Understanding Teachers' Beliefs and Practices in Technology Use in a Korean Language Classroom through Exploratory Practice

By

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ABSTRACT

This dissertation adopts exploratory practice to investigate Korean language teachers in their process of gaining a deeper understanding of their beliefs regarding technology and its use in classrooms. I posit that examining teachers' beliefs about teaching and learning with regard to technology provides an essential foundation for successful classroom technology integration. Moreover, conducting teacher research guided by exploratory practice allows teachers to formulate their own questions and investigate them in their own context, which contributes to their professional development by helping them gain a deeper understanding of their teaching beliefs and practices.

The main research questions of this study are a) What are Korean language instructors' beliefs about the role of technology in language teaching and learning, and how are these beliefs reflected in their teaching practices? and b) How do Korean language instructors interpret and work with exploratory practice? In the research process, this study invited three Korean language teachers who teach in a four-week summer immersion program to participate in an individual research project guided by exploratory practice. Before the program commenced, individual in-depth interviews were conducted to explore the participants' existing beliefs about teaching, learning, and technology. They then attended an exploratory practice workshop, gained familiarity with the principles, and formulated their own questions related to technology use. During the program, they engaged in various activities to investigate their questions (called puzzles in EP), including active discussions with their students and other teachers, video reflections, and observations. Their responses to exploratory practice were collated through an end-of-program interview and group interviews.

The findings show that the teachers presented a strong preference for a student-centered learning environment, which was heavily influenced by their personal learning experiences. On the other hand, the teachers revealed varying beliefs about the scope, goals, and effectiveness of using technology in language classrooms, which resulted from different teaching experiences, the school settings they work in, and a lack of motivations to change existing teaching methods. These factors resulted in inconsistencies between their beliefs and actual technology use. In addition, the teacher participants evaluated exploratory practice as a transformative opportunity to reflect on themselves from a contextual perspective, eventually resulting in a sophisticated understanding of the quality of life in the classroom and a clearer conception of themselves as teachers. They found that formulating their own puzzles and working together in a collegial environment contributed to their successful teacher research project.

The findings of this study suggest that providing teachers with opportunities to think about the role of technology in classrooms and carefully examine their own beliefs and practices may advance the successful integration of technology. Moreover, exploratory practice can be utilized as an alternative model of teacher education as the teachers may benefit from formulating their own questions and investigating them within the context directly relevant to them. Finally, this study suggests that building a strong teacher community with regular reflective dialogue develops teachers' professionalism and sense of belonging, which positively enhances students' learning experiences.

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CHAPTER 1. INTRODUCTION

Motivation: Finding a Puzzle

I am a teacher of the Korean language and have taught Korean for eight years now. I earned my master's degree in teaching Korean as a foreign language (KFL) and received 2nd type certification[1] upon graduation. In order to be certified as a Korean teacher, I had to take courses from designated five domains including Korean language, applied linguistics, theories in KFL, Korean culture, and teaching practice. I had no chance to take any course to develop my technology related knowledge throughout my preservice program since there was neither course available nor requirement for the certificate.

Although I do not see myself as being extremely comfortable with technology, I think I believed in the power of technology in language learning from my experience as a learner. I profoundly benefited from television shows and educational CD-roms which offered fun and

[1] The Ministry of Culture, Sports and Tourism certifies Korean language teachers. The certificate is subdivided into three classes from the first to the third (Table 1.1). Table 1.1 briefly summarizes the qualifications to achieve each class certificate for a Korean teacher. Once qualified, applicants need to apply for certification.

Class	Qualifications (Applicants are eligible to apply for each class if they could meet one of the qualifications)
1st	Those who have worked at teaching institutions or organizations for more than 5 years and have more than 2,000 hours of teaching experience after acquiring their 2nd class certificates.
2nd	Those who majored in KFL and earned a BA degree or an equal or greater distinction at their university.
	Those who have worked at teaching institutions or organizations for more than 3 years and have more than 1,200 hours of teaching experience after acquiring their 3rd class certificates.
3rd	Those who minored in KFL and earned a BA degree or an equal or greater distinction at their university.
	Those who have passed the Korean language teaching proficiency test after completing an authorized Korean Teacher Education Program.

Table 1.1. Teacher certificate qualification

engaging tasks when I was learning English as a child; and from that experience I have had an obscure dream that technology integration enhances learning. However, as a teacher, I did not know where to start, what to bring, or how to use whatever device or program. Even worse, the first school I started teaching at was very skeptical towards technology uses. The school and teachers stated that they aimed for communicative language learning, but in the actual teaching and learning, they seemed to emphasize the written-test scores. In 2012, teachers were drawing, cutting and laminating flashcards and taped these on the blackboard. The only technology available was a CD-player, which was needed for listening practice. I was probably the only one who attempted to use real-life images from google and put them on slides. That was my first attempt, but it ended very shortly because my supervisor highly recommended me to use the institution's ready-made material rather than mine. My supervisor worried that the slides might distract the learners; and told me the blackboard is better to present images since they have bigger spaces than slide screens. The first-year experience surely shook my beliefs about language learning with technology: It might not work as I expected.

It was my second year of teaching when I once again tried using technology. I started to teach at a private law firm as an invited lecturer and gained much more flexibility without supervisors and other senior instructors. In a very private setting teaching one-on-one class, I was able to use my own laptop or iPad to create and present learning materials tailored to individual students' needs. I was excited to incorporate all the information on the web and to try out vocabulary applications with the students, but I soon wondered if I was appropriately using the technologies. I thought I was utilizing cutting-edge technologies, but in fact, I realized that I was just using them to present vocabulary sets and provide simple quizzes. It did not seem to enhance learning or situate students in authentic contexts to develop their communicative competence.

However, I could not change my practice dramatically for a long time. Although I began to question my practices, I did not know what to change or improve; in fact, I think I did not even know what I wanted to accomplish with integrating technology in the first place. My ideas were shallow; I just believed technology is beneficial to learning and this made me keep using technology regardless of the purpose. I sometimes felt proud of myself because of the mere fact that I was using technology in my classroom. It was like an obsession.

My teaching environment dramatically changed when I came to graduate school in the US. My puzzles, questions, and interest in technology integration grew and graduate studies led me to think deeply about appropriate ways of using technology. I started my project and this time, I set my goals first. Given that Korean learners here have very limited access to the target language outside the classroom compared to my previous students in Korea, my goal was to enable my students to actively engage with the target language both inside and outside the classroom. In addition to the learning goal, I personally wanted to explore the educational potential of social media. I conducted a survey on the first day of the class, asking my students their patterns and habits of social media use and their most preferred social network services. The results indicated that every student was actively using social network services every day and their most preferred site was Instagram. I decided to interact with students on Instagram and ran a class Instagram. I designed six types of learning materials, mostly composed of short video clips or images; I found Instagram is appropriate for images and clips rather than wordy paragraphs. Throughout the semester, I frequently asked students how they liked Instagram; in fact, I did not have to ask—they responded via Instagram. At the end of the semester, students told me they enjoyed learning through Instagram mainly because of the following two reasons. Unlike other learning management systems, they did not have to put extra effort to access the materials. They were on

Instagram daily and naturally exposed to Korean. Technology was normalized (Bax, 2003) and fully integrated in their learning. Also, students were satisfied to experience increased interactions between other peers, teachers, and even native speakers they encountered on Instagram. The materials I posted were just facilitators; students engaged with the materials, responded differently and ultimately extended their learning as active agents. The semester-long project seemed quite successful, yet my questions are ongoing.

My interests in technology led me to constantly question and reflect on my vague thoughts on technology and teaching, to seek assistance from students and colleagues, and to finally see how these attempts ultimately influenced my practice. I assume that most teachers also hold these kinds of questions about their practices but lack a motive, opportunity, and time to stop their habitual practices and thoroughly think about a new instructional strategy. Should teachers take initiatives to have an opportunity to stop, look around, and think (Allwright, 1997; Hanks, 2017) about their own questions, teachers would be able to develop deeper understandings and further grow as teachers. Moreover, building a safe and supportive environment to engage in reflective activities and openly share their reflections with colleagues having similar goals would be another critical factor for teachers to continue moving forward since working alone could fizzle out easily.

With regard to technology, then, rather than delivering techniques at a mechanical level, teacher training programs should be designed to facilitate the development of teachers' thinking to better support teachers. As individuals have different levels of experience, knowledge and beliefs about technology, reflecting their understandings and practices, uncovering barriers and affordances, and identifying the future impact of technology would help prepare teachers to be ready for technology-enhanced classrooms.

The Rise of Technology in Educational Spaces

Today, technology has become an inseparable part of our everyday lives. The growing importance of technology has exerted a powerful influence in almost every field, and education is no exception. Technology is accepted as a valuable tool for enhancing curriculum, instruction, and student learning (Garling, 2016; Liu, 2011), creating new roles for both teachers and students in the classroom. Recognizing the educational potential of technology in classrooms, a variety of advances have been introduced and many attempts made to integrate technology into the curriculum. It is now hard to imagine a classroom without basic electronic devices, such as computers and screens, and their active use is strongly encouraged by schools and administrators, expecting that these technology-rich environments will naturally bring about an innovative learning space. Despite those rosy dreams, the main usage of technology still remains passive; teachers use technology merely to design instructional materials, deliver lectures (Ding et al., 2019; Hermans et al., 2008; Huang et al., 2019; Tondeur et al., 2013; Tour, 2015), or do administrative work. In attempting to account for this limited use of technology, for the most part, studies have tended to address the issue from the external or contextual factors that may impede successful implementation, the design of particular software, or from the learners' perspective, but, the teachers who are charged with implementing new instructional strategies (Hubbard, 2008; Son & Windeatt, 2017) have received relatively little attention.

Understanding Teacher Beliefs: Teachers as the Key Decision-makers in the Classroom

It is widely agreed that teachers are the key decision-makers and facilitators of knowledge in the classroom (Borg, 2003; Garling, 2016; Liu & Kleinsasser, 2015; Palak & Walls, 2009).

Teachers direct instruction, shape the instructional context, set learning goals and apply diverse learning strategies to make learning happen. Given that teachers play an active-agent role in instruction, it becomes important to understand their knowledge and beliefs. These knowledge and beliefs inform the decisions teachers make and the actions they take in the classroom (Borg, 2003; Garling, 2016; Kagan, 1990; Nespor, 1987; Pajares, 1992; Palak & Walls, 2009). Teachers' thinking processes are strongly connected to their teaching practices (Kagan, 1992; Nespor, 1987; Pajares, 1992); they rely heavily on their knowledge and beliefs when they plan for class, teach in class, and even afterwards when they reflect on their teaching. In this regard, teachers' thinking and belief systems become extremely important when implementing innovations. MacArthur and Malouf (1991) support this idea, saying that "any educational innovation is filtered through teachers as they modify instructional activities to fit their beliefs and the instructional and management routines in their classrooms" (p. 45). Levin and Wadmany (2006) also underscore teachers' beliefs, stating that they "largely determine how and why teachers adopt new teaching methods or adapt to new classroom environments, processes, and goals (p. 158)." Thus, in order to successfully implement new strategies or promote changes in the teaching context, it is essential to take the teachers' knowledge and beliefs into account.

Toward that end, the question of not using technology to its fullest capacity should be discussed in conjunction with teachers. I argue that researching teachers and including teachers in the research process as significant and necessary to explore the integration of technology in classrooms. After all, it is the teachers who decide what to do in the classroom.

Inviting Teachers to be Researchers

While there have been scores of studies addressing teachers' practices and innovative pedagogy, it is questionable whether these studies actually reflect real-life classrooms or whether they directly contribute to better practices. Teachers are often suspicious of researchers as being too removed from reality; sometimes they do not have enough time to read. Researchers, on the other hand, have difficulties researching the classroom, because they are outsiders and strangers (Allwright & Bailey, 1991; Freeman, 1996).

In light of such observations, a call for teachers to be part of the research process has emerged. Allwright (1993) notes that teachers' practices can play a role as methodological tools for investigations. Tudor (2001) highlights the importance of starting investigations from the inside, and Johnson and Golombek (2002) maintain that research can promote theorizing when teachers conduct the research. Accordingly, practitioner research has been brought to the surface in a way that bridges the gap between research and actual teaching. In practitioner research, the term "practitioners" typically refers to teachers (Altrichter, Posch, & Somekh, 1993; Hanks, 2017). Thus, practitioner research comprises studies conducted by teachers critically questioning their own practices in their contexts in order to fully understand their teaching (Hanks, 2017). According to Hanks (2017), positioning teachers as researchers is beneficial in that it allows teachers to "develop as professionals" (p. 48) and make a contribution to the knowledge base.

Given that classroom research is all about understanding what happens in the classroom and promoting teaching and learning, it is incumbent upon the researchers that teachers who are in the center of the classroom should also be included in the research process. By engaging teachers in research into their own practices, they can develop a deeper understanding of the practices that are most relevant to themselves. With this in mind, I examine exploratory practice (EP) as one

type of practitioner research and adopt this concept as the guiding principles for the research procedure in this study.

EP is an approach that stems from practitioner research, and it highlights the understanding of language education and enhancing the quality of life in the classroom by engaging everyone within the learning community. EP asserts that teachers can develop deeper understandings about their teaching environment when they research their own question areas, called puzzles, by using ordinary pedagogical activities as a research tool. Indeed, this method has been proposed as a way of looking toward professional development without burdening the teachers with the extra workload of conducting research.

Purpose of the Study

The main purpose of this academic study is to enact a teacher research project to examine the relationship between teachers' beliefs and their classroom practices in regard to technology integration. The first part of the study provides a brief review of the current discourse on teachers' knowledge and beliefs, as well as the philosophy of technology in order to discuss its role in language classrooms and how such thinking influences teachers' actual practices. Then, I investigate Korean language teachers in the process of gaining a deeper understanding of their beliefs about teaching and the use of technology, along with their practices in classrooms. I endeavor to understand how participants formed their existing beliefs on teaching, learning, and the integration of classroom technology from their earlier experiences in language learning and teaching. Moreover, I investigate how teacher participants explore and revisit their beliefs and practices in their specific instructional contexts and what factors reinforce or hinder their future professional growth with regards to instructional use of technology.

With the aim of including teachers in the research process, I employ EP to guide the teacher research project. The experience of EP can offer teacher participants a transformative opportunity to reflect on themselves from a local perspective by investigating their own puzzles and constantly work with everyone involved in the learning environment. Thus, the teachers may eventually gain a more sophisticated understanding of the existing quality of life in the classroom as well as a clearer conception of themselves as teachers. Additionally, as EP puts emphasis on collegial work with others, teacher participants would also engage in the formation of a teacher community and experience how such experience leads to their professional growth.

Finally, anticipating that a closer look at teachers' beliefs will help understand current issues leading to the successful inclusion of technology, the implications for future teacher training and policy recommendations will be suggested, considering how professional development programs can support teachers in the long run.

Significance of the Study

The use of technology in the language classroom has been widely discussed. In approaching this area, this study particularly focuses on teachers and investigates how they acquired their beliefs about technology in order to deal with it at the local level by encouraging them to be active researchers in the classroom. I believe teachers are researchers by nature. Whether consciously or not, they always strive to improve the quality of teaching. They ask relevant questions, hypothesize possible solutions, try out these potential solutions in the classroom, look for students' reactions, and evaluate these results (Brown, 1994). Through the use of EP to investigate their own puzzles, I foresee teachers experiencing the joy of research by acting locally to clarify their immediate context and thinking globally to pinpoint the essential underlying

principles (Allwright, 2003). This will lead to both individual teacher development and improvements to the broader contexts.

Moreover, in the field of Korean language education specifically, I believe this study can gain insight into alternative models of teacher education and professional development programs regarding the use of technology. As its teacher certification program stipulated in 2005, the majority of Korean teachers' education research has focused on the language teaching skills of preservice teachers in the Korean context (Park & Yoon, 2019). There have not been enough attempts to understand teachers outside of Korea (Kim, 2015) or to set professional development programs for this population. In addition, in terms of technology incorporation, practitioner research based on a qualitative approach is almost nonexistent in this field. Therefore, this study can contribute to both future research, practical education, and training programs for Korean language teachers.

Research Questions

The objective of this study is to provide an opportunity for Korean language teachers to explore their own beliefs about language teaching and the role of technology in today's classrooms. While there is considerable agreement on the growing importance of technology in language classrooms, teachers of Korean mostly lack training on technology use and time for careful reflection on their practices. As such, their professional growth could be better achieved when teachers have their own responsibilities to deeply understand their beliefs about technology and their own ability to use it while aligning them with their pedagogical beliefs.

I specifically seek to question how teachers form and reshape their beliefs throughout the research process as well as how beliefs influence their practices. Moreover, I examine how teachers engage in individual EP projects, how they form their questions, investigate their puzzles, interact with the learning community, deepen their understandings about the field and ultimately pursue quality of life in the language classroom. With this view, I propose the following research questions:

1) What are Korean language instructors' beliefs about the role of technology in language teaching and learning, and how are these beliefs reflected in their teaching practices?
   - Sub-questions:

   1-a) What are Korean language instructors' beliefs about language learning and teaching as well as beliefs about technology?

   1-b) In what ways do instructors integrate technology into their instructions? Why do they choose (or not choose) to use technology in their classrooms? What factors influence their decisions?

   1-c) Are there any discrepancies between the instructor's reported beliefs and actions?

2) How do Korean language instructors interpret and work with exploratory practice?
   - Sub-questions:

   2-a) Based on exploratory practices, how do instructors understand their beliefs about technology and how do their beliefs and practices evolve by "integrating research into pedagogy"?

   2-b) Based on exploratory practice guidelines, how do instructors form and engage in teacher community in order to "involve everybody"?

2-c) How could the principles of exploratory practice guide teachers' "quality of life" in the classroom and affect their future instructional practices and sustainable professional development?

Conceptual Framework

"For teachers to implement any new instructional strategy, they must acquire new knowledge about it and they weave this together with the demands of the curriculum, classroom management, and existing instructional skills."

(Dexter, Anderson, & Becker, 1999, p. 223)

The conceptual framework of this study is based on two main areas—teachers' beliefs and teacher research guided by EP. As previous studies have concurred, teachers' beliefs play a key role in making their pedagogical decisions (Borg, 2003; Deng et al., 2014; Li, 2013; Tondeur et al., 2017), adopting instructional strategies (Farrell & Guz, 2019; Pajares, 1992; Richardson, 1996), coping with challenges (Gilakjani & Sabouri, 2017) and integrating new teaching methods (Tondeur et al., 2017). Hence, language teachers' use of technology can be better predicted and understood through examining teachers' beliefs about teaching and learning languages as well as beliefs about technology as a new approach for today's classrooms.

Teachers' beliefs are the key to unpacking teachers' classroom practices; however, researching beliefs is not an easy task as the relationship between beliefs and practices is complex and multifaceted phenomenon (Borg, 2011; Farrell & Lim, 2005; Milton, 2019). This is due to the "messy" characteristics of beliefs, as Pajares (1992) noted. Teachers may not always be able to articulate their beliefs, or their reported beliefs may not always emerge in actual classroom practices due to their skills and the institutional context. That is, the relationship between beliefs

and practices is neither a perfect congruence nor complete incongruity, but it varies across teachers and the teaching environment they are in (Buehl & Beck, 2015). Thus, examining teacher beliefs should start from a deep understanding of a teacher as an individual, and data should be gathered from a variety of sources.

Teacher beliefs are formed throughout their lives (Knowles, 1992) from multiple sources. While there is no single predominant factor shaping teacher beliefs, prior experience as language learners (Abdi & Asadi, 2015; Sansom, 2019), instructional experiences as teachers (Gilakjani & Sabouri, 2017; Li, 2013), and knowledge gleaned from teacher education and professional development courses (Richardson, 1996) are widely recognized as their foundations. In addition, teachers' personality (Richards & Lockhart, 1994), culture (Li, 2013) and research-based principles (Abdi & Asadi, 2015; Richards & Lockhart, 1994) also constitute teacher beliefs. Figure 1.1 represents how teacher beliefs are formed and how they are interconnected to classroom practices regarding technology integration.

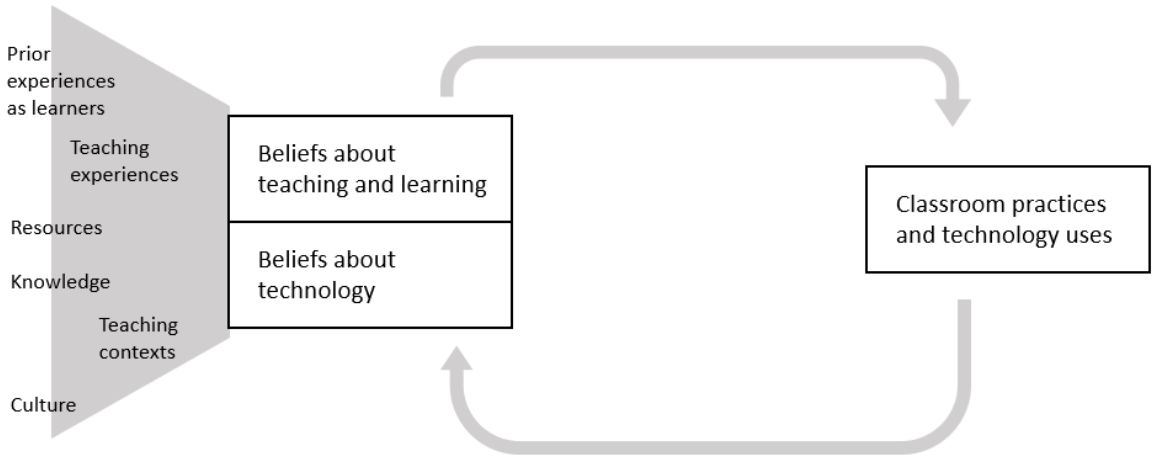


Figure 1.1. Relationship between teacher beliefs and practices regarding technology integration

As Figure 1.1 illustrates, technology uses in classrooms are reciprocally interconnected to teachers' beliefs about teaching and learning as well as their beliefs about technology. The two boxes representing the combined belief system show that beliefs are shaped by multiple sources, such as prior teaching and learning experiences, teaching contexts, and resources. Further, teachers' beliefs and practices are represented in boxes to signify the rigidity of beliefs. It has also been reported that beliefs, once formed, are resistant to change (Block & Hazelip, 1995; Kagan, 1992; Pajares, 1992; Richardson, 1996), but it is possible through appropriate interventions (Sansom, 2019).

In this sense, teacher education and professional development programs need to design programs to be compatible with teachers' beliefs (Gilakjani & Sabouri, 2017). As mere transfer of knowledge rarely alters teacher beliefs, teacher education programs should focus on providing them with continuous opportunities to raise and develop awareness of their beliefs (Buehl & Beck, 2015; Farrell & Guz, 2019) and understand their practices to engage in sustainable professional growth.

Regarding technology integration in language classrooms, given that cutting-edge tools are introduced every day and are changing rapidly (Kimmons et al., 2015), teacher training cannot be focused on the introduction of every new skill or instruction on the best way to incorporate technology. Rather, the role of teacher training should be to help teachers develop their own thoughts about technology, and then providing them with opportunities to examine, implement, and adapt their practices to their own needs at a metacognitive level. Thus, this study proposes a teacher research project to better support these processes, situating teachers as active researchers of their own contexts. Figure 1.2 illustrates this study's teacher research project.

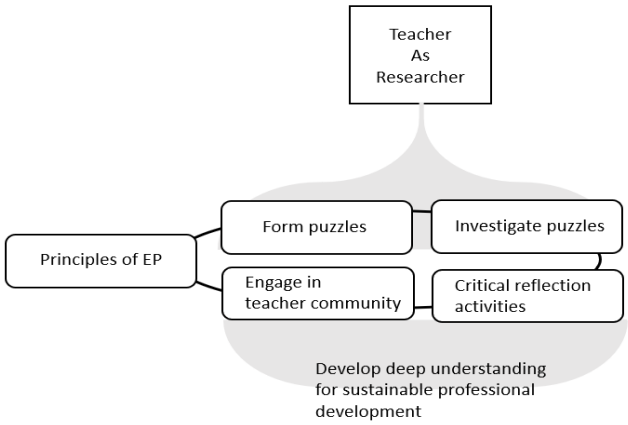


Figure 1.2. Teacher research project

This project is guided by EP principles that highlight the quality of life in language classrooms (Allwright, 2005) and sustainable professional growth by developing a deeper understanding of individuals' own puzzles within their local contexts. As illustrated, the principles of EP guide this project as a whole; within this model, teachers are asked to form their own questions (puzzles) for their needs and to investigate their own teaching contexts through critical reflections and collaborative work. While engaging in these activities, teachers become aware, understand, shape, and reshape their beliefs and practices as well as the external and internal factors that support or hinder the enactment of their beliefs as Figure 1.3 suggests.

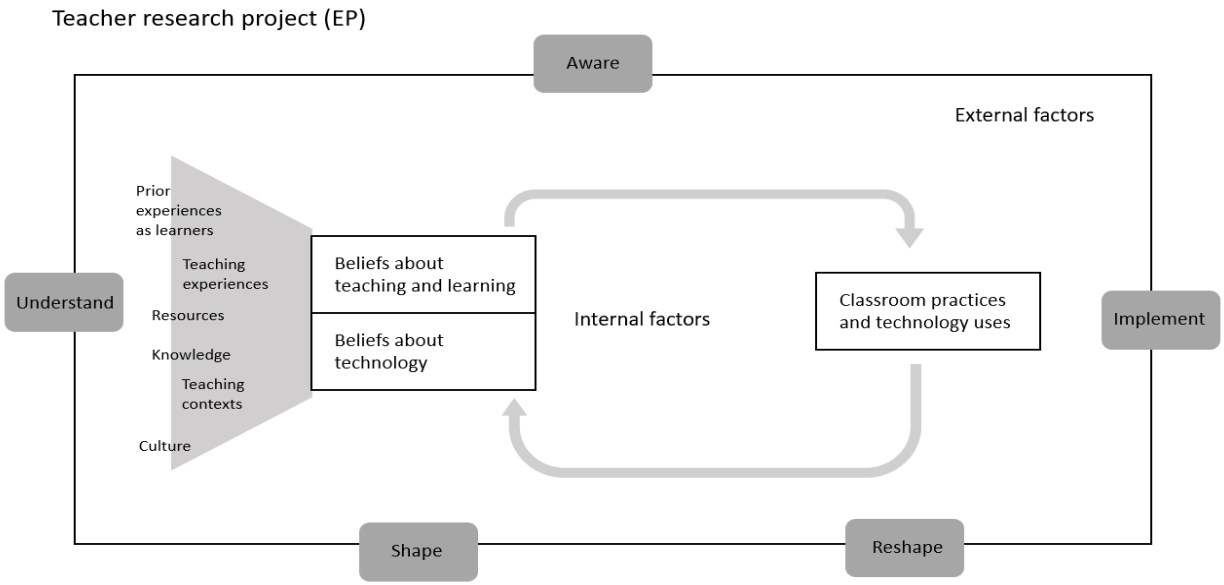


Figure 1.3. Meta-cognitive model of teacher research project

In summary, this study is based on the assumption that gaining a deep understanding of teachers' beliefs and practices will afford insights for successful technology integration. In order to develop a deeper understanding, this study encourages teachers to be researchers through a teacher research project guided by EP principles. While teachers are invited to investigate their own puzzles about technology integration in the classrooms by building a teacher community and participating in critical reflections, the study explores how language teachers become aware and develop their beliefs and practices throughout this approach.

Summary

In this first chapter, I set out the background of this study by introducing the growing importance of technology in language classrooms. I presented the main focus of my study which is examining teachers' beliefs and practices about technology integration through teacher research

project. I then outlined the research questions and provided my conceptual framework of this study by integrating teacher beliefs and teacher research project. In the next chapter, I review the relevant literature on teacher beliefs and practices, teacher beliefs and technology integration, philosophy of technology and teacher communities.

CHAPTER 2. LITERATURE REVIEW

Chapter Overview

As outlined in the first chapter, this study addresses how Korean language teachers shape and reshape their beliefs about technology in language classrooms and assesses their actual use of technology while participating in a teacher research project. The study focuses on developing individual teachers' deeper understanding of their beliefs about language teaching and the role of technology in today's classrooms through the use of exploratory practice (EP).

In this chapter, I describe the theoretical background of the study and provide a review of the literature on four main areas: teacher's beliefs and actions, the philosophy of technology, teachers' beliefs about technology in language classrooms, and the teacher community. The first section on teachers' beliefs conceptualizes teachers' knowledge and beliefs and discusses how their beliefs and practices interact. The next section on technology reviews the philosophical considerations of technology, serving as a framework for investigating teachers' conceptions of technology in today's language classrooms. I also review the history of computer technology in language education in order to specifically depict the changing role it has played in foreign language classrooms, tracing how technologies have been used over the past decades. Then, I combine teacher beliefs and technology use in language education to further discuss the factors influencing the integration of new approaches into classroom practices. Finally, I draw upon the theories of a community of practice and teacher professional community to uncover the teacher community the participants naturally constructed during their teacher research process. I also touch

upon how this teacher community work sheds light on teachers' personal and professional development.

Teachers' Beliefs and Practices

Teachers' Knowledge and Beliefs: A History of Research

Teachers' thinking processes and knowledge have been the central focus of research in the field of education (Shulman, 1986) in past decades. Shulman (1986) called for a "more coherent theoretical framework" (p. 6) for understanding teachers' knowledge and distinguishes their knowledge of the subject into three categories: subject matter knowledge, pedagogical content knowledge, and curricular knowledge. He defines subject matter knowledge as teachers' understanding of the content being taught, pedagogical content knowledge as that needed to teach the subject, and curricular knowledge as understanding the curriculum. Following Shulman (1986), a growing body of research has discussed teachers' knowledge (Connelly, Clandinin, & He, 1997; Munby, Russell, & Martin, 2001) and has expanded the concept of teacher knowledge. Teacher knowledge is not limited to content but also includes the teachers who teach the content. Connelly, Clandinin, and He (1997) especially highlight the teachers and their experiences as components of teacher knowledge. Introducing the concept of teachers' "personal practical knowledge," they maintain that teachers create knowledge from their past experiences, current practices, and future plans.

Teachers' personal knowledge is often discussed together with their beliefs; the definition of beliefs is discussed as much as that of knowledge and much scholarly work has been done to conceptualize beliefs in the field of education (Abelson, 1979; Dewey, 1933; Gill & Fives, 2015;

Green, 1971; Nespor, 1987; Pajares, 1992; Rokeach, 1968). In particular, teacher beliefs have been regarded as among the most valuable constructs for teacher education as they are the best indicators of teaching practices (Nespor, 1987; Pajares, 1992). Green's (1971) is one of the earlier studies that focus on the individual's belief systems. From the philosophical viewpoint, he states that a belief is "a proposition that is accepted as true by the individual holding the belief" (p. 104). Of the extensive literature devoted to defining teachers' beliefs, Pajares (1992) especially acknowledge the complex nature of defining beliefs. He thoroughly reviews earlier studies (e.g. Abelson, 1979; Dewey, 1933; Rokeach, 1968) that touch upon the notion of beliefs and elicits the features commonly used to describe beliefs. He notes that beliefs are "based on evaluation and judgment" (p. 313). In addition, he points out that the nature of beliefs is that they "cannot be directly observed or measured but must be inferred from what people say, intend, and do" (p. 314) and suggests that researchers must keep this in mind when conducting research on teacher beliefs.

In specifying the features of beliefs, a majority of the studies address knowledge as a comparative force. While some scholars assert there is no need to distinguish the two (Kagan, 1992; Munby, Russell, & Martin, 2001; Richardson, 1996), others have reached a consensus that the condition of truth clearly distinguishes belief from knowledge. Green (1971), for example, reiterates that knowledge requires a truth condition, or a warrant accepted as true by a community, whereas beliefs are personally held to be true by individuals but do not necessarily have a truth condition. Drawing from Abelson (1979) and Nespor (1987), Pajares (1992) identifies that the affective and evaluative aspects of beliefs that refer to personal preferences and subjective evaluations of individuals make beliefs different from knowledge. Pajares (1992) adds that beliefs are typically not subjected to critical examination, while knowledge systems are based on objective facts and thus are usually open to verification.

Despite that Nespor (1987) and Pajares (1992) provide sound features of beliefs and knowledge to distinguish them, scholars like Kagan (1992) and Richardson (1996) underline the similarity between the two. They regard belief as a part of personal knowledge. Kagan (1992) highlights the subjectivity of teachers' knowledge, a component that makes knowledge very much like belief. He deems teacher belief as a "particularly provocative form of personal knowledge" (p. 65) and claims that teachers' professional knowledge is more accurately explained when regarded as teacher beliefs. Richardson (1996) also notes that there is considerable similarity between knowledge and beliefs when viewed from the point of "personal practical knowledge," which is said to be derived largely from personal experiences. In a similar vein, Lundberg and Levin (2003) present a somewhat compromising view that regards belief as one's personal knowledge of truth, but at the same time places weight on its affective and evaluative nature. On the other hand, Lewis (1990) presents an almost opposite relationship between the two, stating that the origin of all knowledge is rooted in belief.

Because of the complex nature of teachers' thoughts, Kagan (1992) points out that the term "teacher beliefs" is not used consistently in the literature. Teachers' principles of practice, personal epistemologies, perspectives, perceptions, attitudes, and values are other terms frequently mentioned in studies regarding teachers' thinking processes. It is not my purpose to make a clear-cut choice in defining what refers to what in teachers' thinking; rather, I conclude that knowledge and beliefs are highly interconnected and intertwined concepts. For purposes of this project, I see beliefs as a more personal entity formulated by one's own experience. In this sense, it is convincing that beliefs are more influential than knowledge in determining how individuals organize and define tasks and problems, and are stronger predictors of behavior (Pajares, 1992; Williams & Burden, 1997). In terms of teacher beliefs, then, it is plausible to assume that they would be a solid

predictor to explain and foresee teachers' actions in the classroom. To investigate why a certain situation happened or may happen, teacher beliefs are a key starting point. Their beliefs about learning and teaching influence their decisions about class and their actual practices in class. A wealth of literature underpins this idea, Nespor (1987), a typical example, states:

> If we are interested in *why* teachers organize and run classrooms as they do, we must pay much more attention to the goals they pursue (which may be multiple, conflicting, and not at all related to optimizing student learning) and to their subjective interpretations of classroom processes.
>
> (p. 325)

As many scholars have stated, teacher planning, decision-making, and practices are profoundly affected by the teachers' beliefs (Borg, 2003; Clark & Peterson, 1986; Kagan, 1992; Li, 2013; Nespor, 1987; Pajares, 1992), so beliefs should be taken into account when investigating classroom behaviors and practices (Tondeur et al., 2017).

