

CHAPTER I

INTRODUCTION

1.1. Research Background

Rapid technological advances have profoundly reshaped the educational landscape, transforming the paradigms of teaching and learning. This transformation has been characterized by the integration of digital technology and the internet into the education system, driving a transformation in learning methodologies and competencies. Jannah (2020) highlighted that teachers' perceptions of technology-based learning emphasize the need to adopt digital innovation in education. Furthermore, Zainudin (2024) explains that the increasing integration of technology within educational frameworks has expanded the opportunities for both students and educators to participate more dynamically in the learning experience. This technological advancement not only facilitates improved communication and collaboration but also fosters a more interactive and personalized approach to education. Consequently, the evolving landscape of educational technology is reshaping traditional pedagogical methods, thereby reshaping how learning experiences are constructed and experienced within the educational context.

In this context, educators' understanding of the Technological Pedagogical Content Knowledge (TPACK) framework emerges as a crucial construct, particularly in enhancing teachers' ability to integrate technology into their pedagogical practices. TPACK is a model that integrates three main aspects: content knowledge, pedagogical knowledge, and technological knowledge. According to Mishra and Koehler (2006), success in teaching with technology depends not only on mastery of technology but also on understanding how technology can be applied in appropriate pedagogical contexts. Research by Beri and Sharma (2021) shows that teachers with strong TPACK competencies tend to demonstrate more adaptive approaches in

presenting learning material to students, including in developing digital literacy. This ability is crucial in the context of digital learning, where teachers must be able to select and use appropriate technology to support the teaching and learning process. According to Marte (2024), teachers with a strong understanding of TPACK are more effective in integrating technology into their curriculum, which in turn can support the development of students' digital literacy.

TPACK emphasizes not only the importance of mastering the individual areas of content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK), but also the need for these three areas to work together and interact flexibly to help create and implement contextual and adaptive learning (Hermansah et al., 2024; Farikah and Firdaus, 2020). Successful integration of these areas reflects how educators construct and enact learning experiences for their students in an increasingly digital educational landscape.

In rural areas like Wamena, access to technology is often limited. However, teachers with strong TPACK competencies may navigate existing resources to design learning experiences that are contextually meaningful for students. For example, the use of simple yet effective mobile applications may create opportunities for students to engage in independent learning and develop their digital literacy skills. This aligns with findings by Kusuma (2022), who found that teachers who are creative in using technology create learning experiences that are more contextually responsive to students' learning experiences in rural schools.

However, not all teachers in rural areas possess adequate Technological Pedagogical Content Knowledge (TPACK) competencies. Disparities in training opportunities and professional development may lead to differences in teachers' ability to integrate technology into instructional practices. Sari (2025) stated that teachers in rural areas often lack adequate training on the use of technology in learning. This condition may shape how students experience digital

literacy practices and form their attitudes toward digital learning. In this regard, Students' digital literacy development is closely influenced by instructional support and learning environments that facilitate meaningful engagement with digital tools (Sudana, 2024). Therefore, Teachers' TPACK competencies are considered essential because teachers are role models who know how to help students learn certain things through teaching and technology (Nur'ainun, 2017). Furthermore, the integration of digital tools within pedagogical practices has been shown to enhance students' literacy development through structured and meaningful learning activities (Ratminingsih, 2024). In addition, students demonstrate higher levels of engagement and active participation when digital learning media are effectively utilized in classroom instruction (Alfia, 2024). Supporting this view, several studies have shown that teachers' digital competencies, particularly in the context of Technological Pedagogical Content Knowledge (TPACK), are closely intertwined with students' capacity to utilize technology wisely and efficiently (Quraishi et al., 2024; Sánchez-Cruzado et al., 2021).

The development of students' digital literacy through learning facilitated by educators proficient in TPACK has been shown to be reflected in students' engagement with digital learning environments (Quraishi et al., 2024; Murtadho et al., 2023). In this regard, digital literacy goes beyond technical proficiency and enhances students' academic and life skills in navigating an increasingly digitalized environment (Pariama, 2024). Digital literacy is one of the most important skills to possess. Paul Gilster (1997) was the first to discuss this concept. He called it "the ability to understand and use information in various formats from various sources when presented via a computer" (Yang, 2023). This definition makes it clear that digital literacy is not just about knowing how to use digital devices; it also includes knowing how to absorb information shared in various formats and from various sources through digital media.

