CHAPTER II

REVIEW OF THE LITERATURE

This chapter discusses several points related to the theoretical framework and previous study. In the theoretical framework contains technological knowledge (TK), the integration of technology in the teaching-learning process, technology integration models with the TPACK framework, and EFL pre-service teachers' perceptions of technological knowledge. The intention is to establish an analytical framework for this present study. This chapter ends with discussing the previous study.

2.1 Theoretical Framework

2.1.1 Technological Knowledge (TK)

Mishra and Koehler (2006) formulated technological knowledge as the ability to operate technologies, for instance installing or uninstalling software programs; turning on or turning down software program; creating and archiving documents and the abilities to learn and to adopt new technology in education context. Technological knowledge is crucial in today's digital age, influencing both personal and professional endeavors. It empowers individuals to leverage technology for innovation, productivity, and problem-solving while also enabling them to navigate the complexities and challenges posed by technological advancements. In addition, the technological knowledge engage some abilities, such as learning technology well, keeping up with relevant technology consistently, playing around with technology regularly, knowing many

technologies quickly, having technical skills and having chances to teach with various technologies (Schmidt et al., 2009). Moreover, technology is the knowledge needed as a basis for educators to help students interpret the learning process more easily, precisely, and certainly in a modern way. According to Fitriyana, Setyosari, and Ulfa, (2021) technological knowledge is a knowledge that educators must have about technology that can support learning. Hence, technological knowledge development involves the acquisition, enhancement, and application of knowledge and skills related to technology. It encompasses a wide range of activities, including education, training, research, and practical experience.

Technological knowledge includes the understanding of teachers' in the use of elements of computers, as well as supporting equipment and other technologies related to education and learning. In addition to being required to have knowledge related to technology, teachers are required to have the skills to adapt and learn new technologies. In harmony with Mishra and Koehler (2006), they argued that technology can provide space for explanations, representations, analogies, and demonstrations, which make the subject matter easier for students to understand. Technology is flexible which can be a solution to develop learning to be more meaningful (Fuada, 2020). The technology that is now developing can be used as a tool cognitive in the learning process (Fitriyana, Setyosari, & Ulfa, 2021). It encompasses theoretical knowledge about how technology works practical skills for using technology effectively, and the ability to adapt to new technological advancements. With the presence of the use of technology in the teaching and

learning process can provide many benefits such as increasing learning motivation for students'. Technology can illustrate abstract material through power point presentation that can support student learning. Hence, this study only focus on aspects of knowledge and the ability of EFL pre-service teachers' in adapting technology during field teaching practice.

2.1.2 The Integration of Technology in the Teaching-Learning Process

The use of technological tools in education has been widely addressed in recent years, the question of whether and how technology affects students learning and higher education remains the same, with little progress (Ali, 2020). The integration of technology in the teaching-learning process refers to the incorporation of various technological tools and resources to enhance and support educational activities. Despite the fact that technology has advanced dramatically, it is application in education has not kept pace. Teachers frequently see themselves as inadequate in terms of integrating technology and do not provide proper training in this area (Wang et al., 2018). This situation forces teachers to develop the method for integrating technology-enhanced classroom activities despite their reluctance. Furthermore, incorporating technology into learning activities is thought to be a difficult task for teachers. It required the acquisition of a variety of complicated knowledge by teachers (Rahimi & Pourshahbaz, 2018). There is also no single technology that is ideal for all types of teachers in all classroom settings and instructional situations. In this scenario, teachers must gain

a deeper grasp of both the affordance and the barrier to integrating technology into the classroom.

Moreover, it is widely known that teaching and learning activities are considered complex processes. The focus is not only on what knowledge learners should know or acquire but also on how the teacher will transmit that knowledge. Besides, the teaching-learning process will involve the teacher's decisions about what to do in order to achieve the desired learning goals. Nowadays, teachers are expected to carry out effective teaching with technology. Therefore, many educators feel that integrating technology into the teaching-learning process becomes an essential thing. Furthermore, the integration of technology in the teaching-learning process can escalate students' motivation and students' engagement in the classroom.

2.1.3 Technology Integration Models and TPACK Framework

Understanding the barriers and affordances of integrating technology can assist teachers in creating effective learning with technology. Furthermore, the TPACK framework, which stands for Technological Pedagogical Content Knowledge, discusses the integration of technology in teaching. Koehler & Mishra presented TPACK as the development of Shulman's idea of pedagogical content knowledge (Tseng et al., 2020). The teacher's expertise in integrating technology into learning activities and as part of the teacher's knowledge base is the main point of TPACK. One of the requirements for teachers in conducting effective teaching is several categories of basic knowledge (La Velle & Flores, 2018). Both the Technology Integration Models and the TPACK framework

provide valuable guidance for educators seeking to integrate technology effectively into their teaching practice. By understanding these models and frameworks, educators can make informed decisions about how to select, use, and evaluate technology tools and resources to enhance teaching and learning outcomes. Furthermore, the experts stated that the conceptualization of a teacher's knowledge base is challenging since it connects to other teaching domains such as understanding teaching and learning activities, conceptualizing topic knowledge, and understanding how knowledge is conveyed. This teacher knowledge base is made up of intricate relationships between numerous primary categories of knowledge, such as content, pedagogical, and technology information.