Beliefs and Their Influence on Practice

"*Teacher behavior is substantially influenced and even determined by teachers' thought processes*."

(Clark & Peterson, 1986, p. 255)

As discussed above, teachers' knowledge and beliefs are essential to understanding classroom practices. However, the relationship between the two is known to be a complex one (Levin & Wadmany, 2009; Milton, 2019), generating discussions on whether beliefs influence actions or actions influence beliefs (Buehl & Beck, 2015; Richardson & Placier, 2001) and how

they correspond to each other (Tülüce, 2019). Before the 1970s, the dominant research paradigm was the process-product approach, which explains student achievement with the behaviors of teachers and students. It suggests a unidirectional relationship among the three: teachers' classroom behavior affects students' classroom actions and that finally lead to student achievement (Doyle, 1977). In contrast, Clark and Peterson (1986) suggest a reciprocal relationship between teacher thought and action. They present a model consisting of two domains: teachers' thought processes and teachers' actions. Teachers' thought processes include planning, interactive thoughts and decisions, theories, and the beliefs teachers hold. These thought processes are typically unobservable and unmeasurable because they occur inside teachers' heads. In contrast to thought processes, the actions domain, composed of teachers' and students' behavior and student achievement, is readily observable. In their view, these two domains constantly interact with each other in that "teachers' actions are in a large part caused by teachers' thought processes, which then in turn affect teachers' actions" (p. 258). More studies have echoed this idea that teachers' thought processes—mainly beliefs—and practices are in reciprocal and interactive relationships (Buehl & Beck, 2015; Li, 2013). Acknowledging that teachers' thought processes and actions interplay, from this point, I would like to focus primarily on beliefs, a main component of teachers' thought processes, to inform the discussions on their use of technology in the classroom.

Given that "beliefs and classroom practices are multivariate and interrelated" (Levin & Wadmany, 2006, p. 157), studies geared toward how teacher beliefs are presented in the classroom and have revealed various perspectives on the relationship between beliefs and practices. Some studies present the consistency between them; for example, Johnson (1992) found that teachers with clearly defined beliefs provide consistent literacy instruction. Others report limited consistency (Farrell & Lim, 2005; Liu, 2011; Milton, 2019) or inconsistency (Garling, 2016; Lee,

Baik, & Charlesworth, 2006). Thus, Tuluce (2019) argues that it is the "degree of congruence and incongruence between beliefs and practices" (p. 793) that is important, not the mere fact that they are congruent or not. She adds that examining this relationship is significant as it can give insights into the "internal and external factors that support or hinder teachers' enactment of beliefs" (p. 793).

Summarizing the previous discussions on the relationship between beliefs and practices, Buehl and Beck (2012) illustrate their relationship along with supports and hindrances to the enactment of beliefs, both internally and externally (Fig. 2.1).

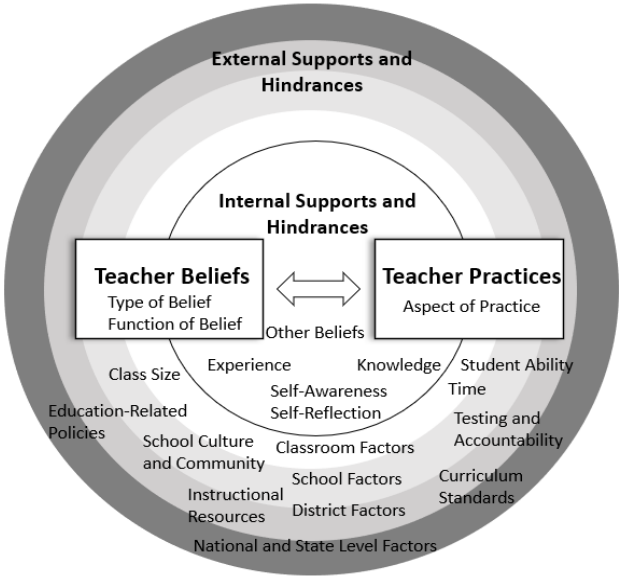


Figure 2.1. Relationship between teachers' beliefs and practices in a system of internal and external supports and hindrances (p. 74)

Many studies indicate that inconsistencies between beliefs and practices emerge frequently (Chen, 2008; Garling, 2016; Pajares, 1992) for various reasons. First, teachers may not be aware of their own beliefs or they do not know how to express them in words (Farrell & Guz, 2019). For example, a teacher can state that they hold constructivist beliefs in teaching and learning but may

in fact demonstrate traditional ways of teaching in the actual classroom; a teacher expresses that they think using technology is beneficial but not use it in their class. In addition, as Green (1971) notes, individuals can hold beliefs that are mutually incompatible. These competing beliefs may lead to alternation in practice (Tondeur et al., 2017). Teachers may be hesitant to declare them publicly (Kagan, 1992) because they feel they are inappropriate, or disguise them as more popular ones. External factors, such as school settings and curricula also influence the transparency of one's beliefs (Farrell & Lim, 2005). In this sense, Pajares (1992) is right in calling beliefs a "messy construct" that require researchers to try to get inside teachers' heads (Feiman-Nemser & Floden, 1986; Kagan, 1992) to describe how beliefs work. Thus, when investigating teachers and their beliefs in relation to practices, it is necessary to "infer from what they say, intend, and do" (p. 314), as Pajares (1992) suggests.

Researching beliefs is recognized as a challenging task due to their complexity and the fact that they are hard to observe and measure (Pajares, 1992). Accordingly, qualitative research methods are preferred in this field and vast literature on teacher beliefs has underscored the need for various sources of data, such as self-reports, interviews, classroom observations, lesson plans, and reflections (Palak & Walls, 2009; Tondeur et al., 2017). Tondeur and colleagues (2017) note that qualitative approaches provide insights into how and why teachers' beliefs and practices are related. Quantitative measures are effective for collecting and analyzing a large set of data from surveys and questionnaires; however, in researching beliefs, their results are often interpreted as weak because the data are collected at one time and include self-reported data. Relying solely on teachers' self-reported data is known to be problematic, as stated beliefs do not always fully explain one's actions (Buehl & Beck, 2015; Garling, 2016). To examine why and how beliefs and practices are interrelated, more studies adopt mixed methods (e.g. Ertmer et al., 2012; Kim et al.,

2013; Palak & Walls, 2009) or a qualitative approach (e.g. Chen, 2008; Farrell & Guz, 2019; Tuluce, 2019) that utilizes multiple sources of data.

Belief Changes

Another important aspect of beliefs in relation to practice is that they are remarkably difficult to change (Block & Hazelip, 1995; Kagan, 1992; Pajares, 1992; Richardson, 1996, 2003). Block and Hazelip (1995) explicitly note that teacher beliefs are highly resistant to change and hard to modify once established. Kagan (1992) also mentions that teachers' beliefs appear to be relatively stable and resistant to change. In the same vein, Pajares (1992) underscores the static characteristic of beliefs in his synthesis of findings on beliefs. First, the period in which a belief is formed and the duration of the belief embedded in an individual's system affect the possibility of belief change. In other words, beliefs one has held for a longer time are more difficult to change, as they are deeply imprinted in one's belief structure, whereas newer beliefs are still malleable. Similarly, once established, beliefs rarely change, even if they are incorrect. Other scholars have affirmed this characteristic of beliefs, pointing out that teachers are reluctant to change by persuasion or by reading and applying research findings, even when presented with reasons and factual evidence (Abelson, 1979; Kagan, 1992; Nespor, 1987; Rokeach, 1968; Williams & Burden, 1997). As seen, these summaries of beliefs aptly encapsulate the difficulty of changing one's beliefs.

Nonetheless, belief change is not impossible and studies point to the efficacy of teacher education programs. Richardson and Kile (1999) show changes in teacher candidates' teacher beliefs, from traditional to constructivist, after a one-semester teacher education course. Peterman

(1991) investigates how experienced teachers' beliefs about teaching and learning changed during a professional development program. She embarks on the discussion by presenting Guskey's (1986) model, which suggests a linear relationship from teachers participating in professional development programs, making changes in their practices, observing positive effects on students, and ultimately changing their beliefs. However, after following one science teacher as her case subject, Peterman (1991) found that belief changes are not the result of a cause-and-effect relationship, as Guskey (1986) suggests, but rather that they interact and respond throughout the whole learning process. Accordingly, she emphasizes the importance of the design of teacher learning programs, as it can successfully aid or inhibit teachers' sensemaking and belief changes. Tatto and Coupland (2003) provide a more hopeful opinion of belief change within teacher education programs. From their vast literature review, they conclude that beliefs can be expected to change if there are appropriate educational interventions.

In short, while teachers' beliefs are resistant to change, they do have the potential to change with suitable intervention and support from teacher education. This is especially important because when teachers learn new skills and techniques, the extent of their reliance on prior beliefs will largely determine successful implementation. Without doubt, if a new strategy is consistent with teachers' beliefs, it will be readily implemented, whereas in the opposite circumstance, it may not. Thus, teacher education and professional development programs should carefully consider how each teacher responds to new concepts and offer them appropriate programs.

Concluding Remarks on Teachers' Beliefs and Practices

In summary, previous studies indicate that teachers' thought processes—their knowledge and beliefs—are closely interconnected with their classroom practices, and strongly held beliefs are the most influential factor determining instructional practice. Thus, beliefs must be taken into consideration when investigating teachers' classroom behavior and actions. Given that beliefs serve as a filter for teachers' instructional and curricular decisions and actions (Levin & Wadmany, 2006; Nespor, 1987; Prawat, 1992), it is even more crucial to examine teachers' beliefs when a new strategy or instructional practice is to be implemented. Even though teacher beliefs are complex and challenging to capture, it is not exaggerating to say that researching beliefs is worthwhile in order to examine how they promote or impede change in the educational context. In this respect, the next section will discuss the emergence of technology in education and associate it with teacher beliefs.

Philosophy of Technology

Defining Technology

While technology has become an integral part of almost every aspect of our lives, scholars have criticized that the definition of the term "technology" has not found a consensus (Feenberg, 2005; Kline, 2003; Spector, 2020; van Wyk, 2004), and therefore requires more discussion and elaboration (Feenberg, 2005; van Wyk, 2004). That being said, we see the term "technology" is more prevalent than ever before, but it seems that people have different images in mind when they use the word. Cogan (2004) points out that people are using "technology" as a buzz word, inferring that the term is used "more to impress than convey meaning" (p. 92). Among the varied uses of

the word, people generally tend to think technology as machines or artifacts invented by humans (Amin, 2019; Ely, 1999; Wang & Winstead, 2016), which is a rather narrow definition of the concept. Nevertheless, to fully understand the various aspects of technology and its impacts on our society, it is essential to unpack the word and review the discourse around it.

The origin of technology is derived from the ancient Greek *technê,* which denotes craft or art. This is a concept opposite to *epistêmê,* the knowledge (Richard, 2014). Plato distinguishes the two and makes hierarchical relations; craft knowledge deals with practical affairs while knowledge deals with theoretical, genuinely rational knowledge, which makes it superior (Scharff & Dusek, 2003). The development of a philosophy of technology became more serious in the 20th century, with Heidegger's (1977) assertion that it is essential to question what technology is and uncover its essence. More recently, Feenberg (2002, 2010) proposes a critical theory of technology which argues that technology is a "two-sided phenomenon (2005; p. 49)," in which human beings play the roles of both operator and object, and technical actions become an exercise of power. He adds:

> ..technology is not a thing in the ordinary sense of the term, but an ambivalent process of development suspended between different possibilities. The ambivalence of technology is distinguished from neutrality by the role it attributes to social values in the design, and not merely the use, of technical systems.
>
> (2002; p. 15)

As the discourse on technology developed, Ihde (1993) and Kline (2003) focus more on unpacking what the word actually represents to construct a definition of the term. Ihde (1993) notes that the definition of technology should include material, methods, and humans. He highlights that the relationships between technologies and the humans who make and use them are key elements

when defining technology. Kline (2003) categorizes its usage into four components: hardware, a sociotechnical system of manufacture, knowledge, and a sociotechnical system of use. Hardware means everything non-natural, made by humans. The sociotechnical system of manufacture includes all the elements required to create an artifact and make it work. Knowledge, which can also be technique, know-how, or methodology, refers to the skills and processes to accomplish tasks. Finally, the sociotechnical system of use concerns understanding the implications of technology, namely, how people embody things to "extend human capacities" (p. 211).

Attempts to define technology date back to ancient Greece and continue to the present. While there have been several approaches to describing what technology is and how to view it in contemporary society, I conceptualize technology largely drawing from Ihde (1993), seeing it as an overarching concept that includes artifacts, humans, and methods. Artifacts consist of machines, devices, or programs that do not exist in the natural world but were made by humans. We make these artifacts and utilize them in our lives. The decision to use technology requires awareness of its role and understanding its benefits as well as its disadvantages through constant cognitive interaction and negotiation based on experimentation, experience, and evaluation. Methods are the procedures that must be followed to use the artifacts purposefully to accomplish tasks and goals.

From the language education perspective, investigating technology means determining what devices and programs may be useful, what teachers and learners believe about them, and how to incorporate them into the learning process to facilitate learning and accomplish learning goals. Thus, the goal of researching technologies for language classrooms is not limited to simply trying out new and innovative machines but rather focusing on gaining a deeper understanding of the relationship between the artifacts and the members of the learning community. As a starting point,

the following section will discuss the role of technology in language classrooms and specifically how it has been discussed in teaching and learning theories in the literature.

Technology in Language Classrooms

Inarguably, the advent of technology has profoundly influenced our classroom environment and created new roles for teachers, learners, and learning spaces (Bax, 2003; Fallatah, 2019; Keser & Semerci, 2019). New technology has especially extended the notion of teaching and learning materials from traditional notebooks and dictionaries to online software and mobile applications. In language education, technology integration has received a great deal of attention since it was seen to enhance students' language learning experiences through interactions with a target culture (Li & Ni, 2011) beyond the classroom. Clearly, language learning is a complex social and cultural phenomenon (Warschauer, 2000), and involving new technologies can connect the classroom to the world.

Evaluating the technologies used in language classrooms has been discussed from multiple perspectives. As technology in the language classroom generally refers to computers and digital forms (Amin, 2019; Heathers, 1970; Isman, 2012; Wang & Winstead, 2016), research centered around technology in language classrooms developed under the name of computer-assisted language learning (CALL) (Chapelle, 2016). While this term seems rather narrow to capture the new phenomena that cutting-edge technologies generate (Wang & Winstead, 2016), scores of studies have discussed CALL as their central focus, and a variety of second language acquisition (SLA) theories have been examined to inform pedagogical practices and innovations as well as research on the effectiveness and outcomes of technology-mediated practices (Thorne & Smith, 2011). In line with these trends, current studies extend the range of CALL and suggest a term with

a broader scope: technology-assisted language learning (TALL) (Wang & Winstead, 2016). Here, I first trace the historical evolution of technology use from CALL to TALL, given that CALL/TALL approaches have evolved in line with SLA and pedagogical theories and methods, and will ultimately discuss the relationship between technology and the teachers and learners in language classrooms.

A Historical View

The discourse on CALL (or TALL) grew over time in line with changing trends in the methodology for language teaching and advances in technology. Technological advances, from mainframe computers to current artificial intelligence and virtual spaces, have had a major impact on the evolution of CALL/TALL (Keser & Semerci, 2019; Wang & Winstead, 2016).

Warschauer and Healey's (1998) representative work identify three phases of CALL, representing three pedagogical and methodological approaches as well as the level of technology integration. Their classifications are summarized as follows:

- Behavioristic CALL (conceived in the 1950s, implemented in the 1960s-1970s):
  The computer was viewed as a "mechanical tutor" (p. 57) that provides repetitive language drill and practice using mainframe computers.
- Communicative CALL (late 1970s and early 1980s):
  The computer continued providing practice materials but in different formats that focused more on using forms. In this period, students' discovery in learning was stressed, rather than one-way delivery of knowledge.
- Integrative CALL (prominent by the mid-1990s):

Sought to integrate both skills and technology. Internet and multimedia were introduced.

As seen, Warschauer and Healey's (1998) phases mirror the evolution of learning theories moving from behaviorism and cognitivism to socioculturalism.

In this section, I explore the evolution of CALL/TALL in chronological order. As criticized, timelines do not always match the characteristics of CALL/TALL development (Warschauer & Healey, 1998; Bax, 2003). Some characteristics have been passed on from past to present; others emerged, disappeared, and were revived. Thus, rather than naming and characterizing the features of each stage or categorization, I mainly focus on extending previous research into the present, capturing how language teachers' use of technology in the classroom has changed over recent decades, and identifying the uses of technology that have been considered pedagogically appropriate. This tracing is meaningful in that it can provide insights on the pedagogically appropriate use of technology today, since, as Davis, Otto, and Ruschoff (2014) put it, "Each generation of CALL has resulted in valuable lessons learned, which eventually filtered down to later adopters" (p. 30).

The 1960s and 1970s. CALL originated in the 1960s (Butler-Pascoe, 2011), while the theoretical roots of this period date back to the 1920s when behaviorism was a mainstream idea in education. Warschauer (2000) names this period the "structuralist and behaviorist phase," as behaviorism and structuralism guided language teaching and learning in this period. According to Stern (1983), this period was "pedagogically audio-lingualism, psychologically behaviorism, [and] linguistically structuralism" (p. 169).

The structuralist point-of-view, also known as the primitive or grammar-based approach, highly valued programmed instruction and mastery learning. Language was viewed as a concrete and monolithic system to be memorized and mastered (van Compernolle & Williams, 2009). The prevailing teaching methods were audio-lingual, emphasizing automatic repetition and structural drills. Learning programs were strictly linear (Beatty, 2003), providing students with each step to master. Learners were required to follow the same steps in the same fashion with rewards for correct answers in the form of points and advancement. In this methodology, language teachers acted as the source of input, and students were expected to be reinforced through practice and drill (Scott, 1998). The role of technology was to be the source of instruction, providing learners with comprehensible input, repetitive practice, and limited instant feedback (Paramskas, 1999). This practice was similar to that of teachers or textbooks, so some even feared that computers would replace teachers and "dehumanize instruction in the interest of efficiency" (Heathers, 1970, p. 2).

The main device used in this period was the mainframe computer, so students were often placed in computer labs to do tasks. While there were technical issues, such as difficulties typing foreign characters (Davis, Otto, & Ruschoff, 2014), computer technology in this period was praised due to the computers' capacity to provide unlimited repetition as well as automated and immediate feedback (van Compernolle & Williams, 2009), which teachers found hard to do. Scholars have reported that computer-based drill activities have a significant advantage in students' test scores when compared to traditional paper-based learning (Adams, Morrison, & Reddy, 1968, cited in Butler-Pascoe, 2011). However, the use of technology based on behaviorist design was criticized by those who argued that this utilization was not an advancement, compared to paper-based textbooks; rather, it was more like copying paper-based book exercises, multiple choice and

fill-in-the-blank questions onto a computer screen, thus, not fully utilizing the special attributes of the computer (Davis, Otto, & Ruschoff, 2014).

The 1980s and 1990s. In the 1980s, affordable personal computers were introduced. The use of computers in the learning environment, as well as in our everyday lives, became more commonplace. Microcomputers in this period had limited graphic options compared to today but were able to provide students with abundant text-based practice (Davis, Otto, & Ruschoff, 2014). Despite this advance in technology and criticism of drill and practice, the way computers were used in practices remained quite the same as the past. The majority of learning activities were repetition on the computer, focusing on grammar and vocabulary.

Possibilities for change emerged alongside growing interest in cognitive theories in response to the trend of rejecting behaviorism. The cognitive approach emphasizes the individual psycholinguistic processes underlying language acquisition (van Compernolle & Williams, 2009). Based on the cognitive approach, in the language teaching field, communicative language teaching was in the limelight, which emphasizes that language teaching should aim at learners' appropriate usage of the language rather than mastering rules and vocabulary (Richards & Rodgers, 2001; Savignon, 2007). Students were urged to become immersed in the target language (Davis, Otto, & Ruschoff, 2014; Underwood, 1984; Warschauer & Healey, 1998) and to develop communicative competence using authentic materials and real-life tasks. In this context, computer technology moved toward providing more communicative exercises that allowed students to "generate original utterances rather than just manipulate prefabricated language" (Warschauer & Healey, 1998, p. 57).

This period became a changeover period in the use of technology. Teachers aimed for teaching language in a more communicative way, but actual computer activities had not changed

dramatically; a plethora of drills and practices were still being produced and consumed. The computer remained a tool that merely provide learners with tasks.

The 1990s and 2000s. In the 1990s, the use of technology became more universal, and myriad multimedia tools were introduced. Most importantly, the world-wide-web changed everything dramatically. In language teaching and learning, technology implementation was expanding its territory as teachers and content designers gradually moved from behaviorism to cognitivism and to the more socio-cognitive and constructivist perspectives of communicative language teaching. From this perspective, language is seen as a tool to communicate with others and is acquired through social interaction. The main goal of this approach does not lie in the classroom but extends to the greater community. Hence, it gives more weight to authentic, genuine language use. Authentic materials in language learning refer to language samples created by members of the language group for their members, not created for the purpose of learning and teaching the language (Glisan, 2015; Widdowson, 1979) and authentic tasks help students work within real-life contexts in the target language (Gilmore, 2007).

In this context, technologies should not merely provide students with pure exercises but broaden their opportunities to think and engage with the wider community in the target language. Computers connected to the Internet can break down the four walls of the classroom and constantly situate learners in the real world.

The 2000s to the Present. As more and more cutting-edge technologies are being developed and radically changing all aspects of our lives, technologies and devices became so ubiquitous that we now see more students writing on their iPads than on papers in the classroom. Smartphones are at the forefront affording greater mobility and wider networking options for learners. They have become so indispensable in our everyday lives that they are even considered

a “digital appendage” (Godwin-Jones, 2017, p. 4). In addition, search engines like Google, crowdsourcing pages like Wikis and blogs, videoconferencing apps such as Skype, video streaming services like YouTube, social media such as Facebook and Instagram, robots, virtual reality (VR), and artificial intelligence (AI) have emerged as new potential teaching and learning resources.

These new technologies foster collaboration, participatory culture (Davis, Otto, & Ruschoff, 2014; Kessler, 2017) and individualized learning experiences (Wang & Winstead, 2016). Collaboration and participatory culture are the most highlighted features of today’s technology. Social media especially encourage learners to actively create, collaborate, edit, and share materials (Godwin-Jones, 2017; Lin, Warschauer, & Blake, 2016). For example, Korean language learners communicate with their K-pop idols through live video streams, talk to other fans and share pictures, videos, and experiences. Mashups are another example of building participatory culture. Kessler (2017) describes them as “combinations of media forms (e.g. memes)” that allow learners to reconstruct ideas and “express their creativity” (p. 210). Individualized learning experiences are readily accessible by providing access to a wide array of content that can be chosen based on individual students’ interests and language competence.

Emerging tools and devices are infinitely varied and afford infinite potential to assist language learning. Thus, rethinking teacher roles becomes more important as teachers should be aware of the value of each technology and carefully design learning plans to use it appropriately in the real classroom.

Reviewing the Past and Looking Forward

With these innovative tools and their educational potential, people are more excited about discussing the potential of technology in the classroom, dreaming that it can be fully incorporated into learning spaces to create authentic and content-based learning environments. Nonetheless, despite the countless tools available and the fact that many of them have already been adopted in classrooms, it is also noted that classroom practice still remains "fundamentally unchanged" (Fallatah, 2019, p. 15). Godwin-Jones (2017) particularly points out that existing mobile programs for language learning have neglected to take advantage of the affordances of mobile devices and merely provide primarily drill-type vocabulary learning. Fallatah (2019) explains that this is because, for the most part, teachers who create and use technology just transfer the content to new devices, without considering fundamentally changing how the content is taught. Indeed, technology has been a supplementary tool for increasing efficiency. However, it is time to envision how technology can develop novel ways of learning, providing "high-level tasks through thinking, exploring, planning, designing, creating, producing, and reflecting" (Korucu-kis & Ozman, 2019, p. 9). In this regard, as Wang and Winstead (2016) stress, rethinking the role of technology is critical to its the successful implementation.

While it is true that the rapid development of technology has greatly expanded the scope of education and shifted its forms in accordance with the directions of pedagogical paradigms, the role of technology in the classroom has not changed dramatically. The historical overview of technology-assisted language learning helps us consider and shape what the pedagogically appropriate use of technology should be in current language classrooms. As Bax (2003) foresaw, technologies have been normalized and fully integrated in both the language learning environment and our lives, constantly opening up possibilities for learners and teachers to escape the typical

boundaries of isolated classrooms (Davis, Otto, & Ruschoff, 2014; Kessler, 2017). In this light, it is our task to examine the discrepancy between expectations and reality and reconsider the role of technology and its proper use in practice.

The next section associates technology integration in language education with teachers' beliefs.

Teachers' Beliefs and Potential Use of Technology in Language Classrooms

Rethinking Teacher Roles

"..in a classroom, the teacher perceives and defines a teaching situation, makes judgments and decisions, and then takes related actions.''

(Chen, 2008, p. 66)

Teachers are unquestionably the key decision-makers in the classroom (Gilakjani & Sabouri, 2017; Liu & Kleinsasser, 2015; Palak & Walls, 2009; Tondeur et al., 2017), and the appropriate use of technology is in their hands. It is widely recognized that advances in technology have generated a shift in teachers' roles, and teachers are vital in successful technology integration (ACTFL, 2017; Hubbard, 2008; Liu & Kleinsasser, 2015). Teachers decide when and how to use technology in their teaching practices and to generate learning outcomes (Arnold & Ducate, 2015).

Nevertheless, in the earlier period of technology adoption when computers provided countless drill-and-practice activities, there were trepidations voiced that computers would replace teachers, threatening their roles as teachers. The role the computer played at that time seemed to overlap frequently with that of traditional teachers, and sometimes computers were deemed better tutors in that they were faster and more accurate. Metaphors such as "computers as tutors" (Crook,

1994) surfaced, as many thought technology could do anything. It sounds quite absurd now, but the fear of being replaced was very real for a time. Postman (1992) criticized this kind of panic, arguing that technology is not a panacea for solving pedagogical problems and that the idea could limit teachers' creative use of technology in classrooms. It is the teachers who design and utilize technology for students' learning, not depending on what technology itself can bring.

Moving into the digital age does not mean choosing one method over the other (Postman, 1992). Using novel technologies does not mean removing non-digital methods of learning but rather enabling their co-existence (Wang & Winstead, 2016). Fortunately, such "computers replace teachers" predictions did not last long, and teachers' roles were neither threatened nor diminished by the integration of technology. Instead, teachers have become more essential because it is now their job to choose the appropriate tools, design tasks, and implement them into the curriculum in a manner that maximizes their effects (ACTFL, 2017; Liu & Kleinsasser, 2015). Teachers' new role will be as designers of tasks, responsible for creating opportunities for learners to engage in meaningful activities (Scott, 1998; Wildner-Bassett, 2008). That is, the expected role of teachers in the TALL environment is not that of the traditional teacher who focused on delivering knowledge and giving grammar instructions. Instead, their role should evolve into that of a manager who manages the general plans and designs for the use of TALL in practice. Teachers' fluent knowledge about the technology and their learners' diverse learning modes will become more important, as Wang (2015) notes. In this revolutionary process, rethinking technologies calls on the teachers—how they perceive technologies and how they use these innovative tools—to provide expert guidance, facilitation, and mentoring (Noblitt, 1995). The next section reviews studies regarding teachers' beliefs and technology.

Studies on Teachers' Beliefs and Technology Integration

"Technologies should not support learning by attempting to instruct the learners, but rather should be used as knowledge construction tools that students learn with, not from."

(Jonassen, Carr, & Yueh, 1998, p. 24)

While many tech-related factors (e.g. easy accessibility) contribute to successful technology integration, teachers are the central factor. As Ware (2008) states, teachers' use of technology is largely dependent on the "teachers' personal interest and enthusiasm for new technologies" (p. 48). We frequently think of teachers as innovative, actively changing their learning plans and incorporating brand-new teaching strategies, but this is not often the case. Adopting new strategies rarely happens in the classroom, as teachers have their fixed routines based on their existing pedagogical beliefs. Thus, implementing new skills becomes easier when they align with teachers' existing beliefs. That is, teachers are more likely to accept and apply new teaching strategies if the assumptions underlying the practices are in accordance with their personal epistemological beliefs (Veen, 1993; Yocum, 1996). By contrast, adoption becomes extremely difficult when new practices and teacher beliefs do not coincide (Gratton, 1998).

Teachers tend to retain their teaching practices, and thus, some instructional practices become stronger and more habitual over time. Teachers become conservatives (Gratton, 1998), and practices get more resistant to change. Delaying changes largely derives from the fact that teachers' beliefs change very rarely, as described in the previous section. Therefore, this paper assumes that issues with the integration of technology in the classroom are better explained as they relate to teacher beliefs, given that teachers' educational beliefs markedly determine the way they use technology in the classroom.

Barriers to Technology Integration. Ertmer (1999) identifies the barriers to integration of technology in classrooms and concludes that teachers' beliefs are the significant factor to be considered for technology to be successfully adopted. She classifies multifarious obstacles impeding the use of technology into two categories: first- and second-order barriers. First-order barriers are the extrinsic and institutional factors that impede technology integration, such as limited access to computers and inadequate administrative support. Second- order barriers, on the other hand, are intrinsic and specific to individual teachers, including their educational beliefs, their beliefs about computers, and an unwillingness to change. While the first-order barriers are relatively easy to overcome with financial support and additional resources, second-order barriers are more difficult because they require belief modification. Scholars have made the point that efforts to promote technology integration have so far concentrated mainly on eliminating first-order barriers (Ertmer, 1999; Fisher, Wilmore, & Howell, 1994; Palak & Walls, 2009; Zhao & Frank, 2003) by purchasing more devices or providing training courses.

However, it has been observed that eliminating first-order barriers is not enough (Lam, 2000) and thus, scholars have turned their attention to investigating how teachers' pedagogical beliefs and readiness to use technology influence their integration of technology in the classroom (Er & Kim, 2017; Kopcha et al., 2020; Tondeur et al., 2017). Tondeur and colleagues (2017) note that teachers use technology in a way that aligns with their existing beliefs about good education. Hence, because teachers' prior, current, and ongoing beliefs heavily influence the use of technology to improve teaching and learning, their beliefs must be considered in researching technology integration. In line with this, in the last decade, a growing body of research has reported that beliefs are the key to successful technology integration (Chen, 2008; Ertmer, 1999; Liu, 2011) and examined the relationship between teachers' use of technology and beliefs (e.g. Ertmer &

Ottenbriet-Leftwich, 2010; Korucu-kis & Ozmen, 2019; Li, 2013) while it is pointed out the relationship is still unclear (Tondeur et al., 2017).

Below, I review previous studies in two categories: teachers' pedagogical beliefs and technology integration, and technology integration in foreign language classroom.

Teachers' Pedagogical Beliefs and Technology Integration. Every teacher holds beliefs on teaching and learning strategies, learners, curriculum, learning goals, and their own role as teachers that are closely interrelated (Li, 2013; Pajares, 1992). Teachers' pedagogical beliefs "refer specifically to the understandings, premises, or propositions *about teaching and learning*" (Tondeur et al., 2017, p. 557), and in language education and the educational technology field, these beliefs have ordinarily been discussed as teacher-centered and student-centered (or learner-centered) beliefs (Deng et al., 2014). Teacher-centered beliefs, often called traditional teaching, are based on behaviorism and emphasize the teacher's authority (Tondeur et al., 2017). Teachers provide direct instruction and transmit knowledge to learners (Deng et al., 2014; Kaymakamoğlu, 2018). In contrast, student-centered beliefs have their roots on constructivism and situate teachers as facilitators or another learner (Nunan, 1999). They underscore the process-oriented approach in which individual student needs and co-construction of knowledge are valued (Kaymakamoğlu, 2018).

As technology can be utilized with different approaches, studies have examined the relationship between pedagogical beliefs and the use of technology. Many have reported that teachers holding student-centered beliefs integrate technology in the classroom more willingly and actively (Bai & Ertmer, 2004; Tondeur et al., 2017). Bai and Ertmer (2004) found a clear correlation between instructors' pedagogical beliefs and their use of technology—specifically, their learner-centered beliefs significantly promoted frequent and constructivist ways of using

technology. Deng et al. (2014) investigated Chinese practicing teachers and found that those with constructivist beliefs were more likely to use technology in the classroom.

Nevertheless, a number of studies have found inconsistencies between teachers' stated beliefs and practices. For example, Liu (2011) reported that teachers with student-centered beliefs used technology merely to deliver lectures. Han, Byun, and Shin (2018) found that Korean teachers who professed constructivist beliefs were unable to use technology in a learner-centered way.

These studies indicate that even though teachers' pedagogical beliefs are strong predictors of their decisions regarding technology use, pedagogical beliefs—specifically this binary distinction—do not fully explain how and why teachers incorporate technology. Recent studies argue that teachers' beliefs about technology (Korucu-kis & Ozmen, 2019) and content-specific beliefs (Ding et al., 2019) are other factors to be considered and contend that researchers should take a multi-dimensional approach to unpack this complex relationship (Tondeur et al., 2017).

Technology Integration in Foreign Language Classrooms. Incorporating technology into foreign language classrooms has attracted considerable interest for quite a long time (Levy, 2009), as technology can provide ready access to authentic materials, increase communication opportunities, facilitate motivation and develop language skills (Korucu-kis & Ozmen, 2019). Thus, Ding et al. (2019) contend that language teachers' content-specific beliefs significantly contribute to their use of technology. They refer to Johnson's (1992) framework of language teachers' beliefs—skill-based, rule-based, and function-based. Skill-based is related to repetition and memorization (i.e., using computers to practice repeated conversation), rule-based focuses on grammatical rules and accuracy (i.e., using quiz programs to check accuracy), and function-based is associated with communicative competence (i.e., using videoconferencing programs to connect students to native speakers). Analyzing Taiwanese English teachers with this framework, they

argue that content-specific pedagogical beliefs provide a robust explanation of why teachers use technology in their language instruction.