Several previous studies have demonstrated a meaningful connection between teachers' TPACK competencies and students' digital literacy. For example, research by Ammade (2020) revealed that students taught by teachers with strong TPACK competencies showed noticeable development in their digital literacy skills. This is in line with research by Liu (2022) which found that teachers' competence in using technology is associated with how students participate in online learning contexts.

In Wamena, students' digital literacy is still developing. A minority of students are able to use digital devices for independent learning purposes (Murtadho, 2023). Challenges faced by students in developing digital literacy include a lack of access to devices and a stable internet connection. According to a report from the Ministry of Education and Culture (2022), a limited number of schools in Papua have adequate internet access. This condition presents contextual constraint for digital learning practices for students to develop the digital skills necessary in this modern era. On the other hand, a study by Usman (2024) showed that students who received guidance from teachers with high TPACK competencies had expressed different attitudes towards digital learning. This research demonstrates the importance of developing teacher competencies in improving students' digital literacy, especially in areas with limited access to technology.

Therefore, within this context interplay, it can be understood that teachers' TPACK competencies not only link to students' digital literacy but also their attitudes toward digital learning. Students' attitudes toward digital learning refer to their perceptions, feelings, and behavioral tendencies toward learning processes involving digital technology. These attitudes can range from positive, such as enthusiasm, acceptance, and enjoyment, to negative, such as rejection, frustration, or feelings of being overwhelmed (Ling et al., 2024; Pala et al., 2023). In

educational practice, students' attitudes play a crucial role in determining the extent to which they are motivated and engaged in technology-based learning.

Positively designed and relevant learning experiences tailored to students' needs can shape how students perceive and respond to technology use in the learning process (Pala, 2023), thus contributing to the successful implementation of digital learning in the classroom. Yasmiatun (2023) study showed that positive attitudes toward the advantages of technology encourage students' openness and acceptance of digital learning modalities. This study examined how teachers' TPACK competencies shaped students' digital literacy and informed their attitudes toward digital learning. Teachers play a central role in shaping students' perceptions and attitudes regarding technology integration in the classroom. Studies have shown that educators' attitudes and digital proficiency significantly influence students' perceptions and reactions to educational technology (Konrad and Štemberger, 2023). Teachers who effectively integrate technology and demonstrate positive attitudes toward digital learning will create a learning environment that encourages student engagement and acceptance of technology (Hamad, 2024).

The presence of educators proficient in TPACK (Technological Pedagogical Content Knowledge) is significant in shaping students' opportunities to engage in digital literacy practice and developing their motivation and attitudes towards learning. However, as mentioned above, the educational landscape in Wamena presents significant challenges, particularly related to inadequate digital infrastructure and diverse access to technology. In several schools in Wamena, facilities such as computer rooms and stable internet connections are often unavailable. This makes it difficult for teachers to integrate technology into daily learning. According to Usman (2024), adequate infrastructure is crucial to support the use of technology in education, especially in rural areas. This region grapples with significant obstacles, such as the inadequate

availability of digital devices across schools, and educators' lack of motivation to innovate with technological developments, all of which hinder the smooth integration of technology into educational practices (Febrianasari et al., 2024; Puspitoningrum et al., 2024).

In addition to the general challenges mentioned above, integrating technology into the learning process in rural areas is not easy. Educators in Wamena often face various challenges that can hinder their efforts to utilize technology effectively. One of the main challenges is the lack of training and professional development in the use of technology. Shambare and Simuja (2024) showed that teachers who do not receive adequate training tend to feel less confident in using technology in the classroom. In addition, a lack of support from schools and the government can also be a barrier. Educators frequently perceive a lack of support in their effort to integrate technology into their teaching practices. The absence of supportive policies and sufficient resources is often described as teachers' ability to implement innovative learning methods effectively. Research conducted by Sari (2025) underscores the importance of institutional support in fostering an environment conducive to technology-based learning. Consequently, it is crucial to enhance awareness and understanding of the benefits that technology can bring to the educational landscape. With addressing these concerns, we can better equip educators to leverage technology; ultimately redefine how digital learning is experienced in classroom contexts.

