

b. Use strategies that combine the content and teaching approaches
    The second point of pre-service English teachers' perceptions of technological pedagogical content knowledge is to use strategies that combine the content and teaching approaches. There are three aspects, those are: based on students' needs, using fun and appropriate learning strategies, and relate to the material. More information described as follows.

    Using fun and appropriate strategies are the most common strategies that pre-service English teachers applied. Some participants mentioned that they use fun

learning strategies such as adding games in the learning process or by using role-play. Some participants used group discussion and jigsaw to have appropriate strategies that applied in the learning activity. A participant also stated that he/she used a strategy that can make the learning process became active.

"I usually use game while checking students' understanding"

"Using fun teaching strategies such as role-play, any games, jigsaw, or simply group discussion"

"Make a group and try to give the problems"

"By making the situation of the class active to use the teaching approach"

"It is usually via PowerPoint that I made or games online that I have prepared for the students and then I teach the students and the students are in the group discussing during the teaching and learning process"

"By giving appropriate learning strategies by the students' interest"

Besides, relate the strategies that will be used with the material is the second aspect of the second point of pre-service English teachers' perceptions of technological pedagogical content knowledge (TPACK). Three participants who stated that they use strategies by relating the strategies to the material first.

"Depends on the topic"

"By relating to the materials that will learn in the class"

"I use mnemonic strategy when the students learn about narrative texts so they get new vocab then remember it"

There is also a participant who used the strategy based on the students' need, *"Knowing the student's need and applied it"*

Furthermore, there is also a participant who chose appropriate strategies by learning the strategy first then relate it to the material before applying, *"Before I choose the approaches for my content, usually I learn the role of the approaches. Then I will use one of the approaches that have suitability with my content"*

However, two participants never combined the strategies with the content.

"No, I don't"

"Never"

c. Applying the strategies which combine technology

The third point of pre-service English teachers' perceptions of technological pedagogical content knowledge (TPACK). This point defined in the two aspects: integrating technology in teaching and using the appropriate strategy. Integrating

technology in teaching is the most common strategy that is used by pre-service English teachers. They mentioned that they ever used computers at one-day learning activity and also by using LMS so it was like blended learning. There is also a participant who got the trouble when he/she did not prepare the technology well.

"Yes. Insert material on technology"

"Yes, I ever use it. It sometimes had a problem when I do not prepare it well"

"Yes. It's like an online class. I ever use a Quipper for my class and I think Quipper is one of an online class tool that I recommended for other teachers. Because it's efficient and interest tool as an online class"

Moreover, four participants combined the two aspects those are integrating technology and using the appropriate strategy.

"Using pc at one day straight for teaching, (PPT, web, or game probably) while giving a lecture, engaging students in learning and explain the Material as well"

"Yes, matching them"

"Yes I have, by dividing them into group discussion and then ask them to answer the question of Kahoot application"

"It is usually via PowerPoint that I made or games online that I have prepared for the students and then I teach the students and the students are in a group discussing during the teaching and learning process"

On the other hand, some participants did not combine the strategy and the technology in teaching because the school did not allow to integrate technology into the learning activity.

"Not yet (because in my schools like PPL or service-learning, the school did not agree if I use the technology)"

"I have applied yet"

"I didn't have experience on that"

B. Discussion

This section will describe the findings of the study related to the theory that has been written in chapter 2. The discussion is based on the research question which is what are the perceptions of pre-service English teachers to technological pedagogical content knowledge in secondary schools in Mojokerto? The more explanations discussed as follows.

According to Mishra and Kohler, there are seven dimensions of technological pedagogical content knowledge (TPACK) which arise from Shulman's' theory, there are three main components which are knowledge of content (CK), knowledge of pedagogy (PK), and technical knowledge (TK). Then, developed by Mishra and Kohler become seven dimensions that are created to interact with one another. Those seven dimensions are Technical

Knowledge (TK), Knowledge of Pedagogic (PK), Knowledge of Content (CK), Knowledge of Pedagogical Content (PCK), Knowledge of Technical Pedagogy (TPK), Knowledge of Technical and Content (TCK), and Technological Pedagogical Content Knowledge (TPACK). Based on the theory, this section will discuss the perceptions of pre-service English teachers to technological pedagogical content knowledge (TPACK) through all of the dimensions. The more explanation will be described below.

a. Technological Knowledge (TK)