Korucu-kis and Ozmen (2019) argue that beliefs about technology are another significant factor to be considered. They investigated how student teachers perceive technology and classified these beliefs into exherent and inherent value beliefs. Based on exherent value beliefs, teachers see technology as "a supplementary tool to increase the efficiency of instruction" (p. 9), and it is used for low-level tasks such as vocabulary quizzes. Inherent value beliefs promote the full integration of technology in the language learning space, providing high-level tasks that allow students to engage in exploration and creation. Korucu-kis and Ozmen maintain that teachers and teacher educators should recognize these value beliefs in order to successfully integrate technology.

Preparing Teachers: Teacher Education Programs and Professional Development Efforts. As the use of new technologies in education is an inescapable phenomenon, scholars have called for transformation in teacher education programs to better support tomorrow's teachers (Liu & Kleinsasser, 2015; Tondeur et al., 2016). However, language teacher education regarding technology is considered "an unstudied problem" by a number of scholars (Egbert, Paulus, & Nakamichi, 2002; Freeman, 1996). While American Council on the Teaching of Foreign Languages (ACTFL) and Teaching English to speakers of other languages (TESOL) statements present the standards of how we should use technology appropriately, they do not mention how teachers should learn to do so. Taimalu and Luik (2019) note that teachers today are fluent with technology, but they need to learn how to teach with technology, yet studies and teacher education programs have paid little attention to this matter. As a result, while available technologies proliferate, countless teachers are still reluctant to incorporate technology in language classrooms

(Lotherington & Jenson, 2011; Kimmons et al., 2015; Tour, 2015), and its use remains limited to delivering and presenting learning materials.

While many factors influence teachers' use of technology in the classroom, it is widely accepted that teachers' technology training experience largely serves to build the foundation for their use of computer technology by expanding their knowledge of available CALL/TALL technologies (Luke & Britten, 2007) and uncovering and shaping their beliefs toward such technologies (Kopcha et al., 2020).

While todays' teachers are mostly proficient in using technology in their personal lives, they still need to acquire familiarity with how to use technology to teach (Taimalu & Luik, 2019). In terms of knowledge enrichment, Mishra and Koehler (2006) introduce the term "technological pedagogical content knowledge (TPACK)" to describe the "dynamic relationships between content, pedagogy, and technology for teachers to develop" (Liu & Kleinsasser, 2015, p. 120), grounded in Shulman's (1986; 1987) pedagogical content knowledge. Acknowledging that teaching with technology is a complex matter, Mishra and Koehler (2006) explain that TPACK serves as "the basis of effective teaching with technology" and offers teacher programs opportunities to "move beyond oversimplified approaches that treat technology as an add-on" (p. 1045). While it is unreasonable to expect teachers to learn every aspect of the technologies at a technical level, it is critical that they learn how to teach students with appropriate technology to enhance learning.

Although TPACK has gained its acceptance in teacher education programs, Moersch (1995) criticizes that technology training programs merely help teachers improve their computer skills at the mechanical level but fail to persuade them to adopt technology to make learning meaningful, leaving the teachers struggling. Indeed, enhancing technical knowledge is insufficient; rather,

teachers need to be convinced that using technology benefits outcomes. Lam (2000) clearly reiterates this idea, indicating that the most significant thing determining whether teachers decide to include technology in their curriculum is being personally convinced of the benefits, rather than whether they are equipped with state-of-the art devices and training. In other words, what teacher education programs should focus on for successful technology integration is raising their awareness and understanding their beliefs and practices (Ding et al., 2019; Mills, Ketlhut, & Gong, 2019).

However, not all teachers are familiar with their beliefs about teaching, learning, and technology and do not recognize how they impact their teaching practices (Farrell, 2015). Kopcha et al. (2019) point out that teachers' lack of understanding how and why to integrate technology is at the core of the problem of ineffective use of technology in today's classrooms. As each teacher has developed their own level of cognition toward technology that influences their practices, teacher education programs should first provide individual teachers the opportunity to raise their awareness about their own beliefs about teaching, learning, and technology and examine their decision-making processes in order to fully understand what it means to use technology for language instruction.

Concluding Remarks on Teacher Beliefs and Technology Integration

The implications drawn from previous studies are as follows: First, as mentioned numerous times above, teacher beliefs play a major role in the successful integration of technology. While contextual factors also affect how technology is used in the classroom, teachers' beliefs about teaching and learning languages and the value of technology will ultimately determine how it is

leveraged. By examining these beliefs, researchers will be able to explain the actual use of technology in classrooms, identify inconsistencies between teachers' stated beliefs and practices and eventually find ways to promote meaningful technology integration.

Moreover, the significance of teacher education also emerged. Teacher education and professional development programs should provide teachers with opportunities to investigate and reflect on their own beliefs toward the use of technology considering that implementing new strategies is a demanding and challenging task for teachers. Incorporating novel technologies is even more painstaking given that most current teachers experienced traditional teaching methods with paper and pencils when they were students but are now required to teach in innovative ways using diverse technologies. As many scholars have pointed out, the greatest difficulty in changing to technology integration is the mindset of teachers and their deeply held beliefs about the nature of teaching, learning, and technology itself (Lundeberg et al., 2003; Sandholtz, Ringstaff, & Dwyer, 1997). Hence, understanding their pedagogical beliefs and their beliefs about technology should precede discussions on the successful implementation of technologies in language classrooms. Moreover, considering the fast-changing nature of technology and the diverse external factors of each school setting, delivering mere skills in a top-down approach is ineffective and insufficient (Liu, 2013). In this regard, I suggest further teacher research and research on teacher communities as a part of professional development to understand teachers more deeply. The next section will discuss the teacher community based on the theory of a community of practice.

Teacher Community

Teachers as Active Agents

According to Clandinin (1986), teachers' stories are useful and powerful in considering what teachers know and believe, and how such cognitions develop over time. Positioning teachers as active agents to tell their own stories and engaging them in research processes are thus important to untangle the multi-layered classroom phenomenon and discover better ways to support teachers' growth (Benson et al., 2018; Brandon, 2015; Richards & Farrell, 2005). As Bullough (1997) states, teacher education begins by "exploring the teaching itself" (p. 21).

Nevertheless, the process of educating and researching teachers has been completed mostly in traditional ways, including inviting them to join workshops led by professional development experts or researchers (Little, 2003; Mak & Pun, 2015; Slimani-Rolls & Kiely, 2019). While these workshops allow teachers to explore new skills and strategies, scholars have criticized that they tend to be unilateral knowledge-transfer lecture in which instructors are unable to actually discuss their authentic contexts (Curcio & Schroeder, 2017; Gay & Kirkland, 2010; Gibson & Brooks, 2013; Jimenez-Silva & Olson, 2012; Slagoski, 2019; Soomro, 2018). However, as Allwright and Bailey (1991) mention, "It is not enough to know that ideas do work; we need also to know why and how they work" (p. 197). Because what they learned in their professional development programs are mere knowledge and do not reflect their own teaching environments, teachers have a hard time applying those newly acquired skills to improve their teaching practices. These newly acquired skills and knowledge are likely to perish shortly, not contributing to teachers' professional growth. Thus, in order to support teachers' sustainable learning and to improve learning environments, many studies have given attention to teacher communities and teacher-led workshops (Garcia & Gomez, 2017), in which teachers collaborate locally.

Engaging in "ordinary, mundane interactions" (Little, 2003, p. 919), teachers become active learners who work together to critically reflect their practices, share their own inquiries, learn from each other and promote improvements in instruction (Bryk, Camburn, & Louis, 1999). By working through their inquiries directly related to teaching practices and exploring the "why" and "how" questions, teachers can learn about themselves as well as learners and understand better what is happening in the classroom. Such increased understanding will bring about individual and professional growth in teachers and strengthen the linkage between teachers and their elevated autonomy. Westheimer (2008) notes that teachers in learning communities "take an active, reflective, collaborative, learning-oriented, and growth-promoting approach toward the mysteries, problems and perplexities of teaching and learning" (p. 759, adapted from Mitchell & Sackney, 2000). Thus, acknowledging that a teacher community plays a pivotal role in teachers' professional development, the next section reviews the underlying theories and key aspects of the teacher community.

Building a Teacher Community

> ***"…*** *conditions for improving teaching and learning are strengthened when teachers collectively question ineffective teaching routines, examine new conceptions of teaching and learning, find generative means to acknowledge and respond to difference and conflict, and engage actively in supporting one another's professional growth."*
>
> (Little, 2003, p. 913)

As previous studies have proposed the concept of teacher community as a model for ongoing professional development (Grossman, Wineburg, & Woolworth, 2000; 2001; Jimenez-Silva & Olson, 2012; Westheimer, 2008), many terms such as "teacher community," and "teacher professional community," "teacher learning community" have been used interchangeably to

describe the collaboration of teachers at schools (Slagoski, 2019; Westheimer, 2008). While defining and identifying the dimensions of teacher community are still in progress (Grossman, Wineburg, & Woolworth, 2001), in this study, I use the term "teacher community" to designate a group of teachers working together for a deeper understanding of their teaching and learning environment as well as to support their personal and professional growth.

As Grossman, Wineburg, and Woolworth (2000; 2001) note, not all gatherings of teachers become a teacher community. In order to distinguish the teacher community from a group of teachers (Bryk, Camburn, & Louis, 1999; Wardrip, Gomez, & Gomez, 2015), it is first necessary to review the underlying theories and identify the defining characteristics. In the theory proposed by Lave and Wenger (1991), a teacher community is derived from a community of practice theory. Wenger (2006) defines community of practice as "groups who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (p. 1) and "membership" is the defining factor of community (Wenger, 1998, p. 73). As encapsulated in this definition, Wenger (1998) posits that to create a community, all members should be engaged in participation and reification while in the process of negotiating the meaning. According to him, participation and reification are complementary. Participation is "a process of taking part," such as acting and interacting; reification means "making into a thing." Through participation and reification, they establish membership by joint enterprise, mutual engagement, and shared repertoire (Smith, Hayes, & Shea, 2017; Wenger, 1998). In summary, by means of a community of practice, teachers in the teacher community develop their sense of belonging by creating relationships with people and engaging in shared practices and joint activities.

Bryk, Camburn, and Louis (1999) introduces three essential features of a teachers' professional community: reflective dialogue, deprivatization of practice, and peer collaboration.

Teachers in the teacher community regularly communicate with colleagues about their practices and engage in reflection. Through critical reflection, teachers develop deeper understandings of their teaching context (Bryk, Camburn, & Louis, 1999) and improve their teaching behaviors (Yang, 2009). The deprivatization of practice means making instructions public (Wardrip, Gomez, & Gomez, 2015). This includes classroom observation, peer coaching, and team teaching. Through these activities, teachers openly share their practices and exchange "expert advice" (Bryk, Camburn, & Louis, 1999, p. 755) with other members. In the teacher community, teachers share actual practices working together. By collaborating, teachers can build cooperative relationships and accomplish more than individually. Drawing on previous studies, Wardrip, Gomez, and Gomez (2015) add two more characteristics of teacher community to the above three: focus on student learning, and shared norms and values. The central goal of the teacher community is to improve student learning (Grossman, Wineburg, & Wollworth, 2001; Slagoski, 2019). Teachers engage in the community to seek better ways to serve their students. Shared norms and values are "a core set of similar values on which the teachers' community may develop" (Wardrip, Gomez, & Gomez, 2015, p. 449). These are norms that have been internally developed and shared by participating members, thus more sustainable and powerful than other external factors.

Wood (2007) observes that teachers must be both "learner and knower" to develop professionally. Dewey (1933) points to the importance of supporting ongoing growth by having continuous inquiries. As lifelong learners, teachers must actively share their teaching practices with others rather than being the sole authority or isolating themselves (Grossman, Wineburg, & Woolworth, 2000). In this regard, a teacher community becomes a critical contributor to teacher development, providing an ideal platform for teachers to share their localized problems, work

towards common goals, and continue to empower, innovate and improve themselves (Little, 2003; Yang, 2009; Wardrip, Gomez, & Gomez, 2015).

Summary

In this chapter, I described the theoretical background of the study and provided a review of the literature on four main areas: teacher's beliefs and actions, the philosophy of technology, teachers' beliefs about technology in language classrooms, and the teacher community. The next chapter will present the methodology used in this study.

CHAPTER 3. METHODOLOGY

Chapter Overview

This chapter outlines the methodology used in the study, including how I collected and analyzed data. I first present a discussion of the nature of exploratory practice (EP), which I used as a guideline to carry out teacher research projects. I outline how EP differs from other forms of practitioner research and elaborate on its goals, key features, and procedures. I then illustrate the data collection processes and analysis methods.

Qualitative Inquiry

Researching teacher beliefs is not a straightforward task due to both its inherent complexity and the fact that beliefs in general are hard to observe and measure. Rather, they are represented through one's participation in the exploration, challenging thoughts, and reflection. Aligned with this view, qualitative research methods have been preferred in this field because a deeper understanding of the "lived experiences of teachers" (Olafson, Grandy, & Owens, 2015, p. 128) allows researchers to unpack how teachers shape and reshape their beliefs over time. As Corbin and Strauss (2008) mention, "qualitative research allows researchers to get at the inner experience of participants, to determine how meanings are formed through and in culture" (p. 12). Olafson, Grandy, and Owens (2015) note that a qualitative approach is specifically advantageous in studying teachers beliefs because a) it provides an opportunity to understand a phenomenon more in-depth, b) multiple types of data are collected in natural settings to corroborate teachers' stated beliefs, and c) longitudinal studies allow researchers to investigate the evolution of beliefs.

A vast pool of literature on teacher beliefs underscores the need for various sources of data, such as self-reports, interviews, classroom observations, lesson plans, and reflections (Palak & Walls, 2009). Bauml (2009) indicates that gathering from multiple sources can extend researchers' understanding of teacher beliefs as teacher participants are given more opportunities to express their own beliefs. The necessity for multiple types of data is also advised because there are often cases in which one might hold multiple or conflicting beliefs and not be able to articulate them. Moreover, certain studies have warned that relying on teachers' self-reported data alone can be problematic, as stated beliefs do not always properly elaborate on one's actions. Thus, as Pajares (1992) suggests, beliefs should be inferred "from what they say, intend, and do" (p. 314) by examining and triangulating various sources.

While there are a number of approaches to designing a qualitative study, I chose to adopt two methods to answer my research questions. The first result of my methodology is practitioner research, inviting teacher participants to become researchers. As active agents of their own projects, the participants in the study explore and analyze their own beliefs and practices. In so doing, I drew on the principles of EP to guide the research process. EP is a form of practitioner research (Allwrignt & Hanks, 2009) that seeks localized explanations for what occurs in their classrooms (Pandhiani, Chandio, & Memon, 2015; Slimani-Rolls & Kiely, 2014) and is further detailed in a later section. While teachers are engaged in teacher research projects, I illustrate each teacher participant's stated beliefs, practices, and experiences with exploratory practice in the form of case studies. The next section describes the case study approach.

Case Study

In the case study approach, research begins by identifying a specific case that represents the study's topic of interest (Stake, 1995; Yin, 2017). A researcher investigates a case or cases "through detailed, in-depth data collection involving multiple sources of information (e.g. observations, interviews, audiovisual materials, documents, and reports), and reports a case description and case themes" (Creswell, 2013, p. 97). Case study is well-suited to examining complex events and behaviors in a real-life context to answer "why" and "how" questions (Yin, 2017). When the case is determined, case researchers utilize multiple sources of evidence, create a case study data base, and find a chain of evidence (Yin, 2017), seeking both what is common and what is particular about the case (Stake, 1995). Data analysis strategies differ according to the purpose of the study, but the analysis should provide a detailed description of the case which involves "atypical features, happenings, relationships, and situations" (Stake, 1995, p. 439), and identify key themes or patterns for understanding the complexity of the case (Creswell, 2013).

Case study is one of the most popular approaches to studying teachers' beliefs and their relation to practices (Olafson, Grandy, & Owens, 2015), as it gathers different types of data in natural settings in a specified time (Creswell, 2013). This extensive data collection and triangulation process generates rich and detailed descriptions of each case, allowing researchers to gain in-depth understanding of each case. In particular, as my inquiry investigates how each teacher participant explores their beliefs and practice through EP projects, a case study method was the best approach as it provides "insight, discovery, and interpretation rather than hypothesis testing" (Merriam, 1998, p. 29).

Exploratory Practice as a New Form of Practitioner Research

Revisiting Practitioner Research: The Rise of Exploratory Practice

EP emerged in the 1990s (Allwright & Baily, 1991; Allwright, 1993) as an alternative to traditional—mainly positivist—research methods (Hanks, 2019). Traditional academic research aims to test hypotheses, build theories, and generate knowledge (Freeman, 1996) and emphasizes the objectivity, soundness, and generalizability of the findings (Gieve & Miller, 2006). While these traditional studies paid attention to classroom issues by approaching the topics top-down, (i.e., setting up the hypotheses, then conducting experimental and interpretive studies (Ellis, 2001)), many scholars criticized the consequent gap between research and the reality of the classroom (Freeman, 1996), pointing to the mismatch in interests between researchers and teachers, teachers' limited accessibility to studies (Beasley & Riordan, 1981), and researchers' lack of experience in teaching (Freeman, 1996). Thus, including teachers, often called practitioners, in the research process became imperative to better understand the multi-layered reality and allow it to be directly relevant to classrooms.

Practitioner research involves an analysis of teachers with whom inquiries have been carried out to better understand their classroom context. It is a comprehensive concept that includes varying methodologies. Hanks (2017) illustrates the "family tree of practitioner research" (p. 30), which explains that practitioner research includes action research, reflective practice, exploratory practice (EP), and other related classroom research. All heavily influenced by Aristotelian thinking and the work of Dewey (Hanks, 2019), reflective practice, action research and EP share similarities and differences.

Reflective practice, as suggested by Schön (1983; 1987), has been the predominant form of language teacher research. Reflective practice allows teachers to reflect on their actions in the classroom so they can connect existing beliefs, learned theories, and practical knowledge about teaching and learning (Crane, 2015; Wright, 2010). Reflective practice also helps teachers discover and explore their experiences (Edge, 2011) and be autonomous in their inquiries (Borg, 2010), as it comprises the aim of assisting in the improvement of their problematic situations through the use of reflection results (Hanks, 2017).

Action research is related to reflective practice but places more emphasis on "action," which typically refers to intervention. Hammersley (2004) summarizes the goals of action research—solving practical classroom problems, promoting social change, and facilitating personal professional development. Action research also involves teachers in identifying the problems in their teaching practice and encourages them to investigate and solve the problems, eventually improving their teaching by direct intervention (Burns, 2010; Hanks, 2017; Richards & Farrell, 2005). This characteristic of action research is clearly stated in Burns (2005), in which she views action research as using "the findings from the investigations to deliberately change, modify, and improve practices" (p. 60).

In summary, reflective practice focuses more on reflection to understand a problematic situation while action research's aims are change and improvement. Both methodologies have been particularly favored by researchers because they develop the teachers' autonomy (Lankshear & Knobel, 2004), reduce the gap between research results and classroom practices (Crookes, 1993; Olson, 1990), enhance the teachers' awareness (Borg, 2010) and improve the teachers' practices (Borg, 2010; Olson, 1990).

Yet, despite the benefits and substantial rationalization of reflective practice and action research, they have their shortcomings. Teachers' time and resource shortages to conduct research and teachers feeling burdened by extra work are factors frequently mentioned as obstacles to practitioner research (Allwright, 2001; Hanks, 2017). More specifically, reflective practice has been criticized for being too introspective, and the results from reflecting seldom lead directly to measurable improvement (Akbari, 2007; Farrell, 2007). Similarly, action research has been censured for being too demanding of teachers and prioritizing change over understanding the phenomenon (Allwright, 2005). According to Allwright (2005), this could be problematic because it seeks the solution only to a given problem and there are instances for which specific solutions are not sustainable in future practices. Allwright (1997) claims that practitioner research could soon be abandoned as its research is often poor and "makes the process so demanding that it is patently unsustainable" (p. 368).

In response to these shortcomings, EP was suggested as an alternative method of practitioner research. In Allwright's (2001) view, EP stands "right in the middle between reflection for understanding and action for change" (p. 105). Rather than problematizing and seeking solutions, EP aims at working for "understanding" and includes all members in the teaching and learning community—teachers, learners, administrators, and any other relevant stakeholders. It highlights the relationship of these people in conducting research, explicitly stating "*We* research *our* practices." This contrasts with the standpoint of action research that "*I* research *my* teaching," or the traditional researcher's "*I* research *your* teaching" (Soomro, 2012, p. 53, Italics original).

Defining Exploratory Practice

The notion of EP was first introduced as "exploratory teaching," a way for language teachers to understand their teaching context better and to become effective teachers (Allwright & Bailey, 1991). The most up-to-date and comprehensive definition of EP can be found in Hanks (2017). According to Hanks (2017), the definition of EP, from Allwright and colleagues' work in 2001, is as follows:

> Exploratory practice is an indefinitely sustainable way for classroom language teachers and learners, while getting on with their learning and teaching, to develop their own understandings of life in the language classroom. (p. 83)

Hanks (2017) indicates that this definition was most widely used as it encapsulates the distinctive characteristics of EP. As seen, this definition emphasizes the notion that EP is aimed at sustainability. It also places emphasis on "learners" by identifying them as another agent of the research, only focusing on "understanding," and the aim is toward "understanding life in the language classroom," rather than changing or improving a certain context.

Exploratory Practice as a Method of Research

"EP is a living framework, one which is capable of growing, of developing, and one which has been incorporated into the curricula of many different types of language education. … [W]hether EP is positioned as research or as pedagogy is immaterial: it is a growing force in the field, with multiple possibilities for nuanced and multi-layered interpretations."

(Hanks, 2017, P. 310)

While EP positions itself as a new form of practitioner research, its methodological considerations require further discussion (Hanks, 2019). Some scholars have criticized the

methodological limitations of practitioner research as too “limited, naïve, and descriptive” (Borg, 2013; p.18), resulting in poor quality (Ellis, 2010). Some raise questions on its trustworthiness and applicability (Foster, 1999). Zeichner and Noffke (2001) express their concerns about involving teachers in research because they often lack proper training as researchers. Dealing with these methodological criticisms of not being scientifically rigorous, Allwright (2005) claims that EP does not rely on a technicist mindset that favors problem-solving by employing unfamiliar academic research tools and then yielding general knowledge, as it is “parasitic” (p. 354) for teachers. After conducting a meta-analysis of EP studies, Hanks (2019) maintains that this in-sider research puts emphasis on “empowerment, social relations, individual engagement, and on developing understanding, ideally in multi-directional ways” (p. 35), resulting in much of the work being qualitative.

From an epistemological perspective, EP seeks the understanding of knowledge in relation to the lives in the classroom rather than the nature of reality or knowledge acquisition (Soomro, 2012). Wright (2005) warns that EP lacks generalizability and is often over-localized. However, given that “there is no single ideal way of learning or teaching a language” (Hanks, 2017, p. 2), and teachers are genuinely interested in knowledge directly applicable to their own settings rather than general findings, understanding the local aspect is imperative. As Allwright (2006) argues, all classroom issues are local ones and they hold “the uniqueness of all human situations and all humans” (p. 13). Nevertheless, general knowledge is not neglected. Allwright (2003) presents a “think globally, act locally, think locally” diagram, which represents that EP principles are created based on global principles (e.g. working together and pursuing mutual development) while action for understanding is conducted in local settings. In other words, EP is a framework informed by

globalized knowledge-based principles, empowering practitioners to understand context-specific questions.

Moreover, EP finds its ethical stance by integrating research into practices (Allwright, 2001; Hanks, 2017; 2019). Traditionally, as mentioned above, the lack of time and resources for teachers to conduct research and teachers feeling burdened by the extra work are factors frequently discussed as obstacles in practitioner research (Allwright 2001; Hanks, 2017). Attending to this issue, EP encourages the utilization of normal classroom pedagogy as the research tools and avoids unfamiliar techniques, which helps teachers save time and feel less burdened.

Key Features and Principles

Since its beginning in 1991, EP has extended its range over the decades and evolved into "a well-established form of inquiry" (Hanks, 2017, p. 55). Hanks (2017) presents the earlier work of Allwright (1997), the first attempt to summarize the features of EP.

Exploratory practice involves:

A. Practitioners working to understand:
    a) What *they* want to understand, following their *own* agendas,
    b) Not necessarily *in order to* bring about change,
    c) Not primarily *by* changing,
    d) But *by using* normal pedagogic practices as investigative tools, so that working for understanding is *part of* the teaching and learning, not extra to it,
    e) In a way that does not lead to burn-out, but that is *indefinitely sustainable,*
B. In order to contribute to:
    f) *Teaching and learning* themselves,

g) *Professional development*, both individual and collective.

(Italics original; workshop handout by Allwright, 1997, cited in Hanks, 2017, pp. 92-93)

Indeed, EP is a process-oriented approach (Breen, 2006). It values understanding, rather than simply attempting to change something. The statement also underscores the use of normal pedagogic practices as a methodological tool for investigations (Allwright, 1993) rather than the application of strategies that are created for research purposes. In this way, teachers do not feel burdened by the extra workload, and the research process can be concurrent with the teachers' normal routine. This is the profound difference between EP and action research, as the latter implements change and evaluates its results. Indeed, Allwright has echoed his view several times, emphasizing the absence of burdens on teachers and the sustainability of EP when compared to action research (Allwright 2001; 2005).

Building upon this, Allwright and Hanks (2009) present seven features of EP as principles, adding to Allwright's original presupposition (1997):

- Principle 1: 'Quality of life' for language teachers and learners is the most appropriate central concern for practitioner research in our field.
- Principle 2: Working primarily to understand the quality of life, as it is experienced by language learners and teachers, is more important than, and logically prior to, seeking in any way to improve it.
- Principle 3: Everybody needs to be involved in the work for understanding.
- Principle 4: The work needs to serve to bring people together.
- Principle 5: The work needs to be conducted in a spirit of mutual development.

- Principle 6: Working for understanding is necessarily a continuous enterprise.
- Principle 7: Integrating the work for understanding fully into existing curricular practices is a way of minimizing the burden and maximizing sustainability.

(pp. 149-154)

In the principles, the most distinctive elements addressed are the notion of "quality of life." Allwright and Hanks (2009) explicitly declare that quality of life is the priority in practitioner research. While most researchers have pointed to the need for measurable improvement or problem-solving methods, Allwright (2003) criticized this idea heavily, noting that focusing on measurable outcomes typically means a short-term process with instant answers rather than considering the ongoing nature of classroom life. To tackle this deficit, EP aims only at ensuring that quality of life in the classroom is enhanced.

Principle 2 emphasizes the significance of understanding. According to Hanks (2017), EP is the only approach that prioritizes understanding over solutions. The principle posits that the development of understanding itself is sufficient—change or direct improvement is not necessary. In addition, the notion of "puzzles" should be discussed in conjunction with this principle (Allwright, 2001; 2003; 2005; Allwright & Hanks, 2009; Miller, 2009). Allwright and Hanks (2009) also recommend that teachers commence their research with puzzles. In contrast to other research methods that begin with identifying "problems," puzzles would be more akin to questions that practitioners have. Unlike problems, puzzles do not require solutions and can include positive questions, such as what makes a certain strategy engaging. While other problem-solving approaches miss the essentials of a classroom phenomenon by focusing on finding answers and

viable solutions, puzzles and “why” questions facilitate deeper thinking about the phenomenon, allowing for a better understanding of the ongoing life in the classroom.

Principles 3, 4, and 5 highlight the importance of inclusiveness and working together, which Allwright (2003) and Hanks (2009) call “collegiality.” Collegiality refers to the purpose of teaching, learning, and research, all of which are directed at the development of all parties who inhabit the classroom (Hiratsuka, 2016). By working together, teachers, learners, and other members of the community share an understanding, develop stronger engagement, and ultimately create mutually beneficial relations for each other. Teachers can exploit their daily teaching activities to investigate their puzzles. This makes the research more meaningful and sustainable as it does not overwhelm the teachers by demanding the preparation of extra materials but also has more relevance to their own teaching contexts. Johnson (2002) also indicates that this is an important component of EP, as classroom routine is not disrupted during the research process despite researchers still being able to learn from them. This view is connected to principles 6 and 7. By integrating inquiries into everyday classroom practices and avoiding one-time, time-constrained funding projects, the burden of teachers is minimized and sustainability increases (Allwright & Lenzuen, 1997; Crane, 2015).

In conclusion, the central features of EP can be summarized as follows: a) the priority is toward understanding quality of life; b) puzzles are an important starting point; c) involving everybody and working collegially is essential; and d) research should be an ongoing process that uses normal practices as an investigative tool.

Procedures: Stop, Look Around, and Think

While EP does not impose researchers to follow strict rules, Allwright (1993; 2003; 2005) presents these practical steps of EP to guide future research:

1) Identify a puzzle area

2) Refine your thinking about that puzzle area

3) Select a particular topic to focus upon

4) Find appropriate classroom procedures to explore it

5) Adopt them to the particular puzzle you want to explore.

6) Use them in class

7) Interpret the outcomes

8) Decide on their implications and plan accordingly

(Allwright, 1993, pp. 15-19)

As mentioned above, EP begins with a puzzle or curiosity. The puzzles are typically framed as "why" questions, rather than "how" or "how to" questions (Hanks, 2017). Teachers and learners can then identify their wonderings (Slimani-Rolls, 2003) because they are central part of the classroom—in this way, teachers and learners are situated within investigations that are highly relevant to themselves. Thus, participants can take action toward understanding. Here, the action does not mean actions directed at improvement or change but actions for understanding. The actions would include bringing puzzles and puzzling situations to the fore of their consciousness and thinking with others how to solve these both in and outside the classroom, looking critically

at what occurs in the classroom, and adopting already familiar pedagogic activities to enable teachers and learners to further develop their understanding (Allwright, 2003). Indeed, the importance of using habitual classroom techniques to explore puzzles has been recognized frequently as it lessens the burden on teachers and learners (Allwright & Lenzuen, 1997). Furthermore, these procedures can be planned and performed collegially. Interpersonal relationships are crucial in understanding classroom phenomena since one's knowledge and understanding develop over time with lived experiences (Freeman, 1996). Exploring and sharing one's understanding can develop a new awareness about the teaching and learning field. In the interpretation stage, the EP community works together toward understanding; participants reflect on their personal and collective practices, reexamine the common concepts of change, gauge the need for change, discuss potential plans, share their understanding processes, and go back to their "dynamic relationship between practice and principles" (Allwright, 2003, p. 126). In the process, various types of data collection methods can be used, such as recording of planning meetings, group discussions, interviews, and observations.

Studies Implementing Exploratory Practice

> *"What these ways have in common is that teachers and learners are taking ownership of their classroom language learning lives, and are thus best positioned to research, and report on, their own teaching and learning experiences."*
>
> (Hanks, 2017, p. 2)

EP was first introduced by Dick Allwright in collaborative work with teachers in Rio de Janeiro, Brazil. In his retrospective of the beginning of EP, Allwright articulates his disappointment with the traditional researcher-teacher relationship in which neither side trust the

other to be useful. Instead of lecturing on the techniques, he decided to ask what the teachers wanted to understand, and this was the emergence of EP:

> I was invited to go to Brazil in 1990 to teach academic classroom research techniques to language teachers at the Cultura Inglesa in Rio de Janeiro. I lost faith in that project when I found I was meeting teachers who had already started asking their learners to help them understand certain aspects of their language teaching and learning. What we were calling Exploratory Teaching at that time [early 1990s] was the idea of precisely helping teachers reorient, if they were so inclined, was that teachers should in fact start by thinking about anything they didn't understand about what was happening in their classroom.
>
> (Interview with Dick Allwright presented in Hanks, 2017, p. 329)

The core of EP lies in questioning what teachers want to understand. While the problem or issue is the same, Allwright underscores that switching "how" questions to "why" allows teachers to pursue understanding rather than focusing on problem solving.

Since its introduction, studies employing EP have proliferated in number and varied in areas; their successful implementation of EP demonstrates its role as a valid research method and encourages its further use in classrooms. I present a few studies that particularly used EP as a way to facilitate teachers' professional development.

- Miller (2003; 2009) investigates her experiences as a teacher-consultant working with Brazilian EFL teachers and her colleagues using an EP framework. By engaging in regular writing, analyzing, and presenting work with colleagues, she demonstrates ways to build a

collegial working environment—one of EP's core principles—and underscores the significance of co-constructing teacher-consultancy.

▪ Soomro (2018) invites Pakistani teachers to conduct EP projects for a full academic year and evaluates EP as an approach to teacher development. Analyzing pre- and post-interviews with the participants, he contends that EP is a practical, viable option for teachers and useful for professional development.

▪ Hiratsuka (2016) adopts EP to enhance team-teaching opportunities in Japan. Conducting class observations, pair discussions, group discussions and story-writing adhering to EP principles, he finds that EP positively assists successful team-teaching as teams engage in researching their own contexts together.

▪ Crane (2015) implements EP into a foreign language methods course for graduate student instructors. She finds that EP allows student instructors to engage in critical reflection on their own teaching environment and thus develop understanding about issues that are meaningful.

The next section provides the rationale for using EP as a guiding principle for this current study in relation to the research question.

Exploratory Practice as a Guiding Principle

According to Clandinin (1986), teachers' stories are useful and powerful when considering what teachers know and believe and how such cognitions develop over time. Teacher engagement in research, such as positioning teachers as researchers to tell their own stories, is thus important

to untangle multi-layered classroom phenomena and discover better ways to support the growth of teachers (Benson et al., 2018; Brandon, 2015; Richards & Farrell, 2005). As Bullough (1997) states, teacher education begins by "exploring the teaching itself" (p. 21). In this regard, EP can serve as a valid approach in fostering teacher development.

EP thus provides all those involved with opportunities to share their puzzles. Through this collaborative work, participants gain new awareness and a deeper understanding of their beliefs and practices. Teachers are encouraged to learn about themselves as learners, understand better what is happening in the classroom, and link their understanding to research. This deeper understanding will bring about individual and professional growth in teachers, stronger linkage between teachers and learners (Allwright, 2003), and elevated autonomy and contribution to teacher education research.