Evidence from Indonesian teacher professional education further demonstrates that technology integration is influenced by both individual readiness and institutional conditions. Sutrisna et al. (2018) identified four major challenges experienced by in-service English teachers during online professional education: limited ICT skills among participants, incomplete digital learning modules, instructors' unfamiliarity with the learning software, and excessive

assignments that had to be completed within a limited period. The study also identified mentor support, participant readiness, program management, and adequate facilities as factors that could accelerate teachers' learning. These findings indicate that the successful implementation of technology-supported education cannot be attributed solely to teachers' technological competence. It also requires appropriate training, accessible instructional materials, effective institutional management, and adequate technological infrastructure. This perspective is particularly relevant to Wamena, where teachers' enactment of TPACK is closely connected to the support and resources available within the local educational environment.

Finally, this study explored how teachers navigated and responded to the challenges they faced in integrating technology. By examining these obstacles, the study provided a contextual understanding of how teachers interpreted and enacted TPACK within a rural educational environment and how such enactment shaped educational practices in Wamena, Papua.

Considering the issues described above, this study was conducted to explore how teachers' TPACK competencies shaped students' digital literacy and attitudes toward digital learning, particularly within the context of the digital divide in Wamena. Educators with a strong understanding of TPACK are more likely to improve students' digital literacy and foster positive attitudes towards technology used in educational contexts (Hidayat et al., 2024 and Deng et al., 2023). Theoretically, this study aimed to contribute contextual insights to discussions of the TPACK framework by illustrating how teachers' technological, pedagogical, and content knowledge was enacted within the socioeconomic and infrastructural context of Wamena.

This study focused on SMA Negeri 1 Wamena as a bounded qualitative case to investigate the enactment of broader contextual dynamics within a specific rural school environment. By examining this institution, the research aimed to clarify the interplay between

local factors and educational practices. This focus allowed for a nuanced understanding of how contextual elements influenced technology integration and learning practices within the rural school.

1.2. Problem Identification

Research conducted by Ammade et al. (2020), Deng et al. (2023), Hidayat et al. (2024), and other researchers identified several key issues related to teachers and pre-service teachers' TPACK competencies. These issues include a lack of skills and understanding in integrating technology into teaching and difficulties in effectively implementing TPACK in different learning contexts. Previous research has shown that despite advances in technology education, many teachers are still not fully prepared to utilize technology in learning. Teachers who feel insecure in using technology may encounter challenges in shaping digital learning experiences in their classrooms. For example, in a study by Deng (2023), it was found that pre-service chemistry teachers experienced difficulties in using data-logging in the classroom, indicating that they did not yet have adequate TPACK. On the other hand, Hidayat (2024) showed that after participating in a training program, biology teachers showed improvements in their TPACK profiles, but challenges remained in their implementation in the field.

In Wamena, Papua, the challenges faced in the context of high school education are not significantly different from those identified in previous research. Many teachers in this area also experience limitations in integrating technology into the learning process. A lack of adequate training and resources is a major barrier. Furthermore, limited technological infrastructure in the area also adds to the difficulty in implementing technology-based learning methods.

A research gap identified from previous studies is the limitation of focus on how TPACK is enacted within specific rural educational contexts, particularly in a region such as Wamena,

Papua. Most existing research emphasizes urban contexts or schools, competency measurement, or structured training interventions in environments with relatively adequate technological infrastructure. While this study provides valuable insights, they often overlook how teachers and students experience technology integration in resource-constrained rural settings. Furthermore, limited research has examined how teachers' TPACK competencies are enacted in shaping students' digital literacy and their attitudes toward digital learning within a bounded rural high school context. The perspectives of students, especially regarding how they interpret and respond to technology integration in students' daily learning practices, remain underexplored. There is a need for a qualitative case study that explores how TPACK is interpreted, enacted and experienced within the local socio-cultural and infrastructure realities of Wamena, Papua.