TPACK is described as technology-enhanced learning, which includes three complicated relationships between content, pedagogy, and technology. It is a phrase for a skill that a teacher must master in order to effectively use technology in the teaching and learning process (Yeh et al., 2021). Koehler, et al. (2014) defined TPACK as the knowledge for a better technology integration needed by a teacher. In addition, TPACK is a concept that mix and match technology in teaching that aims to provide ease in problem solving, development of methods to simplify the information retrieval system, as well as an understanding of the tough concept (Ekrem & Recep, 2014). TPACK is a very effective and comprehensive framework to help teachers to integrate technology in teaching (Öz, 2015). Therefore, TPACK framework is a concept that reflects content, pedagogy, and technology simultaneously and assists teachers' or EFL pre-service teachers' to integrate technology into their teaching. Several studies have posited that TPACK

represents knowledge in action and is best seen in the moments of teaching or from records of practice (Mishra & Koehler, 2006; Polly, 2014; Polly et al., 2020; Polly & Mims, 2009; Tai, 2015). On the other hand, some positive responses towards the introduction of TPACK to the teaching practice in Indonesia have been reported in a number of studies (e.g., Cahyono et al., 2016; Sari & Sumardi, 2020).
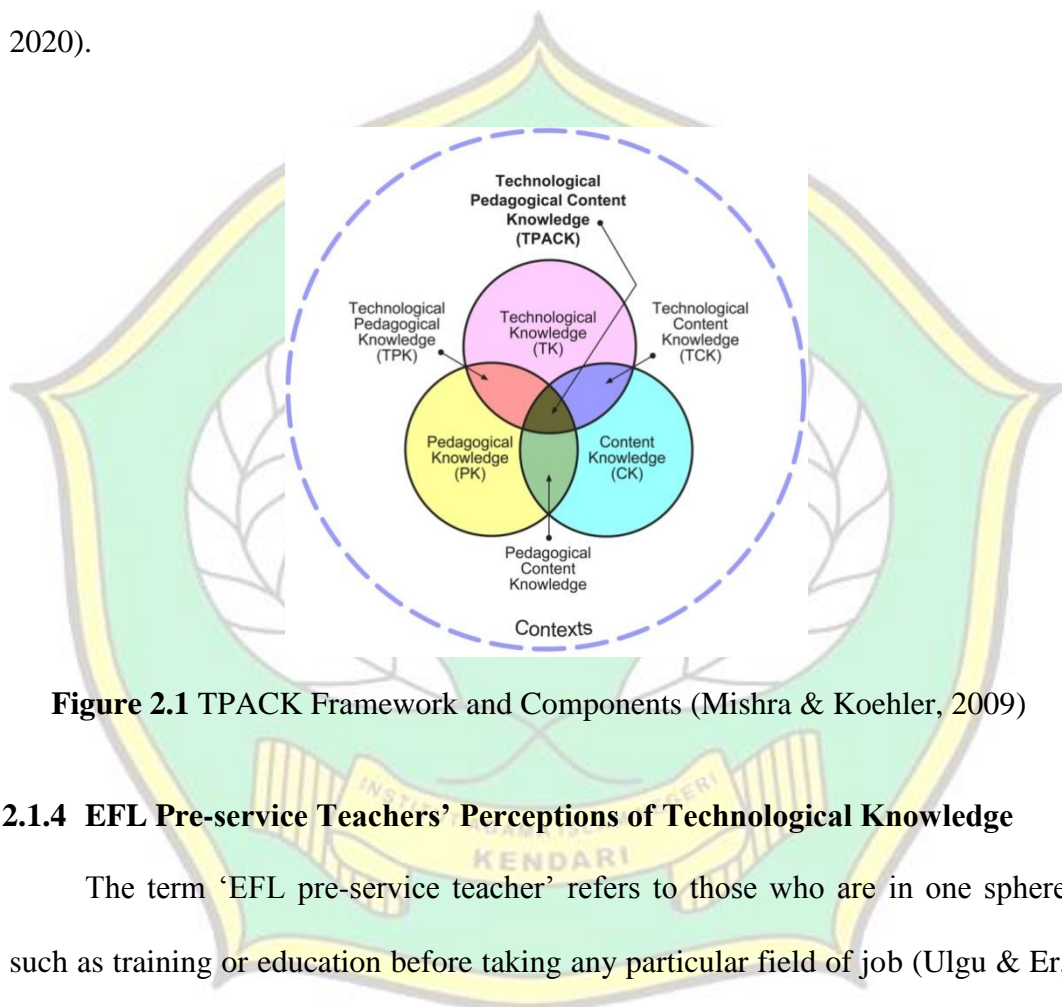