From an extensive review of previous literature on technology and foreign language teaching and learning, I determined that technology in language education can be researched and interpreted in relation to three domains—artifact, human, and method. Specifically, researching artifacts would focus on the practical development of programs and devices that could be used in the classrooms; researching the method would focus on how technology efficiently increases students' language proficiency; and researching the human domain would focus on the people who use the technology, primarily their beliefs about technology and why they choose to use it in class.

To address the aim of this chapter, I investigate Korean language teachers' beliefs and practices regarding technology use, which falls into the human domain of technology. While the artifact and method domains primarily explore measurable products (e.g. verifying an artifact's effectiveness by seeing higher test scores after implementation), the human domain must focus on the processes (e.g. how teachers develop their understanding of technology). Thus, EP is a valid

approach in light of the aim of the study and is expected to give insight into how each participant's beliefs evolve through their puzzle investigation processes.

I designed a study in which all the participants employ EP and utilize its principles to carry out their own EP projects. While conducting their projects, the teacher participants learn EP principles in a workshop, familiarize themselves with the principles, formulate their own puzzles regarding technology uses, and investigate their puzzles using normal pedagogical activities. I, as the researcher, identify each teacher as a single case and carry out an in-depth investigation into each one's evolving beliefs and practices throughout the individual EP projects. The procedures in which the participants engaged are summarized in Figure. 3.1 and detailed in later sections.

	Before the program		During the program				After the program					3 months after the program
	Month 1		Month 2				Month 3					Month 7
Activity/Aim	3	4	1	2	3	4	1	2	3	4		
EP workshop: Familiarize EP principles												
Identify puzzle area												
Formulate and refine puzzles												
Find and utilize appropriate classroom procedures to explore puzzles												
Attend daily meetings/ work together											…	
Attend group meeting interviews/ share experiences, progress												
Attend video reflection session												
Collect, collate, and analyze data												
Interpret outcomes												
Explore sustainability												

Figure 3.1. Participants' EP project activity procedures.[2]

The next section explains the specific settings where the study was conducted, participants, research procedures, the forms of data collected, and data analysis strategies.

[2] The third week of the program was a break—no class meetings—colored in orange.

Research Contexts

Setting

The study was conducted in a Korean immersion summer program at a large public university located in the Midwest, United States, in 2019.[3] The summer program is a four-week, non-credit, non-residential immersion program for high school students interested in exploring the Korean language and culture. In 2019, the program took place from June 17 to July 19 with no instruction in the week of July 1. Daily instruction hours were 9 am to 2 pm, with a total of 100 instructional hours.

I chose this program for the project as it allows teachers more flexibility in designing its curriculum and adopting new pedagogical strategies than in regular credit courses offered at universities. Moreover, as this is an immersive program, teachers are situated in the teaching environment daily and devote most of their time to teaching practices. It also provides a collegial working environment for teachers. They regularly visit and observe each other's classes and hold daily meetings to discuss and modify the curriculum to meet the needs of students, share learning materials and classroom situations, and seek advice on instructional strategies and practices. This collegial working environment permits the teachers to be more active in their research project without feeling burdened.

Moreover, this program well-illustrates how Korean language teachers in the U.S. are comprised. While the Korean language has gained more attention these days due to Korea's economic growth and its pop culture, few universities in the U.S. offer Korean as a major, and thus there are limited opportunities for professional Korean language teachers to be hired or trained.

[3] This study was reviewed and approved by the Institutional Review Board (IRB) in April 2019.

Accordingly, Korean language programs in universities mostly hire graduate students in peripheral areas, such as education and linguistics, as Korean instructors and teaching assistants. The program involved in this research had also recruited its instructors from other departments.

During the program, teachers were given a large workstation to prepare their teaching materials and hold their daily meetings, and they often used their lunch hour to chat about their activities in class and their progress in the research project. They also used a virtual space to communicate. They uploaded their teaching artifacts and learning plans into designated folders on Box, a web storage service provided by the university. In this way, every teacher had easy access to all teaching materials and class content. In addition, they created a group chatroom on Kakaotalk[4], a popular Korean instant messaging service, and used it for communicating before and after class hours.

All observations, field notes, and video recordings of the classes took place in classrooms on campus. Most group meetings took place in the workspace while individual interviews and video conferences were conducted in a private office of the participants' choosing due to the sensitive nature of the conversations. Teaching artifacts and learning plans were collected from the workspace and web storage. Some instant messages relevant to the research question were also collected.

[4] Kakaotalk, the most popular messaging program in South Korea, is a free mobile instant messaging app for smartphones with free text and call features. (https://www.kakaocorp.com/service/KakaoTalk?lang=en)

Participants and Sampling Rationale

The participants were three Korean language instructors, graduate students at the university with different educational backgrounds and varying levels of teaching experiences, who taught in the summer immersion program. All considered Korean their native language.

By inviting teachers to be researchers in their own study, this qualitative investigation required multiple observations, video recordings, interviews, and group meetings. These rigorous processes produced a rich description of the participants and local settings and traced each participant's evolution throughout the program. Given this setting, I selected only three participants but included all the instructors working in the immersion program. Including all instructors was beneficial in creating a collegial environment to carry out the EP project. While the number of participants was limited to yield compelling representation of the case and generalize the findings, it should also be taken into account that the aim of selecting the qualitative samples is to reach saturation so samples can maximize what we can learn and draw on in reflecting on the purpose of the study (Mason, 2010; Stake, 1995). As such, greater numbers alone would not necessarily guarantee more information. Moreover, it has been suggested that studies conducting multiple interviews with the same participant and using various methods call for fewer participants (Mason, 2010).

The participants ranged between 30 and 40 years of age, who represent the digital immigrants, and included one male and two females. Two participants were from the school of education, and the other studied in the English department. Their experience as instructors in this program varied from their first year to their third. The table below details the participants' names (pseudonyms assigned), gender, age, field of study, and years of experience as a Korean instructor. Basic background information is given in greater detail in the following paragraphs.

Name (pseudonym)	Gender	Age	Degree and field of study		Language teaching certificate	Korean teaching experience	
						Current program	Others
Susie	F	30	MA	English	TESOL	Second-year (plus one as TA)	N/A
			PhD	English			
Hannah	F	33	MA	Education	Korean	Third-year	Four years
			PhD	Education			
Eugene	M	40	MA	TESOL	TESOL	First-year (plus one year as TA)	Three years
			PhD	Education			

Table 3.1. Participants

Susie. Susie is a doctoral student in the English department and joined this program in 2017. That year she served as a teaching assistant aiding instructors in the creation of teaching materials. She then served as an instructor in the program from 2018. She was born in the United States and studied English as an undergraduate and in graduate school. She had neither studied Korean language nor received formal training to become Korean language instructor. She had no previous experience in teaching Korean before joining this program. However, she holds a TESOL certificate received from her graduate school and has six years of experience teaching English as a foreign language in the U.S. and South Korea.

Hannah. Hannah is a doctoral student in the education department and joined the program as an instructor in the beginning of 2017. She was born in South Korea and studied English interpretation and translation in college, earned a master's degree in education, and is currently working on her doctoral degree in education. She holds a level 2 Korean language teacher certificate which she received after completing online undergraduate course and has taught the Korean language in the Korean language program at the university and online for four years.

Eugene. Eugene is a doctoral student in the education department and joined this program in 2018. That year, he served as a teaching assistant, checking students' online portfolios and assisting in materials development. This was his first year serving as an instructor. He was born in

South Korea but spent his earlier years in the United States, enabling him to be considered bilingual in English and Korean. While he had not experienced formal training to become a Korean language instructor, he participated several online workshops provided by Korean government to develop his Korean language teaching skills. Before joining the program, he taught the Korean language at local Korean schools and was part of the Korean language program at the university for three years. Other than Korean, he earned his master's degree in TESOL and taught English for more than ten years in South Korea. He is currently pursuing his doctoral degree in education.

Procedures

My investigation commenced one week before the program. Data were collected in four phases—before, during, after, and three months after the program. Phases are outlined as follows:

Step 1 Before the program: "Identifying a puzzle area"	Individual interview	Participants were invited to an individual in-depth interview to explore their pre-held beliefs about technology, teaching, and learning and how these beliefs were shaped.
	EP workshop	In this hour-long workshop, the concept and aim of EP were introduced. The participants were given reading materials; the researcher described the principles of EP. After the workshop, participants were asked to determine their "puzzles about teaching with technology."
Step 2 During the program: "Finding appropriate classroom procedures to explore puzzles"	Participants explored their puzzle area using normal pedagogic practices as investigative tools.	
	Class observation	The researcher observed and video-recorded participants' teaching practices weekly beginning in the second week of the program.
	Individual video conference	The participants were invited to video conferences each week to examine their practices and progress with their puzzles. Upon request, the researcher provided relevant resources, such as academic articles and teaching materials.
	Daily group meetings	Daily group meetings were held for the participants to reflect on the day and preparation for the next day. Meetings were not audio-recorded, but the researcher took notes on relevant content in the conversation.
Step 3 After the program: "Interpreting the outcomes"	Final group meeting	After the completion of the program, participants were invited to group meetings to reflect on their project experiences using EP and share newly discovered understandings about the field.
	Individual interview	After the final group meeting, participants were invited to an individual interview; its aim was to uncover how the overall experience influenced their beliefs and practices as a part of professional development.
Step 4 Three months later "Toward sustainable development"	Follow up group meeting	In a follow-up group interview three months after the program, participants discussed mainly the sustainability of the EP project.
	Follow up interview	Individual follow-up interviews three months after the program were conducted to determine whether their deeper understanding of the field had a long-lasting influence on their teaching practice.

Table 3.2. Research procedures

Consent forms were discussed with the participants and signed before the study began. As the research process began, I sent out weekly emails to help the participants keep on track with their progress. The weekly email also served as a reminder of their observation schedules, the principles they might adhere to, and their reflection questions. Figure 3.2 illustrates the progression of the participants' individual research:

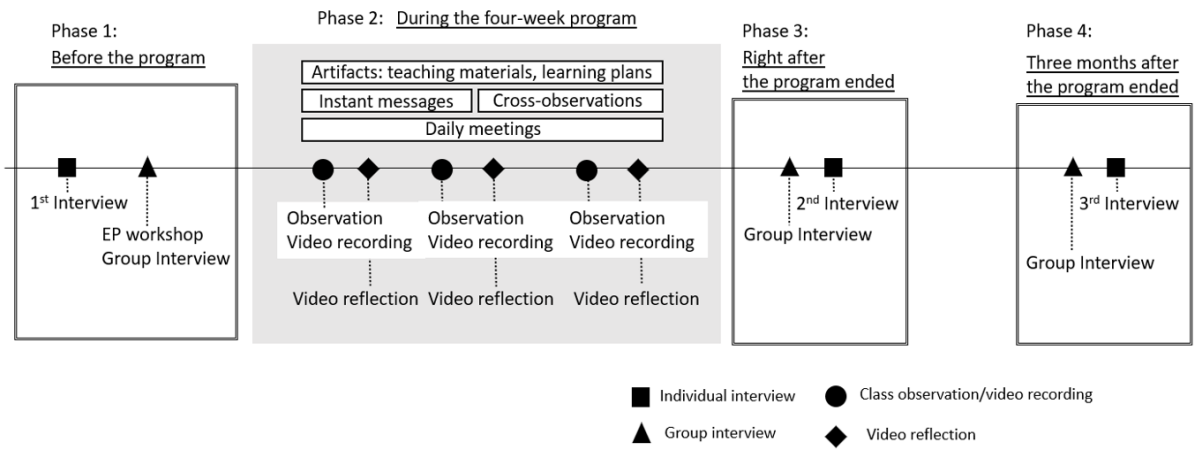


Figure 3.2. Research procedures

Data Collection

Creswell (2013, p. 45) delineates the common characteristics of qualitative research: a) natural setting, b) multiple forms of data rather than relying on a single data source, c) complex reasoning by inductive and deductive logic, d) an emergent design where research plans may change during the data collection process, e) the researcher is the key instrument that focuses on learning the participants' meanings. I followed these characteristics throughout the data collection.

As illustrated above, qualitative data were collected from multiple sources to answer the research questions. Patton (1990) states that having multiple sources of data is the best way to validate and cross-check findings. The main data forms include participant interviews (individual and group), class observations, workshop, and weekly reflection meetings. Other forms of data are detailed in the miscellaneous section. The detailed timeline of data collection is presented in Figure 3.3.

	Before the program				During the program				After the program					3 months after the program
	Month 1				Month 2				Month 3					Month 7
Data Collected	1	2	3	4	1	2	3	4	1	2	3	4		
Lit Review/ Conceptualizing														
EP workshop														
Classroom observations													…	
Video reflection interviews														
Individual interviews														
Group meeting interviews														
Teaching materials/artifacts														

Figure 3.3. Calendar of data collection

Interviews

Interviewing is a classic method in qualitative research. According to Best and Kahn (2006), interviews allow researchers to collect information about the respondents' experiences, knowledge, opinions, beliefs, and feelings. Interviews can be categorized depending on how the questions are organized, ranging from structured to unstructured. Researchers must determine the appropriate interview format for each study with regard to the goal of conducting an interview. For individual interviews, I organized a semi-structured interview format in which interviewees were asked pre-set questions but allowed more flexibility to raise issues or change the direction of questions. I conducted individual interviews three times throughout the data collection period with each participant: before the program began, right after the program ended, and three months after the program ended. All interviews were face-to-face meetings conducted at a location of the participants' choosing. They were audio-recorded and transcribed with the participants' consent.

Individual Interview [1]: Before the Program. The first individual interview occurred a week before the immersion program began. Its main purpose was to capture the individual teacher's pre-existing beliefs about technology, teaching, and learning to understand how their

beliefs had been shaped. Teacher beliefs are formed throughout their lives (Knowles, 1992) from multiple sources, such as prior experience as language learners (Sansom, 2019), instructional experiences as teachers (Li, 2013), and knowledge acquired from professional development programs (Richardson, 1996). Thus, the questions dealt with their background, educational experience, teaching planning, classroom practices, and beliefs about technology in teaching. These included:

1) What experiences have you had in teaching the (Korean) language?
2) Please tell me about your language learning experience (as a student).
3) Please tell me about your learning experience in teaching. (teacher training/professional development courses).
4) Can you share your experience using technology in your classroom? (If you are not using technology, please share how you use your teaching materials in class.)
5) Can you share your thoughts about technology in teaching and learning?

This pre-program interview also included photo elicitation (Bignante, 2010; Harper, 2002) to stimulate the participants' articulation of beliefs about technology. While photo elicitation cannot replace the interview itself, it potentially empowers participants to express their experiences more freely and easily (Bignante, 2010; Hatten et al., 2013). Considering that the beliefs and experiences regarding technology can be difficult to articulate because they are an "unconscious process" (Hatten et al., 2013, p. 3), photo elicitation functioned as a starting point, helping the participants draw ideas from their thoughts. I called this activity "image analysis" and presented sixteen images to the participants, asking them to choose the image that best illustrates their perspectives on technology. The images were sought and pre-selected from open source materials on Google using the search terms technology, technology and language education, technology,

teaching and learning, and technology in language classroom. The complete set of images is numbered and presented below (Fig. 3.4):

Figure 3.4. Images set for photo elicitation (open source images)

Individual Interview [2]: After the Program. The participants were invited to a second individual interview immediately after the four-week program ended. In the second interview, participants were given the opportunity to summarize their weekly reflections and teaching practices and to reflect on how they investigated their puzzles through the EP project. The questions included:

1) Tell me about your first moment of teaching with the use of technology during the program.
2) Can you describe your overall experience with the EP project?
3) What have you learned from researching your classroom?

4) After working for four weeks, what do you think of EP as an approach for teachers' professional self-development?

Individual Interview [3]: Follow-up Interview. Three months after the summer immersion program, I conducted a short follow-up interview with each participant to ask how they were currently benefiting from a deeper understanding of their puzzles in their current instructional practice. The interview questions included:

1) Can you tell me how has your experience in summer EP project affected your regular instructional practice or planning?
2) Do you have intention to participate in EP again?

Exploratory Practice Workshop and Group Interviews

Having group meetings is significant in the methodological approach of EP. As Allwright (2005) asserts, an inquiry should become a joint venture as we research our practice. When utilized in various ways, group meetings bring teachers together to work collegially, leading to mutual development. The goal of group meetings would thus be to provide teachers with opportunities to share their puzzle areas and familiarize themselves with each other's experience with the EP project. In group meetings, teachers identified difficulties, shared experiences, offered suggestions, and presented signs of progress on their puzzles. Teachers were also involved in a reflective conversation and shared specific examples. All the group meetings were held in Korean, as all the participants felt more comfortable expressing themselves in that language. Having conversations in Korean ensured that all the participants articulated their opinions most accurately in a relaxed

environment, although they frequently switched to English when they felt an English word was more precise.

In this study, three group interviews were conducted at various points: right after the EP workshop, after the program ended, and three months later. As the instructors held daily meetings for teaching preparation, group interviews were not conducted during the program to avoid adding to their burden. The group interviews were audio-recorded and transcribed. Not all the teachers' daily meetings were recorded as these were not intended for discussing topics related to research questions; nonetheless, relevant conversations randomly appeared from time to time. I kept notes in those cases.

Workshop and Group Meeting Interview [1]: Finding Your Puzzle. In this summer program, teachers were invited to several professional development workshops before the program's commencement to learn new skills and improve their teaching practices. All instructors were required to join this series of professional development workshops. As a part of other professional development workshop series, the EP workshop was designed for the teacher participants to provide a brief description of the EP. This workshop was held after all three participants' first individual interviews were completed. In this hour-long workshop, the concept, principles, and examples of EP projects were introduced, and the participants were given a one-page summary handout (Appendix 1).

At the end of the workshop, participants were asked to think about what had puzzled them on the topic "teaching with technology," and formulate their puzzle as the first step in their EP project. Each participant had an opportunity to share their initial puzzle in the first group meeting. Their puzzles were then reviewed, refined, and investigated throughout the data collection period.

Group Meeting Interview [2]: Sharing Understandings. The second group meeting was held on the last day of the program. In this meeting, instructors were given the opportunity to share their puzzle investigation process and newly acquired ideas. They also discussed how the collegial work benefited or hindered their daily teaching lives and how it deepened their understanding. The points of discussion were:

1) Share your puzzle investigation process.
2) What kind of everyday practice and collaboration with teachers did you find most helpful and least helpful?
3) What are the most significant things you learned about classroom technology and EP?
4) What were the challenges you faced?

Group Meeting Interview [3]: Follow-up Interview. The last group meeting was conducted three months after the program ended. It was conducted while teacher participants were on a conference trip to give a presentation about the teacher community and their collegial working environment. Their decision to give a presentation about their experience at a conference was self-evident that the EP project had a meaningful impact on their professional life, but the follow-up group interview was still conducted to discuss their views on the long-term effect of the EP project.

Class Observation and Video Recordings

Observation is another way of collecting information in qualitative research. It is "a powerful tool for understanding and eliciting the nuances of incidents and relationships on the lived experience of people in particular situations and contexts" (Simon, 2009, p. 62). Simon (2009) further expounded on the advantages of formal observation; for example, it provides a

comprehensive sense of the setting, a base for further analysis, an opportunity to discover the culture of the setting, another way to capture the experiences of the less articulate, and a cross-check on data from other resources.

I intentionally chose class observation to investigate whether the teacher participants' beliefs were consistent with their actual teaching practices. Toward that end, I kept observation notes (Appendix 2) and video-recorded the participants' teaching practices when they were using technology in the instruction. Observing with video is a popular form of observation (Simon, 2009) and is more conducive to drawing comparisons than audio-recording because "it recreates both the voice and the behavior, the physical context, the direction of the gaze" (Tochon, 1999, p. 42). As videos can capture many aspects (auditory and visual) of classroom teaching practices, as noted by Tochon (1999), the analysis of videos can be effective in examining the teachers' actions minutely in comparison to their reported beliefs in the interview. I also utilized the videos with participants in individual video conferences to facilitate the teacher's reflection, an aspect that I elaborate upon in the next section.

Weekly Meetings: Individual Reflection Sessions

Once a week, I organized short individual meetings with the participants. The purposes of the weekly meetings were a) to review and reflect on individual teaching practices using video observation, b) to explore how participants are working with their puzzles, and c) to provide a collegial working environment for participants.

Before the weekly reflection sessions, I watched their video-recorded teaching clips and reviewed my observation notes to pinpoint topics to discuss. These topics were closely related to

their puzzles and the use of technology in the classroom. The video excerpt of the classroom observation was often used as a prompt to facilitate reflection on the teacher's use of technology. Many scholars have addressed the benefits of using videos in teacher development. Dawson, Dawson, and Forness (1975) report that video can encourage the modification of specific targeted teacher behaviors, and Tochon (1999) claims that video stimulates recall, leading to an evidence-based reflection. Tochon (2008) also states that teachers are transformed into "situated researchers, looking both inward and outward in their search for meaning" (p. 430). In this respect, videos played a role by stimulating active reflection and discussion for the teacher participants. While the topics of discussion were different from one participant to another, the primary aim of the interview was to explore how using technology altered planning and practice. The teacher participants were asked for further explanations regarding their actions in class. These individual meetings were also used to review the participants' EP projects weekly, checking their progress and possible difficulties.

I kept these meetings short so the teachers would not feel an additional burden; each lasted 10 to 15 minutes. All weekly meetings were audio-recorded, and I wrote memos during these discussions for post-session analyses. By participating in this short discussion, teachers did not need to write a reflection paper on their own but were given time to reflect and discuss in a casual setting.

Miscellaneous: Teaching Materials and Learning plans

In this summer program, instructors were responsible for designing and developing classroom activities and writing daily learning plans. Instructors met daily to discuss their students'

progress, reflect on the activities, and prepare for the next day. As they had considerable flexibility in designing learning activities and teaching materials, learning plans and teaching materials were also valid indicators and supporting evidence of the teachers' use of technology in the classrooms.

Data Collection Summary

As seen, multiple sources of data were utilized to answer the research questions in this study. I summarize data sets and research focus of the data below (Table 3.3).

Focus	Data elicitation and collection
The teachers' existing beliefs about teaching, learning, and technology	Individual semi-structured interview - Photo elicitation
The teachers' classroom practice	Class Observation - Video recording Teaching materials
The teachers' insights into the relationship between beliefs and practice	Video reflection sessions Individual semi-structured interview
Introduction of EP and puzzle formation	EP workshop Group Interview
The teachers' insights into the EP experience	Group interview Individual semi-structured interview

Table 3.3. Summary of data

Data Analysis

"Analysis is not about adhering to any one correct approach or set of right techniques; it is imaginative, artful, flexible, and reflexive. It should also be methodical, scholarly, and intellectually rigorous."

(Coffey & Atkinson, 1996, p. 10)

A case study involves a detailed description of the case with a combination of analytic methods, such as examining, categorizing, and recombining (Creswell, 2013; Yin, 2017), without

imposing strict rules to follow. Yin (2017) asserts that having an analytic strategy provides direction in analysis, connecting the data to the research questions. He suggests four general strategies to start a case analysis and five analytic techniques that researchers can utilize based on the purpose of their study and evidence revealed (Table 3.4).

Four general strategies	Five analytic techniques
- Relying on theoretical propositions	- Pattern matching
- Working your data from the ground up	- Explanation building
- Developing a case description	- Time-series analysis
- Examining rival explanations	- Logic models
	- Cross-case synthesis

Table 3.4. General strategies and analytic techniques in Yin (2017)

Stake (1995) presents three forms of analytic techniques: categorical aggregation, direct interpretation, and establishing patterns. I approached the data from the ground up, analyzing individual cases using a combination of different techniques followed by a cross-case synthesis.

In the data analysis process, I identified each teacher as a single case. The main data analyzed included observation notes, conversations in video reflections, and interviews—individual pre-program, post-program, follow-up interviews, and the group interviews. All interviews and video reflections were audio-recorded and transcribed. As the interviews, group meetings, reflections, and the majority of the classes were in Korean, I transcribed them in Korean while keeping English words the participants used. Evident changes in volume of voices and laughter were carefully noted. I also added my notes taken during the interview to the transcriptions. The notes included participants' noticeable gestures and changes in facial expressions. Emerging categories during the transcription process were kept in separate notes. This extensive transcription process further familiarized me with each case.

The transcribed data and observation notes were carefully read multiple times and coded using the qualitative data analysis tool, MAXQDA 2020. In the initial coding process, I assigned codes to any words and phrases that stood out in relation to research questions. As I was the sole transcriber and coder of the data, the coding process was performed three times on separate days, ensuring that I remained consistent in my codes and to maintain intra-observer reliability. As "words on a page do not contain all the meaning" (Simon, 2009, p. 136), I listened repetitively to the audio files during the coding process, complementing them with memos. During the coding phase, I constantly kept memos of emerging themes and organized the units of analysis. Once the coding was finalized, I examined the relationships between them and aggregated them, linking to recurring and prominent categories. The overarching themes in each interview were identified.

For each case, a constant comparative method of analysis (Merriam, 1998) was used to capture the evolution of each teacher's beliefs and practices through the EP project. I analyzed the data sets one case at a time starting from the pre-program interview to the follow-up interview. I constantly searched for supporting evidence and counter- examples by comparing interviews, reflections, teaching materials, and classroom practices. This triangulation process (Miles & Huberman, 1994) allowed me to gain a holistic understanding of each case. When necessary, I contacted the participant to clarify meanings and ask for further details.

Then, to address the research questions, I employed cross-case synthesis, creating a word table to display, compare, and contrast the cases. In so doing, I sought to identify similarities and differences among the cases. Figure 3.5 presents a part of the synthesis.

	Susie	Hannah	Eugene
Teaching experience	"test-oriented" English tutoring → communicative ESL teaching	Korean teaching: knowing students' needs was important → different environment, different needs → highlighted needs-based, motivation More understanding for language as subject, if based on student needs 4) "English as a subject" 6)	English teaching at "Hakwon" → "not meaningful" contents for students // wanted to make it more relatable to students, but failed due to parents' complaint: "increase their scores" "English as a subject" 3) →inner conflict; realizing what he valued in education "meaningfulness, authenticity"
	Reading teaching experience -adopting communicative approach	After school writing class → 망했다 because there was misalignment between student needs / teaching	
Beliefs about teaching and learning	Trained: communicative approach → Shocking experience, turning point; now think Communicative approach is an effective way 5)		The most important thing is "communication"
	Teacher is a facilitator	More like a knowledge-giver 3), power figure 5) I should teach something I know. Teacher needs to devote time.	Want to be a facilitator but, 6)
	Classroom should be student-centered; more activities	I want to make student-centered; but not an easy task.	Student-centered
		Values student interests: students want more interaction activities	Meaningful contents for students
	You need to **use** the language: "useable language" 7) 8)	Student motivation is my teaching philosophy.	Student motivation →motivation comes when students "use" the language 4)
	Culture-embedded; culture relative materials		
	Comprehensible input	Comprehensive input is needed in immersive environment; it requires teachers' skills 9)	Can mix English to improve students' understanding of the content: influence from supervisor
	Extending learning to the world outside the classroom		
		Student wants authentic materials 7) do not like unrealistic situations 11)	Should be authentic: use a lot of authentic materials such as newspapers 5)
		I have to help students	Learn from teaching, 7) learn from students

Figure 3.5. Cross-case synthesis of pre-program interviews

The analysis process was cyclical and recursive, enabling substantive triangulation of the data. Throughout the analysis, I engaged in examining, collecting, categorizing, recombining, and understanding (Merriam, 1998; Yin, 2017), looking for patterns, connections, and contradictions.

Role of the Researcher

The role of researchers is critical in qualitative studies because they act as a research instrument—they design the study, collect data, and analyze and interpret the evidence through a theoretical lens (Cresswell, 2013; Denzin & Lincoln, 2003). Thus, qualitative researchers need to position themselves explicitly and account for relevant aspects of self, acknowledging that they are conscious of the biases, values, experiences, assumptions, and expectations they bring to the

study (Creswell, 2013; Greenbank, 2003). In this section, I describe my role as researcher and my involvement in the study.

My role in this study was participant observer as I was one of the program's instructors. Yin (2017) notes that a participant observer in case studies has greater access to the evidence and is positioned to develop an insider's perspective. During the program that served as the context for this study, I was its instructional lead responsible for teaching morning classes, developing curriculum, and consulting with teachers. As the position allowed me to suggest a professional development program for teachers, I held an EP workshop and invited teachers to participate in this study. From the beginning of the study, I sent out weekly reminder emails with a brief description of the aim of the week using EP principles (e.g. "2nd week: Finding appropriate activities to investigate puzzles in the classroom") and an individual schedule for classroom observation and video reflection sessions. Given that EP encourages practitioners to create their own agendas, the email reminders did not mention specific methods or give directions to the participants.

This qualitative investigation asked teachers to be researchers in their own classrooms and examine their beliefs and practices about teaching, learning, and technology. Data collection involved multiple observations, video recordings, interviews, and group meetings to capture the teachers' experiences and responses. As a full participant in the program, I had frequent personal interactions with the teacher participants (e.g. cross-observations, co-teaching, daily group meetings). During these exchanges, I made every effort not to direct another participant's beliefs and practices, but it is possible that my beliefs about technology may have influenced another's beliefs and practices. However, as the participants considered me a participant like themselves rather than a director with control over their studies, I am confident that such influence would have

been no more impactful than that of their other peers in the community. Aside from this minimal risk, being a complete insider was beneficial, enabling me to understand and support the other participants' EP progress.

Ethical Issues

As the present study examines teachers' beliefs, practices, and responses to the teacher research projects, it requires an intense investigation in personal views, behaviors, and circumstances. As such, ethical issues and potential risks of the study, particularly during the data collection and analysis phase, must be taken into account.

The first ethical issue lies in participants' confidentiality. Confidentiality, protecting the identity of participants from the information they shared (Cohen, Manion, & Morrison, 2011), is the participants' right. All participants had sufficient time to read and sign the consent form, which noted the potential risk of confidentiality before they agreed to participate in the study. During the study period, to better protect their identity, I used pseudonyms in the data collection process and all data were transcribed and digitally stored under the pseudonyms. All interviews were conducted in a place of the participant's choosing, and I always asked their approval to audio-record them. Video recordings of class practice also raise potential risk, while students (their parents, in the case of minor) in the summer program all agreed to be videotaped before they participated in the program (for program-wide purposes), I made every effort not to film the students but to record only the teacher's use of technology in the classroom. Moreover, the video files were only shared between the teacher and the researcher. In the case of video reflections, the initial intention was to

hold a group reflection session; however, as all the participants felt uncomfortable presenting their practices to the others, the reflection sessions were changed to individual meetings.

Another ethical consideration is the potential for participants to feel compelled to accept. While the instructors were under no obligation to participate in this study, my role as the lead instructor and teacher-consultant of the program may have exerted pressure on them, even though I have no involvement with their evaluations or employment. To eliminate any possibility, the participants were given ample time to consider their participation and were assured that they could choose to drop out of the project at any point with no consequences for withdrawing. I endeavored to keep in mind this ethical issue, paying careful attention to each teacher's response. The participants affirmed that they did not feel any compulsion to the participate, and they did not regard the researcher as an authority; rather they regarded me as another participant in the study. One particularly mentioned that they felt comfortable with the researcher and their colleagues as they had worked together before and thus felt comfortable discussing sensitive topics or revealing their personal stories. In the analysis phase, for verbatim quotes that might be too personal or sensitive, I again asked for the participant's specific consent to include them.

Summary

In this chapter, I began with the rationale for using qualitative research methods to understand the teachers' beliefs and practices and examined EP as a guiding principle for enacting teacher research in this study. EP empowers teachers to find ways to explore and investigate their own experiences while facilitating language teaching and learning. I chose this method for teacher

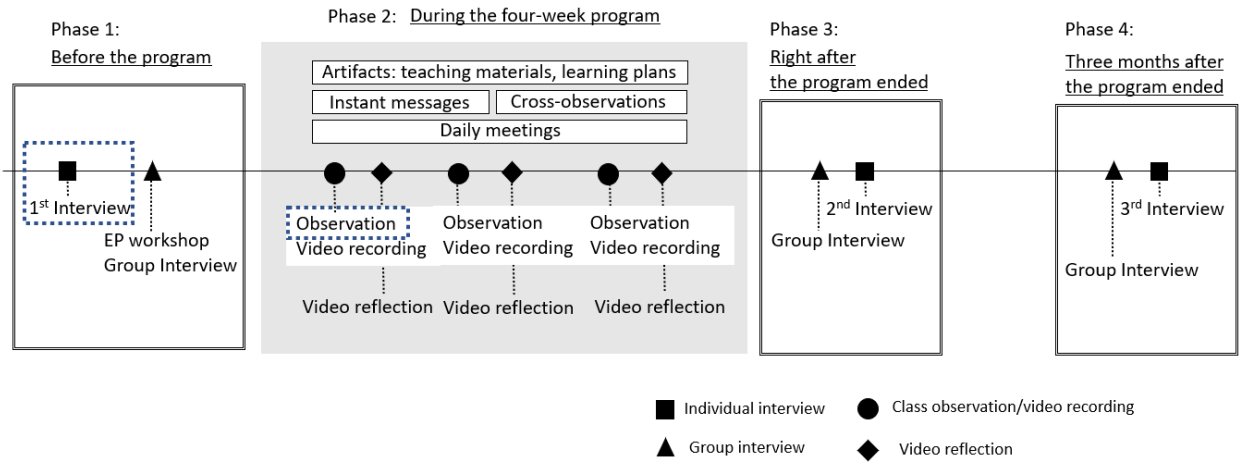
research as it provides opportunities for “co-creation of educational understandings as well as knowledge” (Hanks, 2017, p. 310).

Then, I detailed the settings and participants in conjunction with the research design. The data collection and analysis procedures were also presented. The next chapter provides the findings of the study.

CHAPTER 4. RESEARCH QUESTION 1: BELIEFS AND PRACTICES

Chapter Overview

Chapters four and five provide the findings and analyses of the data collected during the course of the study. As mentioned in previous chapters, this study implements a teacher research project to examine the relationship between teachers' beliefs and their classroom practices regarding technology integration. In this study, three Korean language instructors who were teaching a summer immersion language program engaged in a research project guided by exploratory practice principles. Data were collected from all three study participants throughout four phases of the summer program: before, during, immediately after, and three months after the program. The main sources of data used for analyses comprise semi-structured interviews, classroom observations, individual video conferences, group meetings and teaching materials (Fig. 4.1).



* Dotted boxes represent the focus of analysis in this chapter

Figure 4.1. Research procedures and focus of analysis in this chapter

The focus of this chapter is Research Question 1: What are Korean language instructors' beliefs about the role of technology in language teaching and learning, and how are these beliefs reflected in their teaching practices?

In order to answer question 1, the following sub-questions are addressed:

1-a) What are Korean language instructors' beliefs about language learning and teaching as well as beliefs about technology?

1-b) In what ways do instructors integrate technology into their instructions? Why do they choose (or not choose) to use technology in their classrooms? What factors influence their decisions?

1-c) Are there discrepancies between the instructor's reported beliefs and actions?

This chapter presents findings from careful examination of the individual interviews and class observations gathered from phases one and two (Fig. 4.1). The overview of each participant's interview, including background, reported beliefs, and practices, is presented in its entirety. Then, the integrated findings from all three participants are presented with an aim to answer the above questions.

Making Sense of Beliefs

To begin to answer the research question, it was critical to examine teacher participants' existing beliefs and how their beliefs were shaped. The first interview was administered before the summer program and the teacher research project began. This hour-long, semi-structured interview provided an opportunity for both researcher/facilitator and participants/researchers to make sense

of their beliefs. The interview was conducted in Korean, but as all participants are fluent in English and their language teaching and training experiences took place mostly in the US, they frequently switched to English when they thought it was more appropriate; majority were professional terms, such as "communicative language teaching." When translating quotes, I tried to keep the terms they used as much as possible. These terms are in italics. In some cases, Korean terms are also preserved in italics with a detailed explanation for those that have no equivalent translation.

Field notes from class observation and teaching materials were analyzed to triangulate the interview data. Class observations were conducted three times for each participant during the four-week program; only the analysis of the first observation is discussed in this chapter as the teachers' practices evolved during their teacher research project. Their EP project progress and video reflections will be discussed in the next chapter. The integrated analysis is presented by each teacher participant and subunits of analysis are a) beliefs about language teaching and learning, b) beliefs about technology, and c) the use of teaching materials and technology in the classroom.

Susie

Susie has taken a part in this summer program for three years. In her first year, she was a teaching assistant, aiding instructors in creating teaching materials. In 2018, she taught afternoon classes focused on speaking and culture-related activities. She once again taught afternoon class this year.

Beliefs about Language Teaching and Learning. When initially asked about her beliefs regarding language teaching and learning, Susie clearly stated that "language needs to be used," and thus, she follows a "*communicative approach* in teaching." During the interview, she

frequently referred to her language learning experiences, indicating that they greatly influenced her pedagogical beliefs. Her story started from her English learning at a *hagwon*,[5] which she described as a "nightmare." As is typical of English *hagwon*s in Korea, she learned English in strategic ways designed to improve her test scores. She reported that she had too much homework that concentrated on reading comprehension and grammar problem sets. She recalled, "I had to take a vocabulary test every day, and I couldn't go home until I passed it. I had to take the test again and again until I passed. I really hated going there. I was under a lot of *pressure*. So for the first time in my life, I skipped class and that night, my mom scolded me harshly. So, I don't have any good memories about English." As illustrated in her verbatim comments, she was sent to the *hagwon* by her parents and studied English in the way her teachers told her to. English was a subject to study during this period, and she was not given an opportunity to develop herself as an autonomous language learner. Her memories of learning English dramatically changed when she spent a year in New Zealand, an immersive environment in which she could use the language in the real world both inside and outside the classroom.

She recalled a similar experience with Chinese learning in her undergraduate years. She began learning Chinese at a *hagwon* that was taught in Chinese to prepare her for Chinese proficiency tests. She soon became frustrated with her native-speaking teacher. She said: "…the Chinese teacher kept saying something and I did not understand a single word. She just kept asking me… but I was a *grown-up* at that time, and I felt so *embarrassed* that I had to escape. I got a refund. I just couldn't study a language in the *target language*. I couldn't bear it, I couldn't bear it because I couldn't do anything." In contrast with this experience, her second experience learning

[5] *Hagwon* is a Korean term meaning a private educational institute. Although it is a broad term referring to any profit-based institution offering academic or non-academic (e.g. martial arts) courses, it usually refers to an academy where school-age students go to improve their test scores, serving as cram schools.

Chinese as an exchange student in Hong Kong was much better. Again, she was learning in a target language-only environment, but this time, it was not frustrating at all, although listening was still a challenge. She said, "Unlike the *hagwon* experience, teachers there [Hong Kong] really used *comprehensible input* with super elementary-level students, so that time I just had fun learning it [Chinese]." As she expressed in the technical term, "comprehensible input," she realized that the problem was not teaching in the target language but making the input comprehensible. While she was unable to fully understand every single word the teacher said, she was able to function in the classroom without frustration because her teacher used the target language slightly above her level, which made her challenge herself to acquire the language naturally. While it was later when she joined the TESOL program that she realized the concept of comprehensible input, these contrasting experiences in Korea and Hong Kong surely allowed her to get a glimpse of it.

She underscored that she put an effort into making her classroom "*student-centered*," filled with "*activities* that make students actively participate" and that she is a "*facilitator*," rather than a knowledge provider, but she confessed that it is not an easy task. She was trained to teach in this way in the TESOL certificate program, which she remembered as being a "shocking experience" and at the same time "a challenge." She commented, "…they [teacher educators] said to design activities and make the classroom student-centered; I got it. But it was difficult for me because I had not learned English that way. Because I had not experienced it… I did not know how to make a classroom student-centered. Teachers in Korea always spoon-fed me, and I had thought that was the teacher's role." As noted in her comments, her first teaching after training was rough, having to rewire her teacher-centered tradition. Nonetheless, from all her learning experiences as a language learner and a novice teacher, she formed a strong belief in student-centered learning and a communicative approach. Another comment was, "I now know this [communicative approach]

is a better and more effective way, because students cannot improve their languages if they don't actually use them… I believe it [language] becomes your own when you learn the useable language that you use in the real world because I had experienced it. After learning language for a test, I lost it all." Although Susie clearly expressed her position toward a student-centered and communicative approach and that her previous experiences as a language learner and novice teacher largely shaped this belief, she was not able to fully articulate why and how a communicative approach prompted students to use the language. This may be due to her inexperience in articulating beliefs or her tendency to follow the learned beliefs shallowly. She may have learned a communicative approach as the norm in her teacher education program as a passive learner, just like she learned English at the *hagwon* as she was told to. This raises the need for further examination.

In the classroom, it was observed that most of Susie's overall beliefs about language learning and teaching converged with her practices. She consistently promoted a student-centered learning environment in which students had multiple opportunities to construct their knowledge and interact with one another. In the first class observed, for example, the theme of the lesson was an airport, and the target expression was to ask where the person was going. She introduced basic expressions using real boarding passes, and then presented several pair-work activities, such as having students create their own boarding passes, asking questions of each other, and role playing. When presenting tasks, she frequently used modeling rather than providing directions in English to maintain her target-language instruction as well as to make the input comprehensible. While students were involved in activities, Susie went around the classroom and checked for learning.

Beliefs about Technology. When asked to define technology, Susie immediately responded, "computers, iPads, cellphones that can be used in classrooms. So… machines, I would

say, all the *devices* you use." She stated that she believes technology is effective in holding students' attention, bringing authenticity more easily, encouraging communication, introducing culture, and extending learner experiences beyond the classroom. The benefits she mentioned were closely related to her beliefs about teaching and learning, seemingly viewing technology as an efficient tool to promote a communicative approach. As such, she said she attempts to incorporate technology when possible. Despite her positive attitude toward technology, she mentioned that she does not allow students to use cellphones as they are distracting and hard for her to control. This is an interesting point that she raised, evaluating that the nature of the device and the level of teacher control determine the educational potential of technology.

During the image analysis, she again highlighted the benefits of using technology: highly accessible, enables learning to continue from class to the outer world, and is easily shared so it promotes student communication. She chose image #3 (Fig. 4.2) and explained, "First of all, I think these hands represent students, and each student is using technology to *communicate* with the others. So they really... Oh, this reminds me of what I did in my reading class. To make my reading class more communicative, I asked my students to *surf web pages* in English and share them with other classmates. Those are all reading activities, you know. These days, you can access the web any time, any where, so I think it's very important to *train* students to use it outside of the *classroom*. So this [pointing to the picture] is it. And I think this is a picture illustrating students learning and sharing things using these *technologies* in the classroom and then connecting to *outside the classroom*."

Figure 4.2. Susie's choice

Overall, Susie expressed positive beliefs in technology integration in language classrooms, and they were consistent with her pedagogical beliefs. However, unlike her pedagogical beliefs, which were largely influenced by her previous experiences, she did not refer to any of her previous experiences with technology when discussing beliefs about technology, indicating that she had limited chances to explore technology and its benefits in her actual practices.

Teaching Materials and Technology Used in Class. During the interview, Susie expressed high confidence and willingness to use technology, but when asked to describe her actual use of technology, she said she did not have enough access to it in the classroom, as could be inferred in her discussion. "I would not say I don't use it [technology], but in classrooms that I taught, there was usually only a blackboard. I had a hard time, so I was always longing for it." As illustrated, she attributed her limited use of technology to external factors, particularly accessibility to computers. Naturally, she expressed her satisfaction with this summer program's well-equipped classroom.

Susie's description of her teaching materials indicated that she utilizes teaching materials to increase student engagement with the learning content. Her Korean teaching materials were a mixture of technology and non-technology materials. In terms of technology, she said she mostly

uses PowerPoint slides and videos. She explained that slides are useful in presenting diverse and authentic images while videos are effective in generating student motivation. Worksheets and manipulatives, such as prompt/cue cards, are non-technological materials she uses. “I think the more *props*, the better,” she added. “Students usually have a short attention *span*, so having more props helps keep them engaged.” She mentioned that she tended to follow and copy the lead instructors’ teaching materials as she considered them “answers.” While no one imposed the use of existing materials on her in this program, she positioned herself as a novice instructor and decided to copy and learn rather than create her own. After the first year teaching, this year, she planned to refer to her reflection notes from last year, where she noted what worked and what did not.

Susie’s use of technology was observed in all her lessons. The table below summarizes her uses of technology in the first observed lesson (Table 4.1).

Device	Program	User	L1*
Computer and screen	PowerPoint slides	Teacher	○
		Student	
iPad	Videos	Teacher	○
		Student	

*L1= First observed lesson

Table 4.1. The first observation of Susie’s use of technology

In line with Susie’s self-reporting, she used PowerPoint slides and videos in the first lesson observed. Slides acted as a guide for the lesson—to present images, introduce target expressions, and model dialogues. She presented both photographic and clip art images; the photos showed real places in Korea and the clip art presented new vocabulary. Indeed, slides were effective in presenting images and text together as she had mentioned; however, they were only used as visual

aids that simply delivered content, no different from textbooks. In contrast, when Susie initiated higher-level tasks such as student pair or group activities, non-technology-based materials were used: she distributed image and word cards rather than continuing with slides. She sometimes used slides to provide directions in English to clearly convey what students should do while speaking in the target language throughout the lesson. Again, slides remained a presentation and delivery of low-level task. It was notable that there was no opportunity for students to actually use technology in their activities. It was always Susie having access to technology.

Her use of videos included inflight safety announcements, letting students play the role of passengers traveling to Korea. The announcement was spoken first in Korean followed by English, as it would be in a Korean airplane. Susie played this video twice but did not assign tasks or activities with the video. This was understandable, considering that the language used in the announcement was apparently above the students' proficiency level. Then she explained the details about the announcement in English. Some students seemed confused; one asked the structure of a sentence in the video in English, and Susie answered the question, again in English. This also contrasts with her stated belief—she neither attempted to provide comprehensible input nor maintained the target language. This video did not generate student activities either, which does not correspond to her stated beliefs.

Hannah

Hannah has been one of the main instructors since the beginning of the program in 2017. She served as an afternoon culture class instructor in her first year, a main instructor for slightly advanced proficiency (returning students) group in the second year and taught upper level course

(returning students group) with revised curriculum this year. She has been responsible for designing curriculum and activities with the lead instructor.

Beliefs about Language Teaching and Learning. When asked about her role as a language teacher, she directly expressed that she "has to help students," and "should teach something I know." She seemed to think of herself as primarily a knowledge transmitter—a sort of power figure in the classroom. She emphasized that knowing students' needs and motivating them are critical to being an effective teacher. Thus, rather than pinpointing a single approach to describe her teaching and learning style, it seemed that she diversifies her approach according to students' needs. For example, describing her English teaching experience in Korea, she acknowledged that the goal of Korean students was to get high scores on a test. "In Korea, English is a core subject, so I taught grammar-intensive classes, solving problems, and *reading*, reading comprehension." She said teaching English in a test-oriented way was not difficult because all students are motivated to study in this way. Given that English tests in Korea mostly consist of listening and reading comprehension questions, her teaching geared toward developing students' receptive skills by repetition and memorization, not stimulating or pushing students to produce the language autonomously.

In line with her teaching experience, the attitudes she expressed toward this English-as-a-subject mode were not particularly negative, as Susie's were when she recalled her learning experience as a student. Like Susie, Hannah learned English at a *hagwon* memorizing words and preparing for the test. She also recalled this as being surely a lot of "*pressure*," but regarded it as a rite of passage that every student goes through. All students in Korea are given the same goal—achieving high scores on tests to enter the top universities. Higher education, specifically acceptance to a prestigious college, is a serious issue in Korea as it is the societal norm that

academic success (i.e., achieving top scores on the college entrance exam) ensures and improves their socioeconomic status. Thus, not pursuing better scores is often viewed as a failure, leading students to become obedient for the school curriculum rather than seeking their own interests in certain areas. Given that English is a core subject on the entrance exam and only students' reading and listening skills are assessed in this exam, it is reasonable that students and teachers, including Hannah, shaped their beliefs about English as a means to earn scores and a tool for entering college rather than a language for communicating. Without opportunities to explore other ways of learning the language, students in Korea have no choice but to follow the conventional English teaching method as taught in schools from their early years, resulting in similar beliefs about language teaching and learning. In the case of Hannah, as she expressed, studying English for tests was stressful, but it was just an inevitable task imposed on her. This applied to the other languages, Chinese and Japanese, that she learned in high school. Although these languages were not as important as English exam-wise, they were also taught as subjects for tests and Hannah said she studied them but does not feel that she knows either of those languages beyond recognizing one from the other. This teaching and learning approach continued in her college days until she came to the US.

In the US, her perspective on language teaching and learning changed slightly as learning English was no longer about studying for the test. Rather, she realized the importance of speaking proficiency and understanding how the language is used in the real world. "Foremost, the Korean way of learning was based on memorization, so after the test, it was all gone unless you put real effort into it. In college as well, I learned academic English. The more I studied, the more words I got to know, but… How do I put it? ... hmm, the real language used in a real conversation, the basic expressions, I felt I didn't have those." She said she came to realize that she was truly learning,

not studying the language in the States. “Here, no one pointed out my errors. In Korea, so many people said I was wrong when I made a mistake, so I closed my mouth. But here, for them [English speakers], I am a foreigner who speaks good English. So I started to speak, and you know, if you speak a lot, you get used to the language and your language improves.” She confessed that not having anyone to point out her errors freed her from fear of being wrong and made her speak more. The fear of producing incorrect sentences and obsession with accuracy again stem from her learning experience in Korea, where making mistakes immediately deducts test scores. Once this pressure was removed, she could accept English as a language, a tool to communicate, with a more comfortable mindset.

In teaching the Korean language in the States, she also noticed the different needs of students. “For students here, Korean is not a core subject. They want more conversation opportunities and interaction. They are interested in *authentic* expressions used in Korea.” Realizing what students’ needs are, Hannah focused on building authenticity in her classroom. In this regard, she expressed an unfavorable attitude toward unrealistic situations that textbooks often introduce. She remarked, “Actually, practicing dialogue is the most difficult for me. This dialogue [in the textbook] is correct, but in reality, there are dozens of ways to respond. [When teaching the textbook] I have to pick just one expression, and the students accept that as an answer. I feel like that is a sin [*joe* in her original expression], because… I know that if you go to Korea, there are various ways to talk.” Saying that teaching one expression feels like a sin, Hannah presented a clearly contrasting view about her language teaching in the US compared to in Korea. As an English teacher in Korea, she thought it was her job to teach language for the test, having to teach just one correct answer and disregarding the dozens of alternate ways to respond. Now in the US, once she experienced the language as a means to communicate and became aware of her students’

desire for authenticity, she put more weight on reflecting real-life conversations and building authentic contexts. Still, Hannah did not explicitly say that her reductionist teaching in Korea was wrong; she believed that it was necessary in the Korean context. She also seemed to maintain teacher as a power figure stance as she described that what teacher lectures is accepted as an "answer" by students. This conflicting view, then, resulted from her complete acceptance of the expected norm in each context. Following the expected norm—noticing students' needs and desire for authenticity—her beliefs about language teaching and learning constantly conflicted and were reshaped.

Hannah expressed mixed feelings about the student-centered approach. Although her training programs and the literature she read asserted that the student-centered approach provides more chances for students to learn and speak, and she acknowledges its effectiveness, she said that "it is not an easy task. In my head, I know *student-centered* is ideal, but the way I learned *is teacher-centered*; the way I practiced is also *teacher-centered*, so it naturally comes out that way." This also indicates that previous experience as a learner heavily influences her practices.

Hannah reported presenting myriad authentic pictures to her class allowing students to explore Korean cultures. She also used pictures she had taken, such as one taken inside the airplane with her dolls and integrated her own experiences here and there to enhance the sense of authenticity. In terms of student-centered instruction, it was combined with a teacher-centered approach, but overall seemed to be more student-centered. This reflected well the mixed feelings Hannah holds. While students were allowed to interact most of the time, Hannah often provided direct instruction in either Korean or English when students seemed confused or when clarity was needed and to present new vocabulary.

Beliefs about Technology. When asked to define technology, Hannah named "smartboards" and "apps." While she specifically chose these two to represent technology, she did not choose these two because of their specific features. Rather, these two devices are novel ones that she had not fully explored; for her, technology meant basically something unexplored. She added, "What I can think of now are smartboards and apps…but I think it [technology] is more than that. It covers a wider range…like, *observing* other Korean classes in other countries as a student? Or, developing Korean language *apps*? I don't know for sure, but all these activities… bring more *options*, adding diversity." As she regarded technology as the unexplored, much of her descriptions were vague, but she drew a clear line about things that are commonly used in classrooms. She said, "I think PowerPoint *slides* do not fall into technology anymore. For me, things I take for granted are no longer considered technology. In that sense, using laptops, *PPTs* (PowerPoints), and such are not technologies. Those are just *basics*." She also pointed out that technology is an "essential" part of today's classroom. She said, "I think teachers must learn it [technology], because these students are from generations who started learning based on *technology*. I think excluding technology does not make sense."

During the image analysis, she chose two to describe her perspectives on technology in the classroom. She explained that the first image (image #3) depicts her current situation using technology, and the other (image #9) shows her goal. (Fig. 4.3).

Figure 4.3. Hannah's choice

She began by describing the "goal" image. "I think this [the second picture] portrays diverse methods, connecting …. *Multidisciplinary*? (pause) The picture seems to show using *technology* and integrating diverse methods to achieve learning." While her words were not fully elaborated, they corresponded with her earlier remarks about technology: providing more options and diversity in the classroom. These options and diversity may be interpreted as tasks that students engage with. That is, by using technology, she is able to facilitate diverse ways of communication and student engagement. She then pointed to the first picture. "As I am not integrating things as much, I think I am here, simply using *devices*."

Teaching Materials and Technology Used in the Class. While Hannah had more Korean teaching experience than other participants, she started the interview with a confession that she felt underqualified at first and thus, "passively followed the system and other teachers' teaching methods," when preparing for classes. She said she was co-teaching with the experienced teacher and the methods of the more experienced seemed to be "the correct answer." This underqualified feeling mainly came from the fact that she did not take formal teacher training program to become a Korean language instructor at that time along with her previous failure experience with her job interview, in which she was unable to answer questions on grammatical knowledge. In line with

this lack of confidence, she remarked that she did not think she had the agency or flexibility to modify the curriculum as the Korean program she worked in already had a set curriculum.

Her attitude toward designing and adopting new methods went through a transition when she decided to obtain a Korean language teacher certificate after three years of teaching Korean. While pursuing the certificate, she explored various language teaching methods, observed other people's teaching, and realized that there is no one answer to teaching. This experience helped her reflect on her previous teaching and design her new course geared more toward being student-centered by integrating diverse skills and materials. She took charge of designing the curriculum for one-on-one tutoring this semester and recalled the experience: "Because I am in the charge of tutoring, I tried out diverse methods. In tutoring, a student and I can discuss next week's topic. We set up learning goals together and discuss how to deliver the topic. For example, if the topic is the Korean education system, the lesson can be conversation, a presentation, a discussion—anything the student wants." With more teaching and learning experience as a Korean language teacher and more responsibility, she did not remain following other teachers but became active in designing and developing curriculum, lesson plans, and teaching materials.

In terms of technology use in this new course, Hannah specifically pointed out that she actively uses Google Docs to synchronously give feedback to students. Before coming to class, students are asked to research the topic on Google Docs; in class, students construct dialogues or give presentations. Meanwhile, Hannah opens the Google Doc file, provides comments on their performance and gives additional feedback. Interestingly, when asked about technology uses in regular coursework, she said she is "not using it." This aligned with her previous definition of technology; she reported that she only uses PowerPoint slides, which she said to be "no longer technology." After a moment, she mentioned that she uses videos but immediately corrected

herself. “I will put it this way. I don’t use it [technology], but students use it. In the case of videos, I ask students to create a video, but I don’t do any editing; I do nothing. So, I don’t use it, but the students can use it.”

Hannah continued, highlighting the teacher’s role when adopting technology: “… Teachers need to carefully consider how *technology* is related to learning content. I don’t think creating a video in itself qualifies as a class or a learning activity. Sharing videos and exchanging peer *feedback*… can involve *learning*. If a teacher cannot design these processes, I don’t think one can claim to have used *technology*.” Stating the importance of assessing the educational effects of technology, she added, “Because I don’t know them [technology and how it works] well, I cannot give feedback or an evaluation of how the students worked… I cannot judge how helpful it was for learning… so I think I don’t have a role, which is probably why I think I don’t use it.” As stated, she accentuated that thinking about “why to use technology” should precede, and in this sense, she did not see herself actively using technology.

Regardless of her self-assessment of technology use, Hannah’s uses of technology were observed in her lesson as illustrated in Table 4.2.

Device	Program	User	L1
Computer and screen	PowerPoint slides	Teacher	○
		Student	
iPad	Videos	Teacher	○
		Student	
iPad	Apps	Teacher	
		Student	○

Table 4.2. The first observation of Hannah’s use of technology

Like Susie, Hannah used PowerPoint slides to guide her lesson. She presented instructions, targeted expressions, and modeled dialogues using slides. However, Hannah did not strictly follow the order of the slides or depend too much on them during the lesson. For example, she posted a

new vocabulary word on the screen, but instead of pointing to the screen, she stood right in front of it, partially obstructing it, picked a word card, and introduced the word by showing the card to the students. When presenting student activities, she modeled with a teaching assistant rather than reading the dialogue on the slide. After the students finished their work and she went back to the computer, she then realized that there was a slide with the model dialogue that she prepared for the activity. She said, "I accidently forgot to show you," but, as all the students had the opportunity to create their own dialogue in this activity, she just skipped the slides and went on.

She also played a video of inflight safety announcements that Susie used in her class. In Hannah's class as well, the purpose of the video was not language instruction but to create an atmosphere, which was more noticeable in this class as Hannah turned the light off when the video ended and announced: "Now we are in the airplane. You are going to sleep … 15 hours…. Now we are in Korea!" She turned on the light back, went back to the learning content.

What was not reported in her self-assessment was the use of apps. In the interview, she had said "apps" can be considered technology. In her activity, students were asked to find public transportation to get from the airport to the designated destination. Each student was given an iPad with Korean transportation apps relating to buses, trains, and taxies, in which students can search routes and fares as well as make a reservation. Students seemed excited to explore the apps and search for their own routes for their trips. As a check for learning, Hannah brought out a mini white board and reviewed the transportation the students had chosen.

Eugene

Eugene was the last instructor to join the summer program. Like Susie, he first joined as a teaching assistant in 2018, aiding with preparation of teaching materials. This year, he instructed an afternoon class for the upper-level group.

Beliefs about Language Teaching and Learning. Describing his beliefs about language teaching and learning, Eugene emphasized that language is for "communication." He stated that language should be "used," and thus, the learning content should be "*meaningful* and *authentic*" for students to use in everyday life. He recounted his previous teaching experience in Korea. He was an English teacher at a *hagwon* in Korea for about ten years and, like other participants, acknowledged that English is viewed in Korea as a tool for the test rather than a spoken language. He recalled that he changed the learning contents significantly in order to make them relatable to students, but often confronted parents' complaints who viewed the *hagwon*'s role as the means to ensure their children's test scores. He remarked, "At that time, I thought I just wanted to make the contents interesting, but after the master's program [with teaching methods courses], I realized that I valued *meaningfulness* and *authenticity*." After completing his master's program, he began teaching Korean in the US, adopting what he had learned, and said he actively uses authentic materials. Examples he gave included: "I brought [Korean] newspapers from *Chicago.* [This newspaper] has current news about Korea and the US, too. From this, I designed *reading activities,* and I use *authentic materials,* like Korean radio and other media for listening."

Moreover, when asked about the teacher's role, he stated his commitment and efforts to become a facilitator in his classroom and create a student-centered learning environment, while admitting that these are not easy to accomplish. "The word *facilitator* really resonated with me. I like this word. But I sometimes become a *composer* and … what do you call that—an injector?

Transferrer? A knowledge transmitter! I think these roles keep moving and going back and forth, but the one I prefer and always want to be is a *facilitator*." Unlike Hannah, he refused to be a power figure or a sole informant. "I always think the relationship between teaching and learning is reciprocal. I always learn while I teach. I want to be absorbed by the students, keeping my eyes on their reactions. I always want my class to be in harmony without fixed *power dynamics*."

He also mentioned the importance of teachers' roles in motivating students. He claimed that motivation is another key aspect in learning languages, and high motivation generates "self-directed learning." He cited his French learning experience. In high school, he had a French tutor who fully supported his learning by encouraging his progress and giving him positive feedback. He quickly fell into learning French and looked for materials such as books, movies, and music by himself to learn more about the language. He called this "a true self-directed learning" experience. However, his highly motivated learning was significantly dampened when he met his French teacher at school, who made fun of his pronunciation and even beat him in class. "The trigger moment [when I quit learning] was when I gave a presentation in French. The teacher asked me, "Why are you twisting your tongue so much? This is not English!" and hit my head with a textbook. For real. I felt bad and it hurt, but what most hurt me was that the teacher squashed something that I had been confident and motivated about. After that [experience], I just gave up learning French." From this experience, he acknowledged that teachers can have a significant impact on students' learning. He also expressed his opinion about maintaining the target language in the classroom. He said that he found it extremely difficult to use only the target language in his first year of teaching Korean and asked his mentor for advice. "… He [Eugene's mentor] told me, in a case when teacher thinks it is needed, it is okay to use English. So after that, I explained it [learning content] in English. I added the English explanations and asked students to practice in Korean." In

any of his verbatim, he did not mention that he followed the other teachers' way of teaching as Susie and Hannah did, but it was evident that he used his mentor's advice as a confirmation for his practice. That is, his beliefs about using English and target language corresponded to his mentors' and thus, he was able to build confidence in switching to English when needed.

The goal of Eugene's observed class was to introduce the culture of Korean calligraphy, learning vocabulary on the writing and practicing writing alphabets. He presented authentic images on the screen to introduce the concept and the way to write Korean alphabets in calligraphy. He spoke in the target language most of the time, but he did not hesitate to switch to English when he needed to explain something in detail or answer students' questions. His class was heavily task-based; students spent most of their time working on their own calligraphy and communicating with others about what they needed to begin their writing practice.

Beliefs about Technology. Eugene defined technology in the classroom as "everything that is added to the classroom to make teaching and learning easier." In giving examples, he specifically included "OHP [overhead projector]," while calling it an "old technology." In contrast, he excluded traditional instruments such as "books, blackboards, notebooks, and pencils."

When asked about his beliefs about technology, he stated that he holds a negative stance on technology use in education as it does not provide a real connection like traditional face-to-face interaction. "Overall, I see technology in a negative light. As media, technology connects people, but I don't think this connection is real. It only provides a path, no relationship, no contacts. Communication between a person here and another person there is different from one that occur in the same space. I feel like it diminishes the *authenticity*." This clearly encapsulates Eugene's perspective on technology and authentic communication. For him, conversation is a sharing of physical time, space, and atmosphere between people, not just connecting persons through device

or media. Thus, even though technology readily connects people around the world, it cannot replace a physical conversation act as it lacks human touch.

During the image analysis, he chose image #16 first, then asked if he could choose one more and, picked up image #13 (Fig. 4.4).

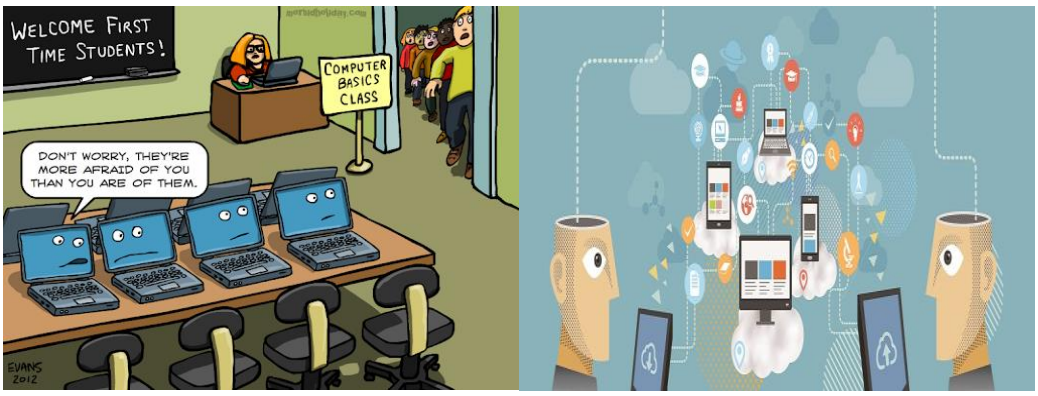


Figure 4.4. Eugene's choice

He connected the first image with his inner "fear" about technology. "Basically, I have a vague fear and feeling of rejection toward *technology*. Unexpected situations happen [when I use technology], like… suddenly the power goes off. I have to take up a great deal of time figuring out what happened. The class time is only 50 minutes and I'd rather talk. So that gives me fear, unexpected things. Also, because I am not *tech-smart*, not skillful, I am scared." On the other hand, he chose the second image to portray the easy accessibility of technology and its benefits. "Students carry cellphones and they have *computers* and *laptops* at home, they bring them to class. If [technology is] used right, it can play a role as the medium to maintain *communication*, which is the most important thing in language education. So, this could be the ultimate goal."

Teaching Materials and Technology Used in the Class. When asked about using technology in his classroom, Eugene initially said the only technology he utilizes is "slides," and

even stated, “except slides, I don’t use any technology.” However, during the interview, he continuously came up with other technology that he uses: videos, music, Google Docs, and learning management systems. He reported that he uses videos and music to increase authenticity, arouse students’ interest, and provide background information. He presented a specific example of teaching formal expressions using videos, explaining that videos help students effectively notice different endings used in conversations while naturally engaging students. However, he also touched upon the difficulty that not all students will be automatically interested in the videos he brings. Some students have commented that videos can be frustrating because they could not understand the contents thoroughly while others seemed to follow them well. From this, he realized that it was his assumption that everyone is interested in videos, and began to select the videos more carefully in relation to the learning content and to provide adequate explanation along with the specific task before playing them.

Notably, Eugene was the only one who discussed learning management systems as part of the technology he uses. Nevertheless, he did not seem to depend heavily on the system but regarded it as another choice students have. “When students submit their writing assignments, they are free to choose how to hand them in. Some print them out and give them to me in hard copy, some upload them to Canvas; and some use Google Docs. I let them choose whatever they feel is convenient.”

In terms of non-technology teaching materials, he said he does not actively use manipulatives made by other teachers but rather provides his students with topics and lets them create dialogues. He explained, “The existing… things like cards, … I sometimes use them but not often. I may use them once in two or three weeks, if students seem to need more practice on certain expressions. Usually, I just ask my students to talk freely. [Because there is no prompt,] students

feel inhibited at first, but soon they get used to it. They make their own sentences without *slides*, and they improve their proficiency using these *practice*s." As read in the quote, unlike Susie and Hannah who said they were heavily influenced by existing teaching materials, Eugene reported that his teaching materials mostly come from students.

Despite his self-assessment of technology use, Eugene utilized more technology than any other participant in his class (Table 4.3). The most noticeable device he actively used was his cellphone. While students were doing their activities, Eugene picked up his cellphone and played music to create an atmosphere from traditional Korean movie scenes. When students finished writing their characters earlier than he expected, Eugene quickly went to his laptop and googled sumi drawings. He shared all of this process on the screen and immediately gave his students a new sumi drawing task.

Device	Program	User	L1
Computer and screen	PowerPoint slides	Teacher	○
		Student	
iPad	Videos	Teacher	○
		Student	
Cellphone or computer	Search engines	Teacher	○
		Student	
Cellphone	Music	Teacher	○
		Student	

Table 4.3. The first observation of Eugene's use of technology

As the other participants, Eugene used slides to guide his lesson, but his slide pages were much shorter than others. He used videos to show how to make ink, which students could not practice during the class. As the language in the video was not targeted for language learners, while it was playing, he simultaneously simplified the language for the students' understandings.

In the next section, a summary of the findings and further discussions on teachers' existing beliefs and practices will be presented.

Connecting Beliefs to Practices

Below are the main findings presented as answers to the research questions. The integrated data analysis reveals four main findings related to teachers' pre-existing beliefs and practices about technology use in language classrooms:

1. The teachers' personal learning experiences as students strongly influenced their pedagogical beliefs and practices, tending to steer them toward fostering student-centered learning environments and preferring to teach a useable language.
2. The teachers revealed varying beliefs on the scope, goals, and effectiveness of using technology in language classrooms.
3. In integrating technology in their classrooms, inconsistencies between the teachers' self-reported beliefs and their practices were observed.
4. The teachers' earlier years of teaching experience, the school settings they work in, and a lack of motivation to change were identified as the factors strongly influencing teachers' acceptance or reluctance to adopt technology.