Technological knowledge (TK) is knowledge of the technological tools both hardware or software such as computers, internet, digital videos, and commonplace technology including projector, interactive whiteboard, software program, etc[60]. Through the questionnaire and reflecting on the theory, this study showed that pre-service English teachers can operate computers well, able to operate LCD projector, and speaker, can create web pages, using LMS, and able to create a multimedia presentation. Pre-service English teachers also can solve the technical problem they faced. For example participant A stated "Not really, even if I have I try to simply solve it". It can be concluded that this finding supported the theory from Mishra and Kohler about technological knowledge.

b. Content knowledge (CK)

According to the definition of content knowledge (CK), this research categorizes the basic knowledge of language into two aspects, those are macro skills of language and micro-skills of language. Based on the research findings, all pre-service English teachers have both language skills, macro skills of language, and micro-skills of language. Those macro and micro-skills are: speaking, writing, reading, listening, grammar, vocabulary, and pronunciation. Besides, pre-service English teachers also do some way to develop their English proficiency through reading then analyze, look for some information, and also practicing. They are also ever combined English with other subject matter in teaching, those are math, science, art, and religion. Therefore, it can be concluded that the finding of the research is in line with the theory of Mishra and Kohler about content knowledge which is the knowledge of the subject matter that is to be learned or taught[61]. This is also in line with the theory of Shulman about the knowledge which includes the concept of knowledge, theories, ideas, organizational framework, and also the approaches and the practices in developing such knowledge[62].

c. Pedagogical Knowledge (PK)

The third dimension is the pedagogical knowledge (PK). Based on table 4.3. Three aspects showed pre-service English teachers' pedagogical knowledge. The first is they can implement any strategies in teaching such as applying fun learning activity which approved make students interest in the teaching process which meant pre-service English teachers can control the class. The second is they can build group discussion effectively, it means that they have good classroom management. Those group discussions build in good preparation and also well instruction. The third is they give students a task to measure students understanding about the material and also as the assessment. Also, the finding of the research supported the theory from Mishra and Kohler about the definition

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[60] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?". *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[61] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?" *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[62] Lee S, Shulman, "Those who understand: Knowledge growth in teaching". *Teaching and learning in the secondary school,* 1994, 125-133.

of pedagogical knowledge which means in-depth knowledge about the process of practicing the teaching methods, strategies, and techniques[63]. Theory from Schmidt also supported these findings. It is also referred to the process of teaching method that includes the knowledge of lesson plan, assessment, student learning, and classroom management[64].

d. Pedagogical Content Knowledge (PCK)

The fourth dimension is pedagogical knowledge (PCK). Based on the questionnaire, pre-service English teachers' perception of pedagogical content knowledge is described in two aspects, they can teach effectively without technology, and also they can use appropriate techniques to deliver the material without technology. They can teach effectively without technology by creating attractive learning and giving clear explanations. Attractive learning itself means the learning activity that can make students active during the learning process such as add games into the learning process. In delivering the material without technology, pre-service English teachers use several techniques such as lecturing, student center, and applying game in teaching to have fun learning activity. Those techniques showed that students can understand the material well because they can play while learning and also they can explore their knowledge and also can speak up about their opinion which meant indirectly they can understand the material on their own before teachers summarized. In summary, the finding of this research in line with the theory from Shulman, Pedagogical Content Knowledge (PCK) is the knowledge about how the subject matter to be taught which includes methods and processes to deliver a specific content[65].

e. Technological Content Knowledge (TCK)

The fifth dimension is technological content knowledge. Technological content knowledge (TCK) is the knowledge of how technology is used to represent the subject matter. Based on Mishra and Kohler's theory, pre-service English teachers can use online application and computer software to teach. Those online applications and software are: HP reveal, Kahoot, Powtoon, Animaker, Microsoft Office, Adobe Photoshop, Sony Vegas, and LMS. Besides, pre-service English teachers can also use appropriate technology to deliver the material. They can use the technology properly then fit it to the material. However, supporting facilities also needed. Some pre-service English teachers could not apply technology because of the lack of facilities support. Additionally, the finding of this research can support the theory of Shulman about technological content knowledge although some of them could not apply the technology in teaching.

f. Technological Pedagogical Knowledge (TPK)

The sixth dimension is technological pedagogical knowledge. Technological Pedagogical Knowledge (TPK) is the knowledge of how technology is used to implement the different methods in the teaching and learning process[66]. According to the theory, the finding of this research showed that pre-service English teachers facilitated students to use technology to find more information on their own. They facilitated students by send

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[63] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?" *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[64] Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., Shin, T. S, "Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers". *Journal of Research on Technology in Education*. Vol. 42, no. 2, 2009, 123-149.