Figure 2.1 TPACK Framework and Components (Mishra & Koehler, 2009)

2.1.4 EFL Pre-service Teachers' Perceptions of Technological Knowledge

The term 'EFL pre-service teacher' refers to those who are in one sphere such as training or education before taking any particular field of job (Ulgu & Er, 2016). Likewise in terms of requirements, EFL pre-service teachers have many duties to fulfill as prospective teachers. One of them is they should have enough pedagogy skills such as in designing and implementing curriculum, applying technologies, and mastering the target language with its culture (Barzaq, 2007). Overall, understanding pre-service teachers' perceptions of technological

knowledge can inform efforts to design targeted professional development programs, curriculum enhancements, and support mechanisms to prepare them for effective technology integration in EFL teaching contexts.

To become a proficient teacher, EFL pre-service teacher needs to improve their ability in terms of choosing content as teaching materials, knowing how to deliver materials and have a good teaching and managerial strategies (Sheridan, 2013). Based on the statement, this study interpret the duties of EFL pre-service teachers' in terms of technology such as they should have enough technology skills such as having basic technological knowledge, being able to operate the technology in the classroom, applying technologies to their teaching, and mastering technology as well. Therefore, in order to become a proficient teachers', EFL pre-service teachers' need to improve their ability in terms of choosing the appropriate technology as their learning media in teaching, knowing how to deliver materials with technology and have a good teaching and managerial strategies in teaching. Technological knowledge is knowledge about the technical ability of a teacher who uses technology tools (Koehler & Mishra, 2009).

Perception is the way we think about everything and our assumption of what it is like in commercial terminology (Qiong, 2011). Additionally, perception is when a person is faced with a situation or stimulus. The individual creates the stimuli in a way that is meaningful to him or she based on previous experience (Pickens, 2016). According to Gibson, et al (1984) perception is the cognitive mechanism that individuals use to perceive and understand the current situation.

Moreover, perception can also from the previous experience of someone. In addition to that, perception can also define as the way people think about something from the world around or it can be from their experience. From the statements above, it can be concluded that everyone has their perception about their actions of interpreting sensory information to provide an overview and understanding environment. Therefore, perception in this study is the way how EFL pre-service teachers' implemented technological knowledge in the classroom during field teaching practice.

2.2 Previous Study

This section provides a general overview of the relevant studies. First, the perceptions of 68 pre-service teachers' regarding how the pre-service teachers' understanding of the TPACK principle and how they will apply TPACK in their classroom by Ringotama (2020). This study focused on the development of pre-service teachers' perception of TPACK and implementation of TPACK in their internship program. The study found that most of the participants understood the concept of TPACK well, and they also had various ways to apply it in their classroom. Regarding pre-service teachers' perception about technological knowledge, all the participants mostly said that there is a need to integrate technology during teaching and learning program because in this global era, the need of integrating technology is increasing continuously.

Second, a study conducted by Lestari and Asari (2022) focusing on how EFL pre-service teachers integrate technology for online learning activities and their views on students when integrating technology during teaching-learning

activities. The study found that all the participants have recognized and used various kinds of technology that are usually used in learning activities. The use of LCD projector and PowerPoint are the most frequently used by participants because of the ease of use, which impact students' understanding positively on the material being taught and become more active in class. Moreover, the various technologies used in teaching and learning activities can make it easier for teachers to find and deliver learning materials.

Third, a study conducted by Singh and Kasim (2019) focusing on how the mastery of TPACK assists the pre-service English teachers with their teaching practice. The findings of the study clearly revealed that the pre-service teachers have a substantial understanding and mastery of TPACK. The pre-service teachers revealed some effective technological pedagogical content knowledge strategies used for teaching purposes to capture students' interest to make learning more fun and meaningful.

Overall, all the studies of literature mostly similar with this study but there are some differences. The first study deals with the development of pre-service teachers' perception of TPACK and implementation of TPACK in their internship program which found that most of the participants understood the concept of TPACK well, and they also had various ways to apply it in their classroom. The second study focuses on how EFL pre-service teachers integrate technology for online learning activities and their views on students when integrating technology during teaching-learning activities which found that all the participants have recognized and used various kinds of technology that are usually used in learning

activities. The third study focuses on how the mastery of TPACK assists the pre-service English teachers with their teaching practice. The findings of the study clearly revealed that the pre-service teachers have a substantial understanding and mastery of TPACK.

Therefore, this present study will also discuss the TPACK itself more specifically to the Technological Knowledge (TK) as the main focus of this study. In addition, in this study there are differences in previous studies because this study will discuss the EFL pre-service teachers' perceptions of their Technological Knowledge (TK) development during field teaching practice. This study will provide information during field teaching practice in carrying out or implementing TPACK, especially about Technological Knowledge (TK) for a pre-service teachers'.