These findings are discussed in detail below.

The teachers' personal learning experiences as students strongly influenced their pedagogical beliefs and practices, tending to steer them toward fostering student-centered learning environments and preferring to teach a useable language

Breaking through the Doors of the *Hagwon*: Shaping Teachers' Beliefs about Language Teaching and Learning and Their Classroom Practices. Richards and Lockhart (1994) note that teachers' beliefs "may be based on their teaching experience or may go back to

their own experience as language learners" (p. 34). In the interviews, all three teacher participants spent considerable time reflecting on their language learning and teaching experiences. The most significant and unique experiences mentioned took place at *hagwon* institutions in Korea, a representative place that practices teacher-centered instruction and teaches language as a subject rather than a means of communication. Susie called this experience a "nightmare," which made her "hate English." Eugene recalled that the content taught at the *hagwon* "was not meaningful for students," eventually leading him to leave the *hagwon* and begin his academic work. Hannah was the only participant who did not directly express a negative view of her experience but acknowledged the limitations of spoon-fed learning in Korea. She commented, "I could not open my mouth when I came to the US." While each participant interpreted learning experience at *hagwon* slightly differently, they all agreed that they learned from their *hagwon* experiences that test-oriented and grammar-based instruction were not effective in acquiring a language.

Susie and Eugene particularly highlighted their beliefs about teaching a "useable language," which derived from their childhood experiences. As they previously experienced English as a language for communicating and were exposed to an immersive environment in childhood, they had stronger resistance to the study of a language as a subject at a *hagwon*. In contrast, Hannah later realized that studying English was not helpful once she came to the US for graduate school and experienced the language as a tool for communication. Their perspectives on the useable language strengthened through their teacher training programs [6], in which they learned communicative language teaching approach. As communicative approach is widely accepted in second language education, the teachers reported that teacher training programs provided teaching skills pertaining to this paradigm, which resulted in solidifying their beliefs about usable language.

[6] Susie and Eugene completed TESOL certification; Hannah underwent Korean language teacher training.

This supports the influence of teacher education programs in shaping and changing teachers' beliefs reported in previous studies (Richardson & Kile, 1999; Tatto & Coupland, 2003) as they provide teachers opportunities "to perceive, analyze, and transform their perceptions" (Clark & Peterson, 1986, p. 281).

The participants mentioned a number of strategies to facilitate communicative language teaching: using authentic materials, making content meaningful, providing comprehensible input, and adhering to target language instruction. All participants emphasized the use of authentic materials, and in their lessons, they displayed materials, such as pictures taken in Korea, short video clips from Korean shows, and boarding passes from Korean airlines. In terms of target-language instruction, Eugene used English a little more freely than other teacher participants, which seemed to be driven by his reported beliefs.

While their beliefs generally coincided with student-centered instruction, their views on teachers' role in the classroom were slightly divergent; two said the role of teachers is to be "facilitator," while Hannah seemed to lean toward knowledge transmitter. In their reported practices, they all expressed that they frequently face difficulties in making student-centered learning environments. They all learned to teach in a student-centered way in their teacher training programs and through this experience, they have explored, reshaped, and reinforced their beliefs. However, they all said they often become suspicious of their practices and see themselves going back to teacher-centered. Hannah attributed this to her lack of experience in learning in student-centered environments, which other teacher participants echoed. Eugene said, "I find myself talking too much. I always have to remind myself that I am taking away students' time to practice [on their own]." Susie also remarked that she received feedback from her mentor after her first observation saying that she does too much talking in classroom. Hannah and Susie also mentioned

that they sometimes feel "teacher-centered instruction is effective and fast" to teach more content, which makes them keep thinking about the ideal approach. This confirms that their experiences as learners, whether they are favor or unfavorable, largely influence their initial shaping of their beliefs about teaching and learning and these imprinted, longer-held beliefs are more resilient to change (Pajares, 1992). Holding mixed feelings and incompatible beliefs is also a common feature of beliefs, as argued in Green (1971) and other studies on teacher beliefs (e.g. Richards, Gallo, & Renandya, 2001).

Contrary to their concerns, their class observation consistently exhibited a student-centered learning environment within communicative approach, corresponding to their reported beliefs. Their balance of teacher talk and student talk was effective and they used various learning activities to allow students ample opportunities to interact with one another in Korean.

The teachers revealed varying beliefs on the scope, goals, and effectiveness of using technology in language classrooms

What is Technology? From Everything to Nothing. As scores of studies have argued, the definition of the term "technology" has not found consensus (Feenberg, 2005; Spector, 2020; van Wyk, 2004). In this study, as well, each teacher presented vague but varied definition. When asked initially to define technology in language classrooms, they held back for a minute, seeming to be a little lost. When they began articulating what they regard as technology, the descriptions all involved "device and machine." This echoes what Wang and Winstead (2016) point out: people generally think of machines or artifacts invented by humans, while that is a narrow description of technology. When pressed, however, the teacher participants presented different kinds of devices,

showing that their range of technology was different. Eugene had the widest range of the three, specifically including OHP as old technology. Susie named “computers, iPads and cellphones” as examples of devices. Hannah mentioned “smartboards,” while pointing out that “slides and laptops” are no longer technology as they are used on a daily basis. Unpacking from her words, something that is unexplored along with cutting-edge skills are another aspect that Hannah regards as technology.

In their definitions and examples of technology, teachers focused more on devices, not mentioning software programs such as PowerPoint slides and multimedia like videos and music. However, when asked about their technology uses, it was the opposite. They did not report devices such as computers, but referred to slides, apps, Google Docs, videos, and music. In the case of photos and authentic images, teachers included or excluded them from time to time. When the images are on slides and presented on a computer screen, teachers regarded them as technology, but once printed and used on cards or worksheets, they were no longer seen as technology.

The benefits of integrating technology into the language classroom have been discussed in a number of studies (Davis, Otto, & Ruschoff, 2014), and during the interview, each teacher participant highlighted different aspects of technology. Susie focused on the efficiency of technology, saying that it allows her to present videos and images more easily, thus enhancing authenticity and presenting the target culture. Hannah underlined diverse options that technology can bring into the classroom as it increases access to a myriad of resources outside the physical classroom. As Ihde (1994) notes, Hannah also underscored the relationships between technology and the humans who make and use them. She remarked that technology *per se* does not automatically lead to learning, but teachers who integrate technology into the curriculum enable learning to occur. This echoes previous studies that stressed the appropriate use of technology and

the importance of teachers' roles for successful technology integration (Arnold & Ducate, 2015; Liu & Kleinsasser, 2015). Eugene stressed connectivity, allowing people to meet and communicate in online space. However, he simultaneously revealed his negative perspective on this aspect, saying that he does not believe that online space generates a real communication between people.

During the image analysis, teachers tended to describe the ideal learning environment using technology, connecting it to their pedagogical beliefs. Eugene and Hannah chose two images, one as current-status and the other as their goal, indicating that there is a gap between their current and ideal uses of technology. Discussing the current-status image, Eugene addressed his fear of using technology due to his inability. This was contrasted with Susie, who expressed her confidence and enthusiasm for using technology.

As every participant indicated a varying definition and level of confidence in technology, they reported their uses of technology distinctively while their observed technology uses were similar in terms of which format they use and in what ways. Despite Hannah stating that technology is an "essential" part of today's classroom, she assessed herself as not using technology at all because her definition of technology excluded slides. Additionally, she commented that the students were using the technology—she was not—and it is difficult to design appropriate activities integrating technology due to her limited grasp of technology. Eugene presented similar but greater unwillingness to use technology. He reported that he uses slides, videos, and music but did not sufficiently elaborate. Instead, he described how his students use Google Doc as a means to submit writing assignments. In contrast to the other two, Susie expressed her favorable attitude toward integrating technology, as she regards herself as having grown up with computers. She listed computers and iPads as the devices she uses, but specifically excluded cellphones as she

believes cellphones distract students. Nevertheless, she noted that she has not had ample opportunity to use it in practice because the classrooms she taught were mostly not well equipped.

Taken together, these findings indicate that the teachers had insufficient opportunities to explore, experience, examine, and evaluate the educational potential of technology from their prior learning experiences. Thus, the teachers are not fully aware of what is out there, or how and why to use technology in their instructional practice. These findings support previous studies (e.g. Gilakjani & Sabouri, 2017; Korucu-kis & Ozmen, 2019) which require teacher education and professional development programs to provide teachers with meaningful experiences to raise awareness about technology integration.

In integrating technology in their classrooms, inconsistencies between the teachers' self-reported beliefs and their practices were observed

Connecting Beliefs about Technology, Beliefs about Teaching and Learning, and Classroom Practices. While previous studies have argued that teachers seldom examine or express their beliefs and thus may not be capable of describing their beliefs (Chen, 2008), the teacher participants in this study were fairly able to enunciate their pedagogical beliefs well. Overall, their pedagogical beliefs can be characterized as promoting a student-centered learning environment and teaching a useable language for communication, while there were some diverging perspectives on ways to facilitate these beliefs. The reported beliefs mostly converged with their classroom practices and teaching materials, exhibiting a student-centered learning environment where students are given multiple opportunities to practice target expressions and communicate with each other. Some teachers also expressed their mixed feelings and challenges in aligning their beliefs and practices.

On the other hand, teachers seemed to struggle when asked about their beliefs about technology. Their words and expressions were unpolished, sometimes inconsistent, and new ideas constantly came up in the middle of their thoughts. Each participant held varying levels of confidence with using technology in language classrooms and different perspectives on its scope and effectiveness. Hence, their self-assessment of their technology use and their actual classroom practices diverged. In the interview, Hannah assessed that she does not use technology at all; Susie remarked that she uses it if the classroom is well equipped; Eugene described his use of a learning management system and barely mentioned slides, adding that he is scared of technology. In their lessons, however, devices and technologies they used and how they used them were considerably similar. They all used slides and videos. While Susie asserted her willingness to integrate technology, she used the least technology in a fully equipped classroom. Hannah, despite her self-assessment, presented student activities incorporating technology. Eugene utilized technology during class more spontaneously and outspokenly than the others. This contrasts with their pedagogical beliefs and practices, but consistent with prior studies (e.g. Korucu-kis & Ozmen, 2019), which indicates that teachers had insufficient opportunities to express their beliefs about technology and to reflect on their practices.

While their reported beliefs and self-assessed technology use varied, they all tried to connect their pedagogical beliefs to technology to describe the ideal integration of technology. That is, they expected to use technology in ways to facilitate a student-centered classroom and student communication, yet they acknowledged that they do not know it well. Nevertheless, very few instances were observed that met their goals. Computer screens and slides were the technology that all participants used in their classrooms, but their use of slides was simply to guide the lesson, no different from the content on paper-based worksheets. Slides were used only when a teacher

presented instructions and explanations without making use of interactive functions, working essentially as a tool to reinforce teacher-centered time. Videos were another technology that every participant incorporated. They commented that videos increase authenticity and easily bring in cultural aspects. In this sense, all participants' video use indeed brought in culture and authenticity but did not integrate linguistic aspects or highlight important concepts, given that there were no follow-up activities or tasks attached to it. Video was simply played, not used in ways to foster their pedagogical beliefs. Moreover, when playing the videos, teachers tended to switch their language to English to provide detailed explanations about the situations in the videos, which clearly diverged from their beliefs on target-language instruction.

Using more English was evident in Hannah's activity introduction. The activity asked students to explore Korean transportation apps and find an appropriate means of transportation. As the activity was quite complicated, Hannah switched her language of instruction to English to give directions to students. While this act did not encourage her to maintain her target language instruction, through this practice, students were able to use technology to engage in a meaningful task, increase cultural awareness, and share their findings with each other in the learned language. This activity was the only one in which students were given the chances to use technology in order to facilitate language practice and was thus the most student-centered one observed.

The teachers' earlier years of teaching experience, the school settings they work in, and a lack of motivation to change were identified as the factors strongly influencing teachers' acceptance or reluctance to adopt technology

"I would like to use technology, but…" Implementing technology can be a demanding and challenging task for teachers. Studies have noted that teachers are more likely to accept and apply new teaching strategies if the assumptions underlying the practices are in accordance with their personal epistemological beliefs (Veen, 1993; Yocum, 1996). In the same vein, the teachers in this study associated their pedagogical beliefs with technology in order to illustrate their ideal technology integration and indicated their expectations for its benefits. However, despite their beliefs about technology and reporting their teaching and learning beliefs to be aligned, their observed classroom practices were inconsistent with their expressed beliefs. The teachers implied that other factors caused these discrepancies: their years of teaching experience, the school settings they work in, and a lack of motivation to change.

The teachers indicated that their prior teaching experiences play a significant role in planning lessons and designing teaching materials. Susie and Hannah recalled that as novice Korean language teachers, they tended to copy the lesson plans and teaching materials of more experienced teachers. They reminded that they had regarded the materials already developed and in use as the "answers" and blindly imitated them. While imitating is a natural process for novice teachers, it was notable that the teachers called the existing materials by the experienced as "answers" rather than examples, positioning them as followers instead of creators or leaders of their teaching practices. This is possibly due to the imprinted habit pursuing answers as passive learners at *hagwon*s or the rigid culture of the school context that does not allow change, which ultimately result in generating the reluctance to change when faced with new challenges. As these

experiences built up, the lesson plans and materials they followed gradually remained as their teaching method. The teachers mentioned that they pay heed to student evaluations at the end of the semester and notice what works well and what does not. However, they did not mention that they made major changes based on feedback, which again supports that change rarely happens even though they are aware of the needs.

On the contrary, in the case of Eugene, who had more than ten years' previous language teaching experience and less experience in *hagwon* as a learner in Korea, said he may refer to existing materials but does not entirely follow them. He had already shaped his teaching style without technology throughout his teaching career, which makes it difficult to change. Eugene stated that "….it is easy and convenient to do the same thing [reuse previous years' materials] every year." Hence, there is a strong possibility that overall less integration of technology in classrooms and not using technology in accordance with their pedagogical beliefs are the results of how they interpreted available resources in their earlier years of teaching.

Moreover, teachers signaled that the school settings they work in also influence their lesson designs. They indicated that if there are established curricula and lesson plans, they feel reluctant to change them. This reluctance is caused by a number of factors: most of them started Korean teaching as teaching assistants with little flexibility to create or change the curriculum, teachers gain reassurance from an already established curricula, teachers assume that there would be too much work involved in creating a new curriculum and they already have a lot to do, and teachers may feel overwhelmed by the greater responsibility required. Given that existing curricula seldom integrate technology or use it in a traditional way, it is unlikely that teachers have much opportunity to think about the appropriate use of technology in today's classrooms. Thus, as teachers tend to choose and design their activities within the established curriculum and learning goals, they may

use technology in a way that is inconsistent with their beliefs or simply not use it. Hannah said that as her school's curriculum highlights grammar and because paper-based tests make up a large part of student's grade, she had to make adjustments to class materials to render them more grammar-based and teacher-centered to be efficient. Conversely, Susie's program encouraged student-centered learning and actively shared lesson plans and teaching materials. Susie commented that this "sharing" helped her design teaching materials.

School settings also include contextual factors such as access to technology in the classroom, which Ertmer (1999) categorizes as first-order barriers. Susie recounted that her classrooms were rarely equipped with technology, so she had to bring paper-based manipulatives and realia to facilitate student activities. While studies have argued that such barriers are relatively easy to remove (Palak & Walls, 2009), equipping classrooms seldom or only slowly occurs in real practice. When a limitation persists, teachers keep adapting themselves to the environment, lessening the possibility to adopt technology and becoming ever more resistant to change.

Finally, all teachers pointed to the lack of motivation to apply new methods or materials. They all used the term, *guichanda* in Korean, which means somewhere between feel lazy, can't be bothered, and not feel like doing it so putting it off to later apathy. They said they "know" that technology could benefit student learning, but they hesitate due to *guichanda*, as using technology is a new approach for them. As Eugene mentioned, it is easy to maintain their practices, but it takes time and effort to adopt a new strategy. As there is no motivation to take the initiative, teachers tend to remain passive and conservative.

As discussed, inconsistencies between the teachers' reported beliefs about teaching and learning and their actual technology uses as well as overall inactive integration of technology are influenced by the interplay among these different factors.

Summary: Implications for Professional Development Aiming at Successful Technology Integration

Studies have pointed out that the greatest difficulty in integrating technology is the mindset of teachers and their deeply held beliefs about the nature of teaching, learning, and technology itself (Lundeberg et al., 2003). Thus, this chapter unpacked the first research question, which aims to address a) teachers' existing beliefs about teaching and learning as well as technology, and b) the relationship between their reported beliefs and practices. In this regard, this chapter presented findings from individual in-depth interviews, initial class observations and teaching materials. Each teacher participant's beliefs about teaching and learning, beliefs about technology, and the use of teaching materials and technology in language classrooms are analyzed and presented as a single case. Then, integrated analysis was presented with discussion. Taken together, the findings indicated that there had been insufficient and inadequate opportunities for teachers to develop their beliefs about technology integration, which professional development programs should take responsibility for.

The next chapter will present the findings from the data gathered in the phases two and three, exploring the participants' teacher research projects and their professional development.

CHAPTER 5. RESEARCH QUESTION 2: INTEGRATING RESEARCH INTO PRACTICES

Chapter Overview

This chapter addresses the findings related to Research Question 2 and the following sub-questions:

2. How do Korean language instructors interpret and work with exploratory practice (EP)?

▪ Sub-questions:

2-a) Based on exploratory practice, how do instructors understand their beliefs about technology and how do their beliefs and practices evolve by "integrating research into pedagogy"?

2-b) Based on exploratory practice guidelines, how do instructors form and engage in a teacher community to "involve everybody"?

2-c) How could the principles of exploratory practice guide teachers' "quality of life" in the classroom and affect their future instructional practices and sustainable professional development?

To answer the above questions, this chapter illustrates teacher participants' processes of performing EP with a particular focus on their integration of technology in the classroom. Figure 5.1 presents how teacher participants engaged in EP throughout the summer program. Before the program began, participants joined a workshop introducing the principles of EP. During the

program, while teacher participants were free to conduct their puzzle investigation at their own pace, I emailed them a weekly reminder summarizing each week's goal and activities.

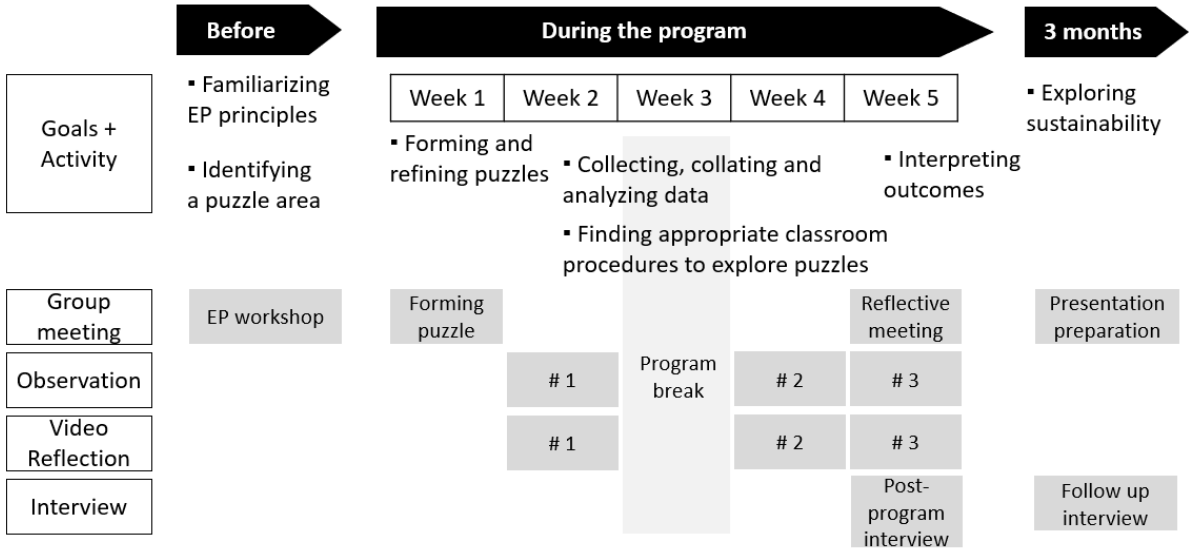


Figure 5.1. Implementation of EP

The main sources of the data analyzed in this chapter are the group meeting interviews, classroom observations, individual video reflections, individual interviews, and teaching materials; they were collected during, after, and three months after the summer program. The findings will be presented in the same general order similar in which the data were collected to capture the participants' view of their projects over time. The chapter starts with a report on the progress of each participant's EP project by analyzing video reflections and group meetings and is presented in three phases: becoming familiar with EP and identifying the puzzle area, investigating puzzles, and experiences with EP. Next, the integrated data analysis is reviewed, and the discussion will be followed.

As in the last chapter, I tried to include the verbatim of each participant as much as possible. The original terms participants spoke in English were kept in italics, and Korean terms that do not have equivalent translation are also preserved in italics with a detailed explanation.

Becoming Familiar with Exploratory Practice and Identifying Puzzle Area

Introductory Workshop: Becoming Familiar with Exploratory Practice Principles

Before the summer program began, I invited teacher participants to an hour-long workshop to introduce EP. The overview, seven principles, and EP procedures were presented with a further reading list (Appendix 1). After this introductory session, all participants were given time to ask questions and discuss possible concerns. While the content was new to them and a great deal to digest, they did not raise particular concerns as they thought it was better to dive in first and experience it to understand the abstract concepts. Instead, they revealed a range of expectations that this could be an opportunity to examine and reflect on their teaching practices in the context of their own teaching. Susie said, “I like this kind of thing [practitioner research]… but you know, it is hard to motivate myself on my own.”

While the teachers had not tried practitioner research before, as graduate students experienced in critical reflection activities, they expressed familiarity and appreciated that one of the principles mentioned minimizing the burden on teachers (Allwright & Hanks, 2009). Having assumed, when they decided to take part in this project, that there would be new things to learn and changes to make in their practices, they were somewhat relieved. Hannah even asked for reassurance: “[T]hen I just need to do what I do?” With regard to the principles, the teachers indicated that they would get used to them as the research processed. At the end of the workshop,

they were asked to formulate their initial puzzles with particular attention to classroom technology integration. To clarify, samples of puzzle questions from previous studies were presented.

Group Meeting: Identifying Puzzle Area

The first group meeting after the workshop was held three days before the program began on the day of staff orientation. The purpose of the meeting was to share their initial approach to puzzle areas. Before sharing their puzzle areas, Eugene and Susie raised the question of whether they had to choose only one. They said they had come up with too many questions. Hence, the teachers began by articulating their questions and backstories about the puzzles they had chosen. We spent the necessary time evaluating these puzzles together and helping each other choose and refine their questions.

Eugene began his story by presenting his negative attitude toward technology. He remarked that after the individual interview, he became clearly aware that he did not actively integrate technology. He attributed his apathy about using technology to an unknown resistance. He raised two questions: “Why do I refuse to use technology?” and “Why is it beneficial to use technology in language classrooms?” Through group discussion, we realized that understanding the benefits of technology could partly unpack his “unknown resistance.” Thus, his resulting puzzle became “Why am I resistant to integrating technology?”

Susie’s questions combined different concepts. She was interested in how technology could aid her in increasing the use of the target language and teaching the alphabet explicitly. Through discussion, we found that target language instruction and alphabet teaching were more concerned

with strategic skills and could be utilized as her exploitable pedagogic activities. She refined her question to “Why is technology effective for teaching and beneficial for my students’ learning?”

Hannah had a straightforward question in mind. She acknowledged that she does not integrate technology regularly and expressed her frustration, saying, “I know *technology* is good and people encourage using it. I just don’t know why I am not using it.” Her resulting puzzle was “Why do I not use technology at its full capacity?”

Investigating Puzzles

When the summer program commenced, the teachers conducted their projects according to their own agenda and participated in three video reflection sessions. As the lead instructor and teacher consultant, I sent them a weekly reminder to check their progress and provided them materials and suggestions when required.

This section will present the individual processes the participants used to investigate their puzzles. The data were gathered during the program, from classroom observations, teaching materials, video reflections, daily meetings, and individual end-of-program interviews. Classroom observations were all video recorded to facilitate their reflections. In an individual video reflection session, we did not watch the whole recording of the lesson; rather, I used some parts to prompt the teacher’s reflection, or the teacher chose a specific moment to review. Teaching materials were all uploaded to the shared cloud, and teachers’ video reflection conferences and post-interviews were recorded and transcribed. Daily meetings were not held for specific project purposes but rather in preparation for that day and the next, and were thus, not audio recorded. Nevertheless, topics regarding their puzzle investigation did come up from time to time; I tried to keep memos

when this happened. In this section, I will describe each individual participant's a) puzzle investigation progress developed mainly from their class observations and video reflections; b) evolving beliefs and practices that summarize their reflections and post-interviews; and c) responses with EP, collected primarily from their post-interviews.

Susie

Susie's question was "Why is technology effective for teaching and beneficial for my students' learning?" While she held a positive attitude toward technology integration, she said she had not had an opportunity to specifically think about "why" it is effective. Hence, she expected to further investigate its effectiveness in teaching and learning in line with her pedagogical beliefs. She expressed her specific interest in investigating why technology is an efficient tool to promote student-centered learning, increase authenticity, and maintain the use of the target language in her classroom instruction.

Investigating in the Classroom: Practices and Reflection. Having formed her question, Susie initially explored technology she had previously used and other types she could bring into the classroom. She actively referred to the shared cloud to look up previous years' materials and seek the advice of other teachers. For example, she picked up the safety announcement video she played in her first observed class from Hannah's teaching materials after observing her lesson. Below is the complete observation of Susie's uses of technology in the classroom (Table 5.1).

Device	Program	User	L1*	L2	L3
Computer and screen	PowerPoint slides	Teacher	○	○	○
		Student			
	Videos	Teacher	○	○	○
iPad		Student		○	○
iPad	Online portfolio	Teacher			
		Student		○	○

(L1* = First observed lesson)

Table 5.1. Susie's observed use of technology

In the first video reflection session, she pointed out the language switch that was caused by the safety announcement video. She said she had no choice but to switch her instructional language to English when a student asked about the formal speech form in the video. "[A student was]… asking about the formal speech. We are only learning the informal speech form… and for them, English does not have such a concept. Although I tried to explain *formality* in Korean, they looked at me like this [with confused facial expression] … so I had to explain it in English." Susie seemed to be disconcerted by this unexpected situation, but soon realized that it was the problem of choosing the appropriate material. As she did not take her students' language proficiency level into account when she chose the video, she could not maintain the target language instruction, which she highly values in her teaching.

After the first observation and reflection session, she became more careful in selecting multimedia materials and likewise had realized that she depended heavily on the web when preparing her teaching materials. She attributed this to her lack of experience in student-centered teaching. "… People tend to teach in a way that they themselves have experienced unless they are really *creative*. I'm losing my creativity these days, so I am *searching* online a lot. How can students… well, because I have not experienced a *learner-centered* or *communicative language class* as a student, I often need ideas. So, I search a lot in the *internet* to *surf* what kinds of *activities* are out there." This comment reveals that technology has made her work easier in materials

preparation as she could gain new pedagogical ideas and solutions on the web. Had there been no technology, she might have needed to ask other teachers in person, or refer to books, which will require more time and effort. In this regard, the use of internet technology greatly aids her to address questions and complement deficiencies readily, leading her to think technology an efficient tool. In line with materials preparation, she stated that technology makes her work easier when presenting photo images in class. “If there was no technology… I’d probably have had to *printout* all the images and hold them up in front of the class.” In this respect, she assessed technology as “a tool that enables you to teach classes efficiently.”

The noticeable difference in her use of technology in the second observation was that she added student activities involving technology. In the second lesson, students were given a group video project that asked them to create a dialog in a café using expressions they learned. In groups of four, the students created a dialog, acted it out by role playing, video recorded it with iPads adding captions, and edited it as a short clip. The students uploaded their video onto their online portfolios, a feature the program offered, to check their learning progress. When the work was completed, Susie collected student comments on the activity using exit slips. Selected students’ comments were:

- The video project was... troublesome.
- The video project was a little rough.
- The video went smoothly.

In the reflection session analyzing students’ responses, Susie recognized that she had presumed too much about the students’ technical abilities and not fulfilled her responsibility to give clear directions, including on the technical skills required, when she designed an activity

involving technology. She pointed to the students' struggling with video recording and editing, causing them to consider the video project "troublesome." She said, "….students in my class seemed not to be as good at *editing* as I had thought. They don't know it, so they just don't do it. So if I am going to give them a *video project*, I should not assume that they all know how… Give them *guidelines* or teach them how to use the *iMovie app*." The problem raised here is that teachers have very vague assumption about their students' digital literacy or competency so that they often leave out important instructions or bring in inappropriate tasks. This causes students' overall confusion about the task, as confirmed in their comments.

In the second and third lessons, Susie displayed a slightly different approach in presenting videos. She selected a video from a popular YouTube channel, "British man," filmed by a famous British guy living in Korea. She played a video of him tasting Korean traditional tea to introduce the Korean tea culture. According to Susie, she purposely chose this video not only to raise cultural awareness but also to present a role-model to the students, "since this channel… [shows] a foreigner introducing Korean culture. As foreigners themselves [students], it could resonate with them. … Our students are all Whites, completely *Caucasians*… this video shows them a *Caucasian* can also speak Korean. [He is] like a *role model*. Well… the video was mostly in English, but in the middle, from time to time, Korean words and expressions popped up, which they [students] learned, so that is good too." Moreover, she found the strongest benefit that technology can bring is accessibility, increasing the possibility of expanding Korean learning beyond the classroom. After the class, she shared the links to the channel in a classroom group chatroom on Kakaotalk[7]. "The *ultimate* goal [of showing videos] is that… [I want them to] watch

[7] Kakaotalk, the most popular messaging program in South Korea, is a free mobile instant messaging app for smartphones with free text and call features.

it after class, increasing *input*. Students can access *YouTube videos* more easily. Sustainable learning." Moreover, she pointed out that the reason why students cannot extend their learning is that there are too many resources out there, but they are not yet capable of choosing the valid and authentic one to attend to. She said, "Students are not doing it [learning outside the classroom] not because they don't want to, but because they don't know how. In my thoughts, things come up easily when you *search,* but when you are *searching* something, too many things come up. Ah… that was why students say they don't know. So [I want to introduce them] among the videos that I already watched, and that I considered helpful for their learning." She said she realized that it was teacher's role to select and introduce appropriate materials for students to give them a steppingstone to the real world.

Susie also mentioned that video helps hold the students' attentions and gives them a sense of achievement. "Videos are fun, so rather than me continuing to lecture, [I used it to] shift students' *attention*. Giving different *perspectives* and showing various people speaking Korean." Students' acquiring a sense of achievement was well confirmed in the students' comment papers after her third observation class for which she designed an interactive video activity. She selected a clip from a famous Korean show filmed in a bed and breakfast, which contained many expressions the students had learned throughout the lessons. After playing the whole clip, she gave students clear directions of what to listen for in the clip. She played it again, and the students seemed pleased to find the expressions that they could hear and understand. In the third time playing through, she paused the video from time to time and posed questions, such as "What is her name?" and "What are they doing?", to reconstruct the video situations in conversational form. Then, students were paired and assigned to talk about the video scenes based on worksheet cues and to create their own dialogs. Selected students' comments about this activity are presented below:

▪ [I]t was really cool to watch a video and be able to understand a few words! :)

▪ I didn't really like watching the video. It was a long stream of high-level vocabulary and I felt like I didn't understand any of it. If I want to listen to a long stream of Korean I won't understand, I can watch a K-drama.

▪ I love the scenarios we are put into! It really helps me speak the Korean language and know how to use it.

▪ I was very glad to find out that I can now distinguish some words from videos! ♡

▪ Today was super fun. I enjoyed watching the show and may watch it myself.

▪ Watching Hyori's bed + breakfast was fun :) I liked that I was able to understand some of the words.

Analyzing students' responses to the activity, Susie expressed satisfaction with the activity as students were able to build confidence in real-life language use. While one student expressed difficulty understanding, Susie said the student would feel less overwhelmed if she planned ahead more carefully. "The videos are easy when you use them without any plans but do not lead to *learning*. If I just play a video [without any activities] students may think 'I can watch that at home by myself'," she said. She concluded that technology is beneficial to students' learning when it is purposefully chosen and designed meticulously.

Evolving Beliefs and Practices: "I used to think it is easy, but it is not an easy thing."

In the individual end-of-the-program interview, she highlighted three major findings from her puzzle investigation:

1. Technology is an efficient tool for teachers to prepare class materials.

2. Technology is beneficial in raising students' cultural awareness, presenting various types of real language, giving them a sense of achievement, and extending their learning beyond the classroom.
3. For technology to promote students' learning, teachers' roles and their understanding of technology are crucial.

Susie appreciated that technology saves a great deal of time when she prepares teaching materials. During the project, she realized that she depends heavily on the web and search engines to browse available resources, such as student activities and authentic images. She also actively used a cloud service shared among the program teachers to look up others' lesson plans and class materials, simultaneously sharing hers. She also felt technology is efficient because she can readily present images and videos on computer screens without having to print them all out.

In all her observed lessons, Susie made use of slides and videos. While her use of slides functioned similarly in all lessons, she varied the videos used after collecting student comments and participating in reflection sessions. She came to think more about "the purpose of using videos" and chose the videos more meticulously. She particularly regarded videos meaningful in presenting diverse perspectives on language culture and providing students a role model by showing a foreigner speaking Korean and experiencing the Korean culture. She also expected that videos shown in the classroom would play a role as a bridge connecting the classroom with the real world by introducing the language used in an authentic situation. "I think learning happens when students actually use the language and when they discover something rather than passively listening to lectures…. [By] watching videos, students can witness the language they learned are actually being used." The emphasis on real language for use also aligns well with her pedagogical beliefs. Moreover, this connection led students to feel a greater sense of achievement in learning. When

Susie presented an interactive video activity, students expressed a great deal of excitement about understanding the real conversation in the video.

As another attempt to connect the classroom to the real world, Susie provided the students links to the video to encourage them to be continuously exposed to the Korean language and culture outside the classroom. Despite being unable to confirm that "learning outside the classroom" actually happened, she greatly appreciated the accessibility of the technology.

Above all, Susie said the most important thing she learned was that teachers' understanding of technology and carefully designing activities are pivotal for successful technology integration in the classroom. She confessed that she had previously used technology without much thought or planning. "I came to realize that I used technology just for my own convenience. I had not gone through *critical thinking*. I just used it and took it for granted. Will it really benefit students? Why? I never approached it this way." By questioning "why," she was able to "avoid using technology habitually" and reexamine her practices. She concluded that if technology does not foster learning, then it is because teachers lack a deep understanding of what students already know and what their needs are. Teachers need such understanding and a great deal of effort. Susie confessed, "I used to think it is easy, but it is not an easy thing."

About her pedagogical beliefs, Susie assessed that she was able to strengthen her positive beliefs about technology. "I have not used technology in a way against my beliefs," she said. Then, she summarized her beliefs about technology as follows: "I think technology is a *tool*. It can be medicine or poison depending on the amount you use. So, it is a *tool* that requires careful planning. When you use it right, it can increase student *involvement* and hold their *attention* but when you abuse it, students do not learn from it and teachers can easily become lazy."

Responses to EP: "We are better together." When asked about the overall EP experience, Susie initially said that the experience allowed her to become continuously conscious of her puzzle. She was able to macro-think and analyze her everyday practices, including her lesson design and preparation, practices in classroom, and the students' reactions. In terms of the EP principles, she constantly used normal pedagogic practices (P7) by integrating technology into existing curricular practices, involving everybody (P3) by collecting student responses, and working with others for mutual development (P5) by participating in group meetings and observing other teachers' classes. "Since I got to *observe* other teachers' classes while doing this project, I could see things like 'Oh, I can use that teacher's method in my class.' I am sure that teachers gathering and *debriefing* together was helpful for me to generate ideas. It is so hard to think all by yourself."

Of all the principles, Susie especially appreciated the collegial working environment that EP created. "While doing the EP, one thing I learned for sure was that humans are much better when they put their heads together. *We are better together*. This idea particularly occurred to me a lot. When we think together, it was much better, and that led to our mutual *improvement*. I think our daily meeting is necessary and *observations*… even if this is too difficult, I felt doing it together really helps—good for teachers and for students."

Hannah

Hannah was questioning why she does not use technology at its full capacity, although she is aware that technology is an efficient tool in language education. She explained that the idea of technology as a worthwhile tool had been vague to her and, thus, that may have led her to use less

technology. She expected that this project experience would be an opportunity to think thoroughly about her own question and increase her use of technology.

Investigating in the Classroom: Practices and Reflection. During the puzzle investigation process, Hannah actively engaged in daily meetings and utilized spare time, such as lunch hours, to talk with other teachers about her inquiry. In one of the casual conversations among teachers, Hannah expressed skepticism in her technology integration in class. Throughout her four years of Korean teaching experience, she had used technology because she was told to. "Everyone said it [technology] is good and people encourage you to use it. I simply interpreted that to mean technology is good. It feels like… I was more like forced to use it. For example, things like drawing a line on cellphones and presenting something on the smartboard; you wow people, but this is just for teachers' convenience; will it actually help students learn? This is just the way you utilize technology, but I don't think this technology contributes to *learning*. But [I assume] people are telling me to use technology because it is helpful, but I didn't think it was helpful at all." As seen in her reflection, it was evident that Hannah had regarded technology as less meaningful because she had been using technology simply to "integrate technology," without thinking about how it would facilitate students' language learning. As she had not been convinced by its benefits to students' learning, technology naturally became meaningless. "It is not meaningful to me because teachers are using technology to just use it. They come up with ways to use it but in the end, it does not aid students' learning."

Hannah also blamed herself for not being proficient in technology, and that is another reason she had not been using it much. "I don't know how to use it [technology] well. That is my limitation. So, I have avoided thinking about it." After this talk, she concluded that she needs to think deeply about the appropriate use of technology to support students' "creative *learning*." This

also supports her belief about technology. Earlier, Hannah mentioned that devices that are used everyday are no longer technology. Rather, she regarded technology as cutting-edge devices and fancy skills. In this respect, she attributed that this was another reason she avoided using technology. “When I am trying to use *technology*, I imagine…. a colorful and lively scene. But when I actually use it, it’s not even close to it. I don’t have [sufficient] skills to make it happen. I want to do like… something pops up here and there… but I don’t know how to do it. So, I have been less satisfied with technology.” The gap between Hannah’s expectation and reality generated disappointment, which also hindered the active use of technology.

Thus, in this project, she attempted to explore cutting-edge devices and programs to support her teaching. She especially made use of various apps when designing student activities. “[When planning for a class], I considered everything that is so-called *technology* like *quizzlet* and *app*s… I searched a lot.” In her observed lessons, she used PowerPoint slides, videos, and various types of apps Koreans use. A complete list of her use of technology is presented below (Table 5.2).

Device	Program	User	L1	L2	L3
Computer and screen	PowerPoint slides	Teacher	○	○	○
		Student			
	Videos	Teacher	○	○	○
iPad		Student			○
iPad	Apps (Transportation)	Teacher			
		Student	○		○

Table 5.2. Hannah’s observed use of technology

In the first reflection session, she focused on her activity involving apps. She commented that she tried to introduce “real apps Korean people use in real life.” In this activity, she asked students to explore various types of public transportation apps and find the most appropriate means of transportation from the airport to a designated destination. She planned this activity to be an authentic one by giving students a real task that they would experience when they travel to Korea.

However, she also found that balancing the focus between language learning and cultural experience was challenging. “The reason why I designed this [activity] was that there are things travelers do. I wanted them [students] to experience the real problems they would face. But then I felt that this is not a *language* learning activity; it was more like a cultural one. So, I had to think what the focus [of this activity] should be.” Moreover, she felt that giving clear directions was challenging and thus students were struggling with this activity, as the language required was somewhat above their proficiency level. “They [students] seemed to be very confused; some were baffled.” As Hannah’s class had only six students, at the end of the class, she invited the students to a small discussion to hear their opinions. In contrast with how Hannah felt, all the students responded that the activity was interesting. “Students said they loved it. They specifically mentioned that using *apps* was good because it felt real. Those are real *apps* that are used in Korea anyway.”

Confirming students’ enthusiasm about authentic experiences through technology, Hannah began to present videos that she took on the streets in Korea. She said that video was useful to give students a feeling of “*cultural fantasy*,” which she believes can stimulate student motivation. “I’ve been using videos to merely show something to students. But now, I try to find or film videos that make them feel like they are inside the video doing things. Videos like I’m walking down the streets. That gives students a feeling that they are actually on that street [walking with me].” Hannah said students were more excited to watch videos of this kind. “They [students] become excited when they think they are in the video… They *point out* things [while watching]. When I just play the video, they just lean back and watch.”

Hannah also mentioned that she realized that different devices can add variety to hold students’ attention, even though the purpose of the materials is the same. “You can show the photo

images through slides, but when you continuously present images, students get bored. Then, I can change to videos. Still, the purpose [of using the materials] is the same. But it [changing the media] grabs the students' attention."

Hannah evaluated that the last observed lesson was the most successful attempt to incorporate technology as the class was "purposeful and presented clear directions." In this class, the learning goal was to learn food vocabulary, understand a cooking recipe, and identify the ingredients to make three Korean dishes. Hannah prepared three cooking instruction videos from YouTube and showed them to class once. Then, she gave students keywords to find the videos on YouTube (Fig. 5.2). Using the keywords, the students looked up the videos themselves, watched them in pairs, identified the ingredients that they needed for each recipe, and shared them in groups. In the next lesson, the students created a complete shopping list of ingredients and visited local Korean grocery store to purchase them.

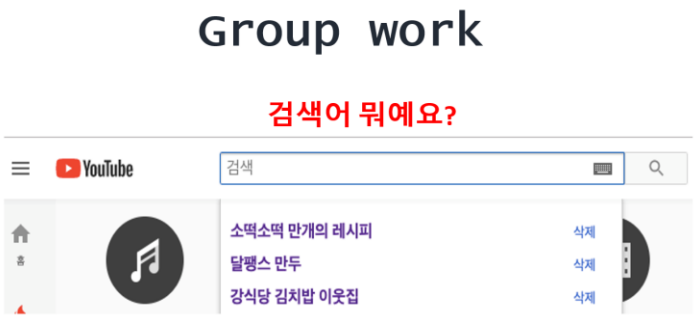


Figure 5.2. Hannah's slide presenting clear directions for the activity

Hannah valued this activity highly because it challenged the students and led them to actively participate in the learning process, creating a genuine student-centered learning environment. "[This activity] was better than previous ones [incorporating technology] because it encouraged students to actively participate. It inspired them. It was not like a teacher talking in

front of the class and students listening and understanding; rather, they really *explored* [the authentic materials and the task]. The *directions* increased students' *engagement* and at the same time gave them a *challenge*. That was why students loved it." Hannah added that by experiencing these tasks and facing challenges, the students felt a greater sense of achievement. "What I found from giving them *iPad* activities is that students prefer *challenging* their thoughts—not too much, but manageable *challenges* they can tackle in various ways. Students like that because they feel a sense of accomplishment."

After her successful experience, Hannah concluded that it was her lack of experience with technology that hindered successful integration and that technology can be used in a way to reinforce her pedagogical beliefs when carefully planned and used.

Evolving Beliefs and Practices: "It was a challenge, but I overcame it." Hannah was the participant who underwent the most dramatic change in her beliefs and practices during the program. In the first interview, she stated that "technology is essential in today's classroom," but her stance rapidly changed when she began her puzzle investigation, realizing that she had been using technology without much thought and following others' way of using it. Criticizing her blind use of technology, she said, "I don't think [my use of] technology is helpful [to learning] at all." Inspired by these conflicting ideas, Hannah actively interrogated herself about the meaningful and appropriate way of adapting technology to language classrooms. She reported two main findings:

1. Understanding what technology can bring into the classroom is crucial.
2. Teachers must clearly identify the purpose of using technology and carefully plan activities.

Hannah explained that she had not used technology at its full capacity primarily because she did not know it well, so she blindly followed how others used it. She sometimes felt that she

was pressured into using it, as everyone seemed to regard technology integration as a norm. Since she was not fully convinced about the benefits of technology, she avoided using it. Hence, during the project period, she decided to explore various technologies, experience them, and learn from them. After the successful activity experience, Hannah realized that technology could provide students with cultural fantasy and authentic learning experiences. Moreover, it encourages students to actively participate in the learning process by presenting them a meaningful challenge.

Hannah also pointed out that to maximize the benefits of technology, teachers should clearly set learning goals, identify the purpose of using technology, design activities meticulously and present clear directions to students. She underscored that teachers need to take the curriculum and learning goals into account when they select materials. She also used videos she filmed herself, but she recalled that sometimes her films were not appropriate because she did not contemplate the lesson fully. "I roughly planned how to use it [video] when I filmed it. However, because I did not fully take *curriculum* into account, [some] videos were too short, and some were too fast." Moreover, she said simply playing the videos and showing them apps would not make learning happen. She learned this from her students' reactions to activities, observing students' confused faces when she gave vague directions with the videos.

In summary, Hannah was able to reshape her beliefs about technology integration while investigating her own project, exploring diverse technologies, thinking deeply about the benefits and limitations, consulting other teachers, and analyzing students' responses. "I witnessed students taking a more active part in activities involving technology. They more willingly accomplished the *learning goals*." As her understanding about technology became clearer, she was able to integrate technology into the curriculum in accordance with her pedagogical beliefs. She recalled, "[My attempts to integrate technology] strengthened and internalized my beliefs [about teaching

and learning]. I believe—well, this is more than *teaching* beliefs but my philosophy of life—you learn by doing; you get it when you experience it. All the activities I planned with technology… finding hotels through an app, looking for routes, sharing information with others… I hoped students would experience all these. I meld everything I know when I designed the activities." To her, understanding and experiencing were the key.

She closed the interview with this remark. "When teachers become complacent, they don't try to learn new things. For me, *technology* was the new thing. It was an unexpected area. Through this *project*, I was able to step into this unknown world and experience it. It was a *challenge*, but I overcame it. Now I feel comfortable with it."

Responses to EP: "I didn't care too much about the principles during the program; but in the end, I found myself adhering to those principles." Prior to project participation, Hannah could not identify what she knows or does not know about technology. By engaging in the EP project, she can now articulate what she knows and what she needs to work on further. She appreciated this experience as it provided her with an opportunity to take time, go back and start from scratch, and think deeply about her own practices. She also expounded on why her question focused her in connection with her beliefs about teaching. "I don't want to teach things I don't know when I teach. The same applies to technology. I had to be convinced first to use it for the students. That's why 'I' naturally became the focus of my puzzle."

In the final interview, Hannah recalled that her lack of understanding of technology led her to hold biased opinions that inhibited her from using technology in the classroom. She said examining students' reactions and consulting with other teachers helped her to eliminate these prejudices. "It was the students that broke down my prejudices. What Eugene told me was huge, too. I was relieved when he told me I did not seem to be lost [when he observed my class]. When

I was doing the *technology*-enhanced task, I felt I faltered and the students seemed confused. But Eugene told me he did not feel that *moment*. I realized it was just my thinking, and it is okay to use *technology*." She further elaborated on her collegial environment. She especially appreciated that teachers, by engaging in this project, constructed a community in which they can share their puzzles, ask questions, and reflect on their practices together. "I think a *community* had been formed without our knowing it while we were doing *group meetings* and sharing our *puzzles*. By *sharing* and understanding… those moments reappeared in many phases. I had sufficient time to think in a comfortable setting."

When asked about the most appealing EP principles, however, Hannah said, "I didn't care too much about the *principles* during the program. *Principles* are not wrong, but if you just hear them, they are just so vague, like floating clouds. Well, all research is like that, all *principles* are like that. You can easily say them… but in reality?" She said principles themselves did not impress her much because principles rarely reflect realistic situations and local practices but tend to speak in general, and they do not present actual examples that she can refer to. Thus, she did not put extra effort into adhering to them. Nevertheless, retrospectively, she assessed that the principles were well aligned with her research. "I didn't consider every principle carefully while doing this project, and I believe neither did other teachers. But in the end, I found myself adhering to those principles. While I was conducting [my investigation], *principles* naturally came along. Looking back now, I think we all followed *EP principles*; now I understand what these *principles* are trying to say."

Hannah summarized her experience as follows. "If I had not participated in [this project], I would not have realized it. I would not have become comfortable with technology. The most important thing is that this project gave me a motive, a steppingstone." Given that Hannah's inactive use of technology was largely because she had not had opportunities to think deeply about

it, explore it, and raise awareness of its benefits, her comment clearly encapsulates the asset of EP: providing teachers with a motive and opportunity.

Eugene

Eugene focused on his resistance to technology and decided to investigate why he has been resistant to integrating technology. He remarked that he had wanted to unpack this feeling of "resistance" and "fear" since the first interview when he realized and articulated them.

Investigating in the Classroom: Practices and Reflection. Eugene embarked upon his puzzle by identifying what the resistance was. In the first interview, he expressed his negative opinion about technology. He felt online learning and using technology decreased authenticity in learning. He initially asserted that his resistance could be attributed to this feeling of overall negativity toward technology.

In the investigation process, as Eugene's puzzle focused on investigating his inner self, he spent his time primarily in observing and reflecting on his own practices. He jotted down his reflections now and then and sent them to the researcher via Kakaotalk. Below are selected reflection notes about his resistance:

- Playing the YouTube video through the link on the PPT slide was not smooth. The speaker wasn't connected so I had to play the sound through my laptop.

- When I wanted to edit content instantly or add things on the PPT slide, editing was more inconvenient than writing on the blackboard. I felt like the flow of the class was interrupted.

▪ Connecting laptop to screen took up time—a lot of time, I guess. Embarrassed, felt sorry for the students.

In the reflection notes, Eugene associated his resistance mainly with unexpected situations resulting from technical problems such as the sound connection. He constantly experienced such problems, and this made him think that technology interrupted his class. He often felt this uncertain interruption takes up too much class time, leading him to use technology less. He said, "I realized most of my resistance came from lack of understanding of the available technology and *system* in the classroom. I just avoided confronting these problems. If the sound *system* did not work, I *panicked* because the class was not going well as I planned. Although I spent only five minutes fixing the problem, that five minutes felt like fifty minutes, like a long time, and a huge loss. Fearing that class was not going as planned, the uncertainty, that was my resistance."

Having roughly identified the nature of his resistance, he planned to eliminate these factors by arriving at the classroom early and simulating the situations. In his video reflections, however, he confessed that he could seldom improve the situation due to his *guichanism*. He explained the scene when he confronted the same technical problem with the sound. "To improve my situation, I need to solve the problem. I asked Hannah. She said I can connect it with a USB. I have one….[explained technical ways to solve the problem], but I just ended up not doing it. I wanted to do it to make the sound quality better, like *surrounding* sounds, allowing students to feel like they are shopping; I really wanted to do it. I could go to *learning support services* to get the things I needed, but I didn't. There was my laziness. My *guichanism*. My resistance also came from my *guichanism*." Further, he observed that uncertainty also influenced the adoption of new methods. "In terms of adopting new things [technology], when you integrate new, skillful items, you need to think outside your boxes. Break my own curriculum and teaching materials. That brings

uncertainty like… will this require extra work? Won't an unexpected situation happen if I try it?" Through his reflection process, he realized that multiple factors had interplayed to cause his resistance.

Although he expressed his resistance to technology and worked on identifying it, Eugene seemed to be the one who made the most diverse uses of technology in his observed lessons. A complete list of his technology use is summarized below (Table 5.3).

Device	Program	User	L1	L2	L3
Computer and screen	PowerPoint slides	Teacher	○	○	○
		Student			
	Videos	Teacher	○	○	
iPad		Student			
Cellphone or computer	Search engines	Teacher	○	○	
		Student			
Cellphone	Apps (Google Map)	Teacher			○
		Student			
Cellphone	Instant Message (Kakaotalk)	Teacher			○
		Student			○
Cellphone	Music	Teacher	○		○
		Student			

Table 5.3. Eugene's observed use of technology

The most notable observation was that Eugene actively used cellphones in the class. While Susie specifically mentioned that cellphones are distracting and not allowed in her class, Eugene used his cellphone a few times and let students use theirs during the activity time. In his third class, he presented an activity in which students were asked to browse Korean online shopping malls and find things to buy for a picnic. After explaining directions for the activity, he picked up his cellphone and shared the link for the online mall on Kakaotalk group chatroom. Students also took out their phones, accessed the link, and began their work. Having checked that every student had accessed the website, Eugene picked up his phone again and played music with his phone. The background music had a light vibe, allowing students to feel like they were shopping. Eugene

commented that "technology easily creates atmosphere. I hoped students would be completely immersed in the environment."

He also focused on students' reactions to these activities and found that technology breaks down time and space constraints. After using Google maps in class, he commented, "Even though students are not there, they can feel like they are actually there with technology. It maximizes students' *authentic* experiences." This contrasts with his first interview, in which he said technology hinders authenticity as he believed learning should happen in a real space.

Eugene was the only participant who used search engines in his class. When there was extra time (Lesson 1), he searched for another activity using search engines. When a student asked a question about a certain word (Lesson 2), he opened a Google page, typed the word, found it, and showed a picture to the students. He openly shared his searching process to students. When asked about this, Eugene said that having access to technology allows him to instantly deal with new ideas and questions. "When I come up with things… It is like instant responses; if needed, I just do it. If the environment allows, I try to do it. If I did not have access to *technology*, I would just explain it or find another way, but as I have the *technology*, I can do it more easily." He also elaborated upon his practice, why he openly shares the searching processes. "I thought the process of searching could be helpful for students." He also connected this with his beliefs about the relationship between teacher and students. "I might have hidden it [the searching process] if I thought that I am the one who knows everything and you [students] should learn from me. But, for me, the relationship between a teacher and students is at the same level. If my lack of preparation is not so *critical*, I just ask students to help me, giving them *empowerment*. Students are cooperative. So, I just openly say, 'Oh, right. I did not prepare this in advance, but it just came across. Let me search it and show it to you. *Ta-ta-ta* [pretending to type]. That's how it works."

This comment reflects his beliefs well about teaching and learning, given that in his first interview, he stated that he believes that the teacher-student relationship is reciprocal and that learning is constructed by all members of the learning community.

Evolving Beliefs and Practices: "I think technology is like eyeglasses." After focusing on his resistance to technology, Eugene proposed two main findings.

1. Technology can be effective in language education as it readily brings authenticity in the classroom and minimizes time and space constraints.
2. The interplay among multiple factors caused my resistance. These factors include existing beliefs about technology, fear of uncertainty, and *guichanism*.

Contrary to his negative opinions about the role of technology in the language classrooms reported in the first interview, Eugene said he was able to experience the benefits of technology in language education throughout his puzzle investigation process. He pinpointed the "authenticity" that technology can easily bring. Although he had thought technology in education decreases authenticity as it lacks the human touch, he reversed his beliefs to the idea that technology can indeed bring authentic experiences into the classroom more easily as it minimizes time and space constraints. Moreover, he found that the students he taught were more accustomed to using technology, thus making technology indispensable in the classroom. His realization was from the "*shocking* moment" he experienced while observing the students' final video project process—making a video. "They [students] filmed videos. They filmed many pieces, and based on my common sense, I assumed they would need about two hours to edit them. But they did it in five minutes. Cut here, put it there, done. Some students found background music and inserted it. They spent more time selecting the music they like. It took almost no time to insert it. Wow. Then I realized: Right, they were born with this [technology]. They were born with screens. They were

born with this (he swiped his cellphone). I realized that I had not been sensitive about this matter." Putting it together, he stated, "My teaching philosophy and beliefs were slightly changed after playing around with technology. I've done it myself, witnessed, and experienced it [how technology works]."

Having understood the benefits of technology integration, Eugene interrogated himself about other factors that contributed to his resistance to technology. Fear of uncertainty was another strong cause. His uncertainty had largely resulted from technical issues and lack of experience with technology. He had previously experienced several technical difficulties, such as connection errors or the poor sound-quality issue, which caused him to feel like wasting class time. As these problems arise unexpectedly, he felt paralyzed and interrupted. Also, he admitted that technology had been a new area to discover, but he had not put in much effort. He became hesitant because he had little clue about how much time and effort would be needed to learn this new skill.

Eugene also attributed his *guichanism* as playing a huge role in this resistance, as this uncertainty could have been eliminated if he had attempted to overcome it. His *guichanism* was powerful enough to influence his practice even after he initially identified his resistance. For instance, he could have gone to learning support services to seek for the devices he needed, but he procrastinated until the last day before the class. Finally, recognizing the last factor responsible for his resistance, he concluded that as he understood his resistance, he would soon be an "*adopter*" of technology.

Finally, he was asked what technology is in his post-program interview. He put on a difficult face. After a fair amount of time, he said, "I think technology is like eyeglasses." He continued, "You can live without them, even though your eyesight differs. Technology as well—you can teach without it. But when you put on your glasses, you see [things] better and more

clearly. In language education, technology allows you to explore more things that I couldn't see and overcome the constraints. They [eyeglasses] are not part of your body. I can wear them or not wear them. Technology, too, can be applied or not."

Responses to EP: "I asked a sincere question." Eugene evaluated that the EP experience was valuable for him in that it gave him the opportunity to think about his own practice and ask his question. He said, "I can see that being in this process itself increased my *quality of life* in the classroom. I had this… resistance [about using technology in the classroom], but I had not pinpointed it. I did not ask why. Having a chance to think and being in this process made me realize things that I had not seen before." Moreover, he said the project was especially meaningful because he asked himself "a sincere question." As a graduate student in education familiar with teacher research, he said research could end up as "role-playing" if the question is not meaningful to the participant. "You know, people can just perfunctorily participate in research. In particular, I think people in education have a high possibility because they know [the rules]. They just play their *roles* as they are in the *game*," he said, revealing that his fear might seem to be his weakness. "I tried to form my *puzzle* honestly. It was actually not easy. My question addresses my resistance and fear. Disclosing my fear, my weakness… I was little concerned. But when I decided to take part, I thought this would be helpful to my own development. Then, the process became *significant* for me."

He also underscored that involving everybody (P3) was critical to sustainable (P7) mutual development (P5). By working closely with other colleagues and participating in a naturally built teacher community, he was able to develop a strong bond with the other teachers. "When we share our practices and technical difficulties, we sympathized with each other. Realizing that I wasn't the only one working on the puzzle, I could feel a bond." He appreciated that he was able to observe

others' teaching and share reflections for mutual development. "They [observation and reflection] were not for the purpose of evaluating or judging. We all worked to share reflections in a way conducive to each other."

He summarized his experience: "The question of 'why' was significant for me. The investigation process was pleasant. There's a huge difference between before and after I created the puzzle. It was significant in that I explored myself."

Summary of Puzzle Investigation Process

As presented above, the teachers investigated their puzzles at their own pace in addition to their regular video reflection sessions and group meetings. As the individual teachers formulated different puzzles and showed varying levels of engagement to the project, their implementation of EP and use of investigation tools were slightly different. The table below briefly summarizes their investigation process (Table 5.4).

Participant	Practices and Reflection
Susie	- Explored technology she had previously used - Asked suggestions to other teachers - Designed and implemented activities involving technology in the classroom (e.g. video story telling) - Collected student responses using exit slips
Hannah	- Frequent conversation about technology with other teachers - Designed and implemented activities involving technology in the classroom (e.g. using transportation apps) - Discussion with students and collected their responses
Eugene	- Focused on his own practices through frequent reflection - Kept reflection notes - Observed other teachers' teaching practices and compared them to his

Table 5.4. Summary of individual project processes

The next section reports the participants' reflection on overall EP experience through the analyses of end-of-program and follow-up group interviews.

Experiences with Exploratory Practice

On the last day of the program, the teacher participants were invited to the second group interview to reflect on their overall experiences with the EP project. Three months after the program ended, the teachers gathered for another group interview to share the long-term impact of the project. The interviews revealed three major themes: a) pursuing quality of life, b) building a strong teacher community, and c) concerns and challenges.

Pursuing Quality of Life

The first thing the teacher participants pointed out with one voice was that the EP experience had provided them the chance to ask themselves relevant questions about their own practice and to become constantly conscious of their puzzle during the program period. They all appreciated that the EP project had encouraged them to work toward understanding their genuine interest in their own agendas rather than being pushed to change. Eugene said, "By posing a *puzzle* to myself, I began to think about the *puzzle* all the time." Hannah commented, "By keeping the *puzzle* in mind while teaching, my project period was full of enlightening moments." Susie added that in terms of technology specifically, "I've been mindful of my practices. My practices had been habitual; [in the project], I was able to be more conscious about when I choose to use *technology*."

Discussing their puzzles, they indicated that the project served to motivate and encourage exploring the new method, resolving their *guichanism*. As the teachers had interpreted technology as a new method to learn and confessed their lack of motivation toward learning an unexplored area, participating in this project had reassured them to initiate the experience. Susie said, "I know the first *hurdle* [learning to use technology] is high and then gets easier, but learning it was *guichanda*, so I had been procrastinating. This time, I felt that now is time for me to learn and do it. That's why I decided to participate in the project." Hannah recognized her *guichanism* as well while doing the project. She said she had a myriad of ideas for using technology but ended up not doing it as she felt it would be a lot of work. "I used a lot of pictures in lectures and wanted to put them into iPads. Then students would have been able to readily see and enlarge them as they wanted. But I just printed them all out; it would have been better to use *technology*." Eugene also confessed that he figured out ways to fix technical issues and what he had to do was take action, not just ignore the problem.

Having these positive experiences, they all agreed that they pursued understanding quality of life in the classroom, while each participant had slightly different interpretations about what "quality of life in a language classroom" is. Susie connected her quality of life to her time and effort preparing her classes. She thought adopting technology required extra effort so "balancing between maintaining quality of life and creating new activities" would be difficult. However, she found that understanding the ways to use technology, creating, and updating materials one by one, and sharing with others would ultimately improve her quality of life. "As they [teaching materials involving technology] can be easily archived, teachers can share materials. You know, *activity stealing is good*. [With technology], you can share materials easily, and I think that is great." Hannah associated quality of life with her achievement. She evaluated that her quality of life had

been improved as she was able to experience technology and become confident using it while witnessing her students' satisfaction. Eugene extended quality of life from his professional to personal life. He realized how deeply technology is imbedded in his daily life, not only in the classroom. "When I check my emails or respond to Kakaotalk, when I use smartphones and search something on the web… I constantly realized that I am using technology all the time. Then naturally, questions followed. I also became curious about how my kids are using it… I found the importance of the process of understanding, and that was how I understood my *quality of life*."

Building a Strong Teacher Community

Of the EP principles, the teacher participants underscored the importance of "involving everybody," and working in a "collegial environment." They all said the most significant and meaningful experience they had was creating a teacher community. The participants remarked that the community was naturally built through sharing their goals and continuously working together enthusiastically. In this community, the teachers actively shared their puzzles and investigation processes while asking for feedback and suggestions. Hannah mentioned that the sense of belonging to the community even lessened her stress about the project and teaching. "You know, although I decided to participate in this [EP project] willingly, there was another part of me being *challenged* and *stressed* because it is new thing to do [while teaching] and requires another kind of responsibility. But having someone to talk with about it, communicate, and share feelings… that really softened my *challenged* feelings." All the teachers agreed that the meetings relieved their stress levels, rather than adding an extra burden.

The teacher participants regarded their teacher community experience as being so impressive and successful that they decided to present their experience in a conference[8]. They summarized the core values of the teacher community to illustrate how and why their teacher community worked well. They consisted of four values: understanding, openness, trust, and mutual development (Fig. 5.3).

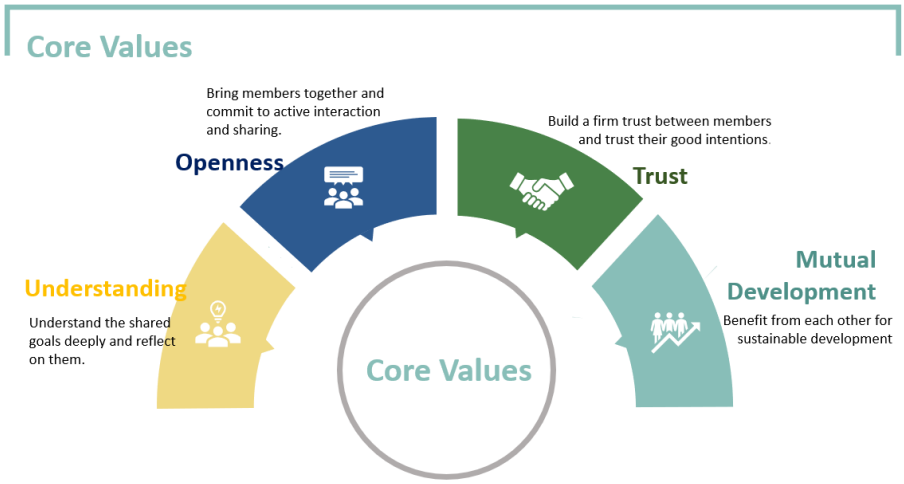


Figure 5.3. Core values of teacher community (Ahn, Choi, Kwon, & Yum, 2019)

Of the four values, the teachers all indicated that building trust is the most significant. Susie mentioned that "without *trust*, there would be no working for understanding, sharing things openly, and mutual development." She continued that trust is essential to ensure that mutual feedback is helpful and constructive. "There is a fine line between *critique* and censure. When you hear it, sometimes you can feel like this person is denouncing me or looking down on me. You need *trust* to ensure that this person really is saying this for me, and we are working toward *mutual development*." Eugene echoed this idea, highlighting that "members need to trust that all members

[8] After the program ended, the teacher participants worked on developing their presentation materials. Three months after the program ended, they participated in an e-poster presentation session and presented their research and community-building experience at a world language teachers' conference.

have good intention." Hannah connected trust to openness, which refers to sharing. From her experience, she learned that trust is built through mutual sharing. "I am a person who actively shares things. But I have experienced so many people who come and *take* things from me, not *giving* me anything. Then I can't *trust* them. When people just want from me, not *opening* theirs, there can't be interaction."

All participants commented that openness and mutual development are not possible without trust and dedicated members. They appreciated that they built a "fair" environment where all members willingly share their ideas and feedback, working toward mutual development. Eugene said, "We were all dedicated, and thus we could have a strong bond. We worked in a horizontal relationship. You know, if there is a hierarchy, one can force others. Each of us had their own puzzle, and we worked together. That led to mutual development. I liked that." Agreeing with Eugene's remark, Hannah mentioned that sometimes she felt this experience was "too ideal" for her first EP and teacher community experience due to its devoted members. "It would have been really difficult if there were a person who did not want to *open up*."

Understanding represents that the members of a community set shared goals and work toward understanding rather than hastily implementing changes. This value is most directly influenced by EP principles as shared goal in this project was a puzzle. Having shared goals was an essential component to make the group meetings meaningful. "Because we had similar goals to work on, the meetings were organized. I cannot stand meetings without purpose." Hannah shook her head, and everyone laughed. Susie appreciated the emphasis on "understanding" as the premise of many projects is problems first and aiming for improvement. "Hearing that we don't have to change was novel. I appreciated that the principle of no *burden* for teachers was continuously highlighted." While this project and community was not seeking change, the teachers said that

understanding naturally promotes changes. “Before [participation], my question was vague. But once I formed my puzzle and worked to understand it, I wanted to change things and was looking for improvements,” Eugene said, and the others agreed. They described that looking for improvement is an “instinct for teachers,” and all these processes lead to their personal and professional development.

In summary, participants evaluated that their EP project and teacher community experience were successful and had a positive influence on their professional development. However, despite their satisfying experiences, they expressed different opinions on the sustainability of the EP project. Eugene was most enthusiastic about the potential. He said he could initiate one with others. “I think I can lead it, too. It would be great if I can have this similar *teacher community*. Having shared goals, working together, I liked it and I can do it.” Susie was optimistic about its sustainability as well, stating that EP provided her with continuous opportunities to reflect on her practices. However, she commented that she would join only when openness and trust between members are premised. Susie said, “I liked this experience because every day can be the same if you try nothing. This [working on the EP project and being in a teacher community] allowed me to *reflect* on my own practice. I would like to do it again when I feel like this will positively influence me. It would be meaningless if people are not dedicated.” Hannah showed a more passive attitude, pointing out that this practice is still extra work for teachers, and it necessitates certain conditions to be sustainable. She said, “Teachers themselves have loads of work to do, and it [doing teacher research] could be very stressful if I feel like I am the only one opening and sharing. But if it would be like this time with people I can trust, I am definitely in.” Again, she underscored the openness and trust are key.

From the above feedback, it is apparent that certain preconditions are necessary for EP and a teacher community to be sustainable professional development practices. While the teachers regarded themselves being influenced and guided by the EP principles, they indicated that they were not fully governed by the principles and not all principles were equally meaningful. They pointed out that "involving everybody" was the factor that most determined their success in conducting their projects, as it allowed them to regularly engage in questioning and reflecting. By working together toward a shared goal, they were able to build a sense of belonging to a community, which led them to create their own teacher community. The participants encapsulated its core values—trust among members, having shared goals to work for understanding, dedicated members openly sharing their progress and feedback, and working toward mutual development.

Concerns and Challenges

When asked about the challenges they faced during the project, the teacher participants shared three problems: formulating a puzzle, recording their classes, and concerns for future work.

First, the teachers indicated that formulating a puzzle was a little challenging as they had not had the experiences before. Susie had difficulties connecting a specific topic (technology) to the preexisting question that she had about teaching. Thus, she initially shared her general question about language teaching, and then asked for suggestions from the other teachers in an attempt to make her question more meaningful. Eugene said there was a part of him that had worried about sharing his resistance as this could be viewed as his weakness. Nevertheless, believing that a truthful question could contribute to his professional development and trusting his colleagues, he decided to create a puzzle that was most meaningful to him.

Another challenge that all the teachers addressed was that they felt considerable pressure about recording their teaching practices. Originally, I planned to hold a group conference for reflection but, not all the teachers were comfortable about video reflection in a group setting, so the reflections needed to be done individually, and the videos were shown minimally. While the participants were very favorable about class observations and reflections, they confessed that not only video reflection but also recording their practice *per se* were stressful because the video is preserved. However, they all agreed that understanding the purpose of recording, "not to evaluate but to reflect" had significantly lowered their stress level. Eugene commented, "With everyone understanding that this [recording] is for *reflection* and for our own good, not accusing them [teachers] of wrongdoing, I could overcome my pressure."

Lastly, a concern that participants reiterated a few times was about building trust among teachers. They explained that it was relatively easy for them to build trust because they had already experienced working together in this program, and they all decided to join the project. As trust was built in a short period, they became committed to the project and actively shared their progress in observations and group meetings, which they considered key to the success of the experience. In this respect, they speculated on a case in which a teacher was not as enthusiastic and devoted as they. Hannah said, "If a new teacher comes in not knowing the culture, I have no idea how he/she would respond. Maybe it could be more challenging." Eugene agreed. "If a new teacher is very self-centered and not used to doing *teamwork*…. this [collegial] culture might not be shared." What can be derived from this point is that once again, building trust, and creating the culture of community were seen as crucial in creating a teacher community and further EP projects.

In the next section, a summary of the findings and further discussions on EP as a sustainable professional development strategy will be presented.

Toward Sustainable Teacher Development

Below are the main findings presented as answers to the research questions. The integrated data analysis reveals four main findings related to teachers' experiences in exploratory practice:

1. By conducting research in their own context, the teachers were able to focus on their own practices and actively implement technology into their classrooms, resulting in a newfound awareness of their beliefs and practices regarding technology integration in language classrooms.
2. In conducting exploratory practice, the teachers identified forming their own puzzles and working together in a collegial environment are the most significant.
3. The teachers indicated that trust, openness, understanding, and mutual development are critical in creating a strong and constructive teacher community.
4. The teachers evaluated exploratory practice as a meaningful method for professional development, optimistically expecting its sustainability, in that it encourages them to take the initiative.

These findings are discussed in detail below.

By conducting research in their own context, the teachers were able to focus on their own practices and actively implement technology into their classrooms, resulting in a newfound awareness of their beliefs and practices regarding technology integration in language classrooms

Developing Awareness from Everyday Practices. Teachers' engagement in research has been emphatically encouraged as teachers' stories reveal an insider's perspective and are thus

valuable in unpacking the multi-layered classroom phenomenon (Benson et al., 2018) and in "bridging the gap between research and practice" (Slimani-Rolls, 2019, p. 195). However, it is difficult for teachers to conduct research because it typically requires a great deal of time, effort, and special skills to draw theories, gather the applicable knowledge, and posit potential solutions for a designated problem (Slimani-Rolls & Kiely, 2019). In this regard, EP has aimed to lessen teachers' burden by encouraging them to use normal pedagogical activities as research tools and not imposing extraneous work upon them (Allwright, 2005).

The participants in this study conducted their EP project within their own teaching context following their agenda. During the project period, each teacher created a question regarding technology and carried out an investigation in the classroom to develop understanding about their beliefs and practices. They shared their puzzles with students and other teachers, explored various ways to use technology in the classroom, designed technology-enhanced activities, collected student responses, participated in video reflection sessions, and discussed their issues in group meetings. While the investigation process did require them to modify their practices to a varying degree, the teachers expressed contentment in the process as they served as the directors and facilitators of their own project, choosing and implementing activities based on their needs.

Three class observations and the end-of-program interview revealed that the teachers' uses of technology increased and became more diversified in terms of the types and devices they used, and how they integrated them into the curriculum. The teachers reported higher levels of motivation in adopting technology in their classrooms during this period. Given that one of the major reasons identified in the pre-interview for resisting active technology integration was insufficient motives and opportunities, it is clear that EP served as an impetus to stimulate and motivate them. In terms of their specific beliefs and practices, Susie reported that her beliefs about

technology have been strengthened, as she was able to confirm its efficiency in class preparation and students' learning. Hannah underwent dramatic changes while investigating her puzzle and concluded that her apathetic use of technology resulted from prejudice against technology and her lack of experience using it. Eugene investigated his resistance to technology, which led him to eventually question the benefits of technology in language learning and further in daily lives.

As seen, even though individual approaches to the puzzle and understanding varied, all participants were inspired to challenge their own thoughts more deeply, explore unknown areas, and experience unaddressed issues in order to develop their understanding of their questions. As the goal was to work toward understanding rather than to achieve measurable improvements, they were more likely to focus on themselves and the process, carefully observing how their beliefs and practices had been shaped, reshaped, strengthened, or even changed completely. Eugene underscored that "the process itself" was meaningful to his professional development. As Hanks (2015) points out, implementing EP requires change in one's conceptions of classroom life. "It was full of enlightening moments," as Hannah recalled; the teachers, conducting EP, were able to gain a re-conceptualization of their beliefs and practices regarding technology integration.

In the next section, the most significant factors that contribute to successful EP will be discussed.

In conducting exploratory practice, the teachers identified that forming their own puzzles and working together in a collegial environment are the most significant

While the teachers remarked that EP principles were successfully integrated in their research process, they specifically chose "identifying puzzle and working toward understanding," and "involving everybody" as the two critical factors that had deeply influenced them.

Identifying My Puzzle Area. EP commences with the identification of a puzzle (Hanks, 2015). A puzzle encourages teachers to articulate their questions about a situation they want to better understand, rather than seeking instant solutions to the problem or referring to external studies (Allwright & Bailey, 1991; Allwright & Hanks, 2009; Hanks, 2015). By focusing on and formulating their own questions, teachers are given opportunities to determine what they want to learn, and how they learn, which encourages them to build increased ownership and commitment to the professional development project they are involved in (Patton, Parker, & Tannehill, 2015; Richards & Farrell, 2005). Moreover, as the puzzles focus on understanding, they typically ask why instead of how, and lead to a multifaceted interplay of further questioning, exploration, investigation, and discussions (Hanks, 2015).

Previous studies have identified that teachers tend to form "how" questions seeking solutions (Hanks & Dikiltas, 2018), but, this tendency was not observed in this project as the participants were presented with clear concept of puzzles and numerous examples of puzzle statements from previous studies at the EP workshop. Rather, individual teachers reported different kinds of difficulty. While Hannah easily created her question, Susie had difficulty in formulating a puzzle that encompassed her strands of questions in diverse areas. Eugene, on the other hand, confessed that he had been reluctant to reveal his weakness to others.

In the participants' puzzles, it was notable that two participants presented "I" as the focus of their question. As they considered technology a new teaching method they had not deeply considered and explored before, they put themselves as the topic of the question, focusing on their evolving beliefs, thoughts, and attitudes. After the investigation process, the teachers felt that having puzzles relevant to their own practice allowed them to be "constantly conscious" of their practices while teaching, which resulted in active reflections and discussions. This supports previous studies that argue teacher learning becomes most relevant when it concentrates on teachers' real work (Patton, Parker, & Tannehill, 2015).

They also noted that focusing on "why rather than how to improve" had kept them more aware of what happens in the classroom and what underlies the phenomenon. In so doing, they often found that their questions were full of complexities, leading them to explore diverse and sometimes seemingly irrelevant aspects, to gain clarity about their questions. As seen in Eugene's case, he began his investigation with himself, but had to extend his research to the benefits of technology and thereby gained further insights on his use of technology in his professional and personal life. After all, the issue in the classroom is not an isolated situation; understanding their puzzles is the starting point, leading to developing an understanding of the quality of life in the classroom. As Gieve and Miller (2006) note, understanding quality of life is ultimately understanding what is going on in the classroom.

Even though Allwright and Hanks (2009) note that the aim of puzzles is to develop deeper understanding without burdening teachers with extraneous work or "rushing into solutions" (p. 176), these teachers argued that they found themselves naturally seeking solutions in the course of their progress. However, these so-called "solutions" and changed behaviors were not the end result of their projects; rather, they were steps toward deeper understanding. As the teachers began to re-

conceptualize their beliefs and practices, they asked themselves what could be done to gain more insights and spontaneously looked for ways to improve. Eugene described this as "teachers' instinct." By exploring new things and implementing changes with a sense of ownership, they then come one step closer to their professional development.

Rise of a Teacher Community. What the teachers appreciated most from their experiences was that they worked together in the whole process. In the summer program, they regularly observed each other's classes, attended daily meetings and video reflection sessions, and shared their teaching materials online.

The participants did not indicate any issues in attending group meetings, which contrasts the previous studies that reported the complications of group dynamics and the burden of working together (Hanks, 2015; Soomro, 2018). This is essentially because the participants in this study had already worked together in the same setting, and the teaching program already had a culture of team-teaching and class observation. As they already knew each other, it was easier for them to adopt the working culture and build a bond. While the reflection session was a new activity that began this year, the participants did not express particular stress or burden about attending the meeting or difficulties with reflections. Given that all teacher participants are currently graduate students in the language or education field and have experience in teacher training, they seemed comfortable with critical reflection.

Despite the teacher participants being accustomed to working together, they pointed out that "being in the project" allowed them to create a teacher community in which group meetings were more purposeful and constructive. As Grossman, Wineburg, and Woolworth (2000; 2001) note, not all gatherings of teachers become a productive teacher community. Although the questions of individual teacher differed slightly, the puzzles served as a shared goal and invited

them to work with each other more actively in the process. By sharing teaching materials, observations, and feedback, they realized that they were not alone in this journey but working together as a team. Studies maintain that these teacher inquiry communities allow teachers to collaboratively examine their teaching, form new visions, and transform their thinking process (Lieberman, 1992; Patton, Parker, & Tannehill, 2015). Eugene greatly appreciated that this experience made him feel sense of camaraderie, which Patton, Parker, and Tannehill (2015) described as one aspect of teacher community. He said, "Realizing that I wasn't the only one working on the puzzle, I could feel a bond." Hannah mentioned that this well-built culture of teacher community lessened her stress in teaching.

The next section will describe how the teacher participants created their teacher community meaningfully and constructively.

The teachers indicated that trust, openness, understanding, and mutual development are critical in creating a strong and constructive teacher community

"We are better together." After their successful experience, the teacher participants discussed what factors allowed them to create a strong teacher community and identified the four critical features: understanding, trust, openness, and mutual development.

Wegner (1998) notes that members of a teacher community establish membership by shared practices and joint activities. Understanding encapsulates the process of the EP project in general and how the teachers in this project built their membership in the community. Setting a shared goal—in the case of EP, the puzzles—and working toward understanding created the foundation of the teacher community. Free from the pressure to expose problematic situations and

seek solutions, working toward understanding allows teachers to address issues they are genuinely interested in and discuss them in a relaxed environment. In so doing, they become autonomous learners, engaging in diverse activities to facilitate reflections and share feedback.

When engaging in shared practices, the teachers underscored that openness must be ensured among the members. Ostensibly, openness refers to how openly teachers share their thoughts and practices; in practice, it is professional engagement, which means commitment and contribution that members of community make for mutual benefit (Roberts et al., 2018). The teachers pointed out that their similar level of engagement facilitated the success of their teacher community. Specifically, Hannah mentioned that active participation would not have been possible "if there were teachers who do not want to talk and are only seeking things relevant to themselves." All agreed that they expected a reciprocal relationship in the community and the open and equal exchange of materials and feedback.

In order for teachers to openly share their practices, they indicated that building "trust" among members is essential. As Patton, Parker, and Tannehill (2015) note, trust in teacher community ensures a "safe and supportive environment where teachers are more likely to take risks and engage in challenging discussions that push them to deepen understanding and attempt new practices" (p. 31). Susie posited trust as the foundation of the other features, saying that "without *trust*, there would be no working for understanding, sharing things openly, and mutual development." She also commented that trust is important to ensure honest feedback. "You need *trust* to ensure that this person really is saying this for me, and we are working toward *mutual development."*

In this project, the teachers could build trust relatively easily as they already knew each other and worked together before participating in the project. Hence, the teachers expressed

concerns about not experiencing new members. “I don’t know how this will work with a *new* teacher because we don’t know how [they] will respond to this,” Hannah said. While examining the dynamics of the teacher community is not the central focus of this study, as the teacher participants questioned, how the member relationships are created and trust is built should be carefully considered before the initiation of a community. Sharing expectations, values, and practices can be an initial step to getting to know each other and creating the relationship. “Shared norms and values,” as Wardrip, Gomez, and Gomez (2015, p. 449) note, are internally developed by the members and thus a powerful engine to sustain the community.

Finally, the teachers indicated that working for understanding, opening up their ideas, and building trust all contribute to mutual development. Hannah remarked that she could explore different ways to incorporate technology from other teachers’ classes, which made her class activities more colorful. Susie contended that “working together” allowed her to carry out her project more actively and led to her growth. “[I] would not do this alone, by myself. [When people say] ‘Let’s do it together,’ then I can do it.” Eugene concluded with conviction, “…all these processes led to our [personal and professional] development.” As seen, the teacher community played a significant role in their EP project and further professional development by providing a platform for them to share their localized questions, reflections, and feedback.

The next section discusses how these EP experiences can continue to empower, spur innovation, and improve teachers.

The teachers evaluated exploratory practice as a meaningful method for professional development, optimistically expecting its sustainability, in that it encourages them to take the initiative

Moving toward Sustainable Professional Development. Teacher education begins by "exploring the teaching itself" (Bullough, 1997, p. 21). However, teachers, faced with daily instructional duties and preparations for the next day, have limited opportunities to deeply explore and reflect on their teaching. For professional development, they usually attend workshops and training programs to learn innovative strategies and methods (Little, 2003; Mak & Pun, 2013; Slimani-Rolls & Kiely, 2019). Yet, teachers often find these newly learned skills are not readily transferred to their classroom due to local and contextual situations (Slimani-Rolls & Kiely, 2019).

In contrast, EP encourages teachers to focus on their own questions in their local context and proposes a "process-oriented" approach (Soomro, 2018, p. 464) by integrating research into pedagogy (Allwright, 2005; Hanks, 2017). As suggested, the teachers in this study greatly appreciated the opportunity to begin from their own questions and investigate within that context. They were able to be "constantly conscious" about their practices, which generated active discussions and critical reflections with their colleagues.

Moreover, the teachers indicated that by focusing on their own questions, they were more likely to develop a sense of ownership of the project. Eugene remarked, "…this [project] is relevant to my teaching and so I felt I was working for my professional development." Having been assured that the project would be helpful for their development, the teachers became more dedicated agents in carrying out the project. They actively explored diverse ways to use technology, implemented them in the classroom, reflected on their practices, and asked for suggestions from other teachers. While they used normal pedagogical activity formats to minimize their burdens, such as pair

activities and discussions, they took initiatives to determine the best practices to gain deeper understanding.

In terms of sustainability, all the teachers agreed that EP positively influences their professional development and should be considered a valid approach to teacher development. They indicated that creating their own puzzles and working in a collegial environment were the two essential features to ensure the success of the EP. While they presented conflicting attitudes about new EP projects, they viewed their first experience as exceptionally successful; they all expected to participate or initiate another EP with trusted colleagues for their personal and professional development.

Summary: Helping Teachers Become Active Learners and Thinkers through Exploratory Practice

"…effective professional development places teachers in the role of active learners, with a focus on inquiry and reflection, constructing their own meaning and understanding through collaborative engagement in relevant tasks."

(Patton, Parker, & Tannehill, 2015, p. 33)

Most teacher education programs and teachers' professional development courses have been in-put based, providing teachers with new knowledge and skills in a short period (Breen, 2006; Patton, Parker, & Tannehill, 2015; Slimani-Rolls & Kiely, 2019; Soomro, 2018). However, this one-size-fits-all approach has been found to be less advantageous for teacher development, as introduced methods are often not applicable in their specific classrooms (Slimani-Rolls & Kiely, 2019). In this regard, this project implemented EP, practitioner research, to examine its possibility as an alternative method for teachers' professional development. Specifically focusing on

technology integration, the teachers were invited to query their beliefs and practices and investigate together while utilizing their everyday pedagogy as a research tool. They found that their experiences with EP led to meaningful realization of their beliefs and practices regarding technology by focusing on their own questions and working collaboratively with colleagues. They also indicated the possibility of EP as a sustainable professional development strategy, as it allows them to take initiatives in their own project within the local context.

The next chapter will present the conclusion of this study.

CHAPTER 6. CONCLUSION

Chapter Overview

This final chapter summarizes the main findings of the study and connects them to the broader implications for technology integration in language classrooms and Korean language teachers' professional development. I first revisit each chapter and present concluding thoughts. I then discuss how this study contributes to the field of technology-enhanced language teaching and teacher education programs. Finally, I describe the limitations of the study and close the chapter with policy recommendations for teacher education and suggestions for future research.

Summary of Chapters

I began this study from my personal experience as a language learner and a Korean language teacher, which led me to question the use of technology in language teaching and learning. Acknowledging the growing importance of technology in our everyday lives and education, I pointed out that understanding teachers' beliefs and practices is key to successful technology integration in the classroom. As a way to explore teachers' beliefs and practices, I introduced exploratory practice (EP), a practitioner research strategy that underscores the process of deep understanding rather than changing or seeking solutions for problematic situations. Employing EP as a guiding principle, the study embarked on a teacher research project to examine the relationship between teachers' beliefs and their classroom practices in regard to technology integration. The proposed research questions were as follows:

1. What are Korean language instructors' beliefs about the role of technology in language teaching and learning and how are these beliefs reflected in their teaching practices?
2. How do Korean language instructors interpret and work with exploratory practice?

In Chapter 2, I described the theoretical background of the study and reviewed the literature on teachers' beliefs and actions, the philosophy of technology, teachers' beliefs about technology in language classrooms, and teacher communities. First, I conceptualized teachers' knowledge and beliefs by reviewing previous studies and discussing the relationships between teacher beliefs and practices. Then, I reviewed the philosophical considerations of technology, providing a framework for investigating teachers' conceptions of technology in today's language classrooms. The history of computer technology in language education was thoroughly reviewed in a timely order to specifically depict the changing role it has played in foreign language classrooms. I combined teacher beliefs and the use of technology in language education to further explore the factors influencing the integration of new approaches into classroom practices. In concluding, I touched upon how teacher research and collaborative work shed light on teachers' personal and professional development by reviewing the theories of a community of practice and a professional community of teachers.

Chapter 3 discussed the methodology used in this study. I introduced the concept of EP as a novel form of practitioner research and reviewed studies that had adopted EP. EP is an approach that highlights the understanding of quality of life in the language classroom by engaging everyone in the learning community (Allwright & Hanks, 2009). EP asserts that teachers can develop deeper understanding about their teaching environment when they research their own question areas using ordinary pedagogical activities as a research tool. I employed this method to examine teachers' beliefs and practices regarding technology integration and used it as a way of looking toward

professional development without burdening the teachers with extra workload to conduct research. Thus, the participants in this study conducted an individual EP project during the four-week summer program, deepening their understanding of technology integration in the language classrooms. In addition, I provided brief information about the settings and the participants and outlined the types of data collected, assembling procedures, and analysis methods.

In Chapters 4 and 5, I presented the findings and discussions of the study in relation to the research questions. Chapter 4 addressed the first research question, which examined the teachers' existing beliefs about teaching, learning, and technology, and the relationship between their reported beliefs and practices before they began their EP project. The integrated data analysis revealed four main findings:

1. The teachers' personal learning experiences as students strongly influenced their pedagogical beliefs and practices, tending to steer them toward fostering student-centered learning environments and preferring to teach a useable language.

2. The teachers revealed varying beliefs on the scope, goals, and effectiveness of using technology in language classrooms.

3. In integrating technology in their classrooms, inconsistencies between teachers' self-reported beliefs and their practices were observed.

4. The teachers' earlier years of teaching experience, the school settings they worked in, and a lack of motivation to change were identified as the factors strongly influencing teachers' acceptance or reluctance to adopt technology.

I discussed the second research question in Chapter 5. I mainly examined the teacher participants' experiences with their EP project and assessed the potential of EP as a sustainable professional development approach. Findings from the integrated data analysis were as follows:

1. By conducting research in their own context, the teachers were able to focus on their own practices and actively implement technology into their classrooms, resulting in a newfound awareness of their beliefs and practices regarding technology integration in language classrooms.

2. In conducting exploratory practice, the teachers identified forming their own puzzles and working together in a collegial environment are the most significant.

3. The teachers indicated that trust, openness, understanding, and mutual development are critical in creating a strong and constructive teacher community.

4. The teachers evaluated exploratory practice as a meaningful method for professional development, optimistically expecting its sustainability, in that it encourages them to take the initiative.

Concluding Thoughts: "What is technology and why should we use it?"

Researching and writing this dissertation was a journey full of questioning, exploring, and understanding, but in the end, it led me back to the most basic question: "What is technology and why should we use it?" All the processes sought to elucidate the complicated answers to this simple question. Technology is still an unexplored area for many language teachers. Although studies constantly introduce cutting-edge technology-enhanced learning programs and proclaim their

benefits, technology in education seemed to be viewed as a s*imulacrum*—it is rarely seen in actual classrooms. To bridge this gap between research and reality, this study posited that teachers are the key decision makers for the classroom and explored their beliefs about teaching, learning, and technology. The interview results revealed that each teacher perceived the range and concept of technology differently and held diverse beliefs about its educational potential. This may be explained by the lack of adequate opportunities to explore technology. As learners, the teachers had not learned languages with technology; as pre-service teachers, they had not learned about technology as a teaching tool; and as teachers, they had not used it in their teaching practices. Most importantly, they had not had chances to think deeply about technology—how it can support language education—or to experience it in the classroom.

Nevertheless, most workshops dealing with technology have been brief introductions of new programs. While such workshops certainly provide new knowledge, it is not likely to arrive safely in the classroom as it fails to take into account the individual teaching environment, the demands of the curriculum, and accessibility to technology. Recognizing that one-way workshops are inadequate for teachers to evaluate new methods and endorse the integration of technology in their classrooms, the need for professional development that "goes beyond the acquisition of new skills and knowledge" (Patton, Parker, & Tannehill, 2015, p. 27) is raised to encourage teachers to rethink their beliefs and practices. This study aimed to invite teachers to become researchers of their own questions about technology using the exploratory practice framework. While the teacher participants of this study held a vague notion that technology is beneficial to learning, they all acknowledged that they had not thought critically about what technology is and the value of using it. Hannah's comment that she used technology because she "was told to" clearly demonstrated their lack of understanding.

Granted, teachers' days are full dealing with everyday teaching practices and getting ready for the next day, so it is extremely difficult for them to voluntarily set aside a time to think about technology. In this vein, these teachers confessed feeling time pressures and having a general lack of motivation to make new changes. The concept of *guichanda*—or *guichanism* as a noun—was introduced to capture the teachers' rigidness in their teaching routine and low motivation to adopt new technology. The essence of *guichanda* illustrates teachers' sense of priority—teachers feel *guichanda* for matters they do not regard as urgent. As individual teachers interpret the importance and priority of their responsibilities differently and have divergent energy levels to carry out their work, what falls into the category of *guichanda* and how this *guichanism* affects teachers' actual practice can vary widely. In this regard, *guichanism* leaves room for negotiation with the appropriate intervention.

EP played a significant role in overcoming *guichanism* and generating motivation by asking the teachers to explore their own puzzles, creating a collegial environment, and not burdening them with extraneous work. As all participants mentioned in their final interview, they were able to develop their own understanding of technology by formulating their own puzzles and working toward understanding. They concluded that the experience of EP led them to become fully convinced of the effective uses of technology in language classrooms and to realize the importance of meticulous planning by the teacher when implementing technology.

The rise of the teacher community was anticipated, but no one expected it would become the most significant part of this work. The teacher participants manifested the highest satisfaction with the formation of the teacher community in which they could exchange reflections, suggestions, and feedback that ultimately contributed to their mutual development. They also mentioned that the community helped lighten the burden of everyday teaching practice as they had each other to

lean on. This trusted relationship ensured that the EP project would be a continuous enterprise, a sustainable tool for teachers' personal and professional development.

In the beginning, I perceived that apathetic use of technology in language classrooms was a problem. However, adopting a new strategy was a matter of choice; teachers would determine their own strategies based on the curriculum. Thus, instead of identifying problematic situations, developing hypotheses, and seeking solutions, what the teachers needed was a motive to initiate their own exploration. By asking their own "why," they become active agents exploring, implementing, and reflecting on the unknown area, developing their understanding of unknown aspects of technology, and ultimately the quality of life in the classroom. I found that the significance of this study was that it allowed teachers to "stop, look around, and think," as Hanks (2017) describes. It provided opportunities for them to deepen their understanding of their own teaching environment by working through their own puzzles and involving everybody in the context.

Teacher-community-based EP: EP as a Way to Cultivate a Teacher Community and Teachers' Professional Development

In this study, the teacher participants explored and examined their own beliefs about teaching and learning languages and their actual practices by participating in individual EP projects. While engaging in this project, the teachers formed a teacher community in which they actively shared ideas, critiques, and questions, supporting their puzzle investigation progress and ultimately leading to their mutual development. As this study affirmed the benefits of EP and the significance of a teacher community in their professional development, I recommend that EP and teacher community become a more integral part of teachers' daily lives for their continuous development.

For EP and teacher community to become more readily accessible approaches, I combine both concepts and present six practical steps for a teacher-community-based EP with each step's goals and facilitating methods (Table 6.1), reflecting on this project's trials and errors and supplemented by previous studies (e.g. Allwright, 1993). In line with previous EP studies that do not impose strict rules on researchers, the purpose of these practical steps is to provide a good overview for teacher educators or those wishing to initiate EP while constructing a strong teacher community, not to regulate them with steps to follow.

	Steps	Main goals	Facilitating methods/strategies
(1)	Organize an orientation meeting	Identify the settings Become familiar with EP principles	Individual interview Group meeting
(2)	Set a shared goal	Identify the area of interest Discuss shared goals	Group meeting
(3)	Formulate and refine puzzles	Individuals formulate their own puzzles Share ideas within the group	Individual assignment Group meeting
(4)	Explore and investigate puzzles	Individuals utilize regular classroom activities to investigate their own puzzles Involve everybody (students, teachers, and administrators) in progress Share progress regularly and seek feedback from others	Individual research Classroom activities (discussion, assignments, presentation, worksheet, etc.) Daily/weekly feedback Video recording, reflection Reflection journals, Co-teaching, observation, interview
(5)	Interpret outcomes	Analyze data Discuss outcomes and implications Plan for future teaching practice	Individual reflection sessions Group meetings
(6)	Review the progress	Share, discuss, and evaluate experiences	Group meetings

Table 6.1. Practical steps of teacher-community-based EP

The first step begins with the orientation meeting. The significance of an orientation meeting has been overlooked in previous studies, but this study found that holding a well-planned

orientation or workshop benefits the overall process of EP. In this stage, two major goals should be accomplished—identifying the setting and becoming familiar with EP principles. As each teaching context is unique, participants should have a good understanding of their own settings, including their students, colleagues, curriculum, learning goals, resources, and administrative needs. Moreover, participants may roughly discuss their availability in terms of time and space at this stage. In so doing, participants will have the first interaction with other members of their future community, confirm their willingness to participate in the project, and lay the foundation for establishing membership of the community. In this orientation meeting, the principles of EP should be introduced, enabling teachers to become familiar with the concept, ask questions, and share concerns. As the principles cover basic ideas and general features, providing actual examples helps teachers build more concrete ideas. For example, in this study, the participants recalled that the list of example puzzles was helpful for them to construct their puzzles in "why" questions.

The second step, setting a shared goal, is associated with identifying puzzle areas (Allwright, 1993) and a joint enterprise (Wenger, 1998). Indeed, a language classroom is a small world, and thus myriad questions may arise. While the EP puzzle can deal with any question that a participant poses, this study found it helpful for teachers to have a shared area to focus on (e.g. technology integration in language classrooms) as it narrows down the field and clarifies initial vagueness teachers might have. The shared goal (i.e., puzzle topic) can be constructed and negotiated through mutual engagement. Through this process, participants create a shared goal for their teaching environment while bonding as a group.

Once the area of interest is decided, participants are given time to formulate their own puzzles. Like the participants in this study, teachers may face difficulties in creating their puzzles. They may have too many questions or even not know where to start. Sharing their initial

approaches and discussing challenges in group meetings can help resolve these difficulties. Given that a puzzle does not emerge at once, continuous discussion and revision within the group are necessary.

The next step is to explore and investigate the puzzles. This step corresponds to "finding appropriate classroom procedures" in the seven practical steps of Allwright (1993, p. 15). In this step, individuals explore and utilize regular classroom activities to investigate their own puzzles. The exploration and investigation process varies largely by participant, as each one is entirely responsible for planning and conducting the process. Participants may explore diverse classroom activities that can be adopted in language classrooms (e.g. pair activities, presentation, discussion, surveys, worksheet, assignments, etc.) and use them in considering their puzzles. Participants may also refer to studies or books, keep reflective journals, or interview others. In these processes, the important thing to keep in mind is "involve everybody," as the principles of EP highlight. In order to involve everybody, holding daily meetings or regular group meetings is helpful. While the frequency of meetings should be determined based on the settings and participants, regular meetings should be kept short and casual, assuring teachers a comfortable environment to interact while not burdening their time. Regular meetings enable participants to share their progress, raise questions, and seek feedback, which builds up the shared repertoire (Wenger, 1998) in a teacher community. Further, during the investigation process, co-teaching, observation, and video recording of the classes can be utilized to facilitate deeper reflection and understanding. The teachers in this study greatly appreciated observing others' classes as they gained new ideas and exchanged valuable feedback. Video recordings of classes and having video reflection sessions are other useful strategies, while initial reluctance to be video recorded is to be expected. As the

teachers in this study said, video recording becomes comfortable when trust among the members builds up.

Interpreting outcomes includes analyzing collected data and interpreting implications and should be conducted interactively in the investigation process. Individual reflection sessions and critical reflection within the community aid participants in examining and analyzing data from various angles and further deducing implications for future teaching practices.

At the end of the semester or program, the end-of-program meeting is especially valuable to review overall progress and share individual experiences. By sharing, discussing, and evaluating their experiences, participants are given the opportunity to summarize their findings and plan for the next course. Moreover, in recapping their progress, they can take pride in their accomplishments, confirm their personal and professional development, and explore the sustainability of this project in future semesters.

In summary, this study suggests that EP, an approach to working for understanding, allows teachers to develop a deeper understanding of themselves as teachers and construct a strong teacher community in which trusted members grow and develop together as a team both personally and professionally.

Contributions to the Field

While the educational potential of technology has been continuously underscored, a wealth of studies has indicated that teachers do not fully use technology to facilitate learning (Ding et al., 2019; Huang, Teo, & Zhou, 2019). Scholars have explained this mismatch by delineating the internal and external barriers that teachers face (e.g. Ertmer, 1999; Liu, 2011), but it has been

pointed out that these studies have not clarified fully how and why teachers make decisions about technology integration (Kopcha et al., 2020; Tondeur et al., 2017). Given that teachers' beliefs are difficult to observe and measure, multiple sources of data and triangulation are necessary. However, studies dealing with teachers' thought processes and beliefs about the use of technology have largely relied on teachers' self-reported data alone (e.g. Bai & Ertmer, 2004; Liu, 2011). Thus, this small-scale qualitative study fills this gap by providing an in-depth investigation of each teacher's case through the analyses of interviews, class observations, teaching materials, video reflection sessions and group discussions.

By using the EP framework, the study offers empirical evidence of EP as practitioner research. EP was suggested as an alternative form of practitioner research primarily aimed at developing understanding rather than problem-solving. Being relatively new in the field, studies to date on EP have often been theoretical lacking empirical data. In this regard, the present study is significant in that it used EP as a methodology to carry out individual teachers' project in the context of a US public university and evaluated its validity as a plausible form of practitioner research. Additionally, the study specifically asked participants to formulate puzzles pertinent to technology integration to narrow down the puzzle area. This allowed the participants to pursue similar goals even though their puzzles were all different. Having similar goals positively influenced the creation of a collegial environment that promoted active sharing and collaboration. It also demonstrated EP's potential as a professional development opportunity to deal with specific content areas.

This study contributes to teacher's professional development by providing them an opportunity to be fully autonomous in exploring their beliefs and practices in the course of carrying out their own projects. As Hanks (2017) maintains, EP empowers "all those involved in education

to take their rightful place as ‘knowers’ and ‘researchers’ of their own language learning and teaching lives” (p. 308). Guided by EP principles, the teacher participants formulated their