In this research, the researcher addressed the identified research gap by focusing on the educational context of Wamena, Papua. The study included an in-depth analysis of how teachers integrated technology into their teaching and how the local context influenced this process. The researcher also conducted classroom observations and interviews with teachers and students to identify the challenges they experienced and to generate contextual insights that could inform future professional-development initiatives, including the use of mobile applications that could function with limited internet connectivity.

Through this approach, the researcher aimed to contribute to a contextually grounded understanding of TPACK enactment in Wamena, Papua. The study also offered insights relevant to educators and stakeholders concerned with technology integration in similar rural and resource-constrained educational settings.

1.3. Scope of the Study

This study employed a single qualitative case study design focusing on SMA Negeri 1 Wamena, Papua, as a bounded educational context. The research explored how teachers' TPACK competencies were enacted to shape students' digital literacy and attitudes toward digital learning within this specific rural school setting.

The scope of the study was limited to:

1. Exploring how English teachers' TPACK competencies were enacted in classroom practices and how these practices were experienced in relation to students' digital literacy and attitudes toward digital learning.
2. Examining the case within the specific context of SMA Negeri 1 Wamena, where access to technology and digital infrastructure is limited, thereby situating the analysis within its rural and resource-constrained environment.
3. Recognizing broader structural factors, such as national educational policies, school management systems, and socioeconomic conditions, as contextual influences; however, these factors were not examined as the primary units of analysis. The main analytical focus remained on classroom-level practices and the lived experiences of English teachers and students within the bounded case.

1.4. Research Questions

Based on the explanation above, the following research questions were formulated, as follows:

1. How are English teachers' TPACK competencies enacted in shaping students' digital literacy and attitudes toward digital learning in senior high school at SMA Negeri 1 Wamena, Papua.
2. How do students experience challenges within digital learning practices in senior high school at SMA Negeri 1 Wamena, Papua.
3. How do English teachers interpret and navigate challenges in integrating technology into classroom practice in Senior High School at SMA Negeri 1 Wamena, Papua.

1.5. Research Objectives

1. To explore how English teachers' TPACK competencies are enacted in shaping students' digital literacy and attitudes toward digital learning in Senior High School at SMA Negeri 1 Wamena, Papua.
2. To examine students' lived experiences of challenges within digital learning practices in Senior High School at SMA Negeri 1 Wamena, Papua.
3. To understand how English teachers interpret and navigate contextual challenges in technology integration in Senior High School at SMA Negeri 1 Wamena, Papua.

1.6. Research Significance

1.6.1. Theoretical Significance

Thus the explanation regarding several theoretical significance of research, as follows:

1. This research provides a deeper understanding of the TPACK framework and its significance in contemporary pedagogy. It highlights the relevance of technology integration in teaching, thereby contributing to discussions of effective teaching in the digital age (Septiana, 2023).

2. For students, this research contributes to an understanding of the competencies and dispositions associated with digital literacy in educational contexts. It emphasizes digital literacy as an integral component of learning in an increasingly digital environment (Pala, 2023).
3. This research offers insights for local schools in to the role of teacher competencies in shaping classroom practice. It contributes to the theoretical discussion of how TPACK is enacted within the unique socio-culture context of Wamena (Endrayanto, 2022)

1.6.2. Practically Significance

Thus the explanation regarding some of the practical Significance of research, as follows:

1. On the practical level, the finding may serve as reflective resources for teacher in understanding how digital competencies are enacted within their instructional practice. By identifying contextually grounded strategies of technology integration, teachers may gain insight in to their classroom practice (Jannah, 2020).
2. The study's finding may inform discussion surrounding context sensitive approaches to digital literacy and students' attitude towards digital learning particularly in rural education setting (Farikah and Firdaus, 2020).
3. The finding may assist school administrators in reflecting on provisional development needs related to teachers' TPACK competencies. This may support more contextually responsive educational practices within the school community (Hidayat, 2024).