[65] Lee, S., Shulman, "Those who understand: Knowledge growth in teaching". *Teaching and learning in the secondary school,* 1994

[66] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?" *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

links and recommended sources, besides, they also create group discussions to find the information together with their group and can help each other. They also gave clear instructions on what they have to do to find more information. Furthermore, pre-service English teachers also facilitate students to collaborate with others by using technology. As mentioned before, by having group discussions, students can share and help each other in finding the information. Pre-service English teachers also create online media such as using HP Reveal to have group activity and also having group projects. From the explanation, it can be concluded that the finding of this research supported the theory of Mishra and Kohler.

g. Technological Pedagogical Content Knowledge (TPACK)

The seventh dimension is technological pedagogical content knowledge (TPACK). TPACK is the knowledge that teachers need to implement the method or the learning process in any subject matter[67]. Based on the theory, pre-service English teachers combined technology and teaching approaches in teaching English appropriately by choosing the appropriate technology and adjusting it to the material to have effective learning. Besides, pre-service English teachers also used strategies that combined with the content and teaching approaches. They use those combinations in teaching based on the students' needs first, then they also use fun appropriate strategies and also giving clear explanations. Moreover, pre-service English teachers also applied strategies with combined the technology by integrating technology in teaching and using appropriate technology such as using PC at one-day teaching and learning activity and also using Kahoot as media to assess the students. However, some participants did not apply and could not apply because of the schools' rules. Then, it can be concluded that the finding of this research in line with the theory of Mishra and Kohler about technological pedagogical content knowledge.

The previous study conducted by Lailatun Nurul A. & Nur Arifah D[68]. The study investigated EFL teachers' perceptions of competences in their TPACK development. The result showed that more EFL teachers had higher dimension knowledge which concern content knowledge (CK), pedagogical knowledge (PK), and pedagogical content knowledge (PCK) rather than dimension which concerns technology which are technical knowledge (TK), technological content knowledge (TCK), technical pedagogic knowledge (TPK), and technological pedagogical knowledge (TPACK). In contrast with this research, pre-service English teachers have a good response in the dimension which concerns to technology. It is proven by them in having good technological knowledge, can use technology appropriately, and also can implement the technology by using appropriate strategies.

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[67] Matthew J Kohler, Punya Mishra, "What is Technological Pedagogical Content Knowledge (TPACK)?" *Contemporary Issues in Technology & Teacher Education*, vol. *9*, no. 1, 2009, 60-70

[68] Laikatun, N.A, Nur Arifah, D, "Investigating EFL teachers' perceptions on their TPACK development: how EFL teachers view seven domains on TPACK framework". *Leksika*. vol. 13, August 2019, 95-101

CHAPTER V

CONCLUSION AND SUGGESTION

This section gives some explanations about conclusion and suggestions of this research. The conclusion summarizes the results of the study based on finding and discussion and also the previous study. The suggestions provide based on the research.

A. Conclusion

Based on the finding, the researcher concluded that pre-service English teachers' perceptions of technological pedagogical content knowledge in the EFL classroom is beneficial for pre-service English teachers in teaching. By using TPACK in the teaching and learning process, pre-service English teachers can integrate the technology in the classroom with their knowledge by adjusting the material and choosing the appropriate strategy for effective learning. This is supported by several data from the questionnaire which found that pre-service English teachers used seven dimensions of technological pedagogical content knowledge (TPACK) in their teaching. Moreover, the researcher also conclude that pre-service English teachers can use and also operate technology well such as operating computer software, use online application like Animaker, use social media, creating multimedia presentation, etc. On the other hand, some of them did not implement technology in their teaching English because the rule of the school do not allow students to bring smartphone, to do not use technology in teaching, and also lack of facilities support.

B. Suggestion

For pre-service English teachers or students of English Language Education Department, based on the finding showed that technological pedagogical content knowledge is beneficial in teaching, pre-service English teachers or students are expected to be more familiar and understand well with the TPACK framework to have good technological knowledge, content knowledge, pedagogical knowledge, and the other dimensions of TPACK to implement it in the teaching and learning process in any condition to have an effective teaching and learning.

For further researcher, in this digital era that technology continues to develop, as teachers nowadays are expected to have good technological knowledge to use the technology well in teaching. Since, this study only investigate the perceptions of pre-service English teachers to technological pedagogical content knowledge in EFL classroom and there still some problems that faced. Hence, future research can more explore in-depth about the implementation of TPACK in teaching, teachers' technological knowledge, and also the difficulties in implementing TPACK in teaching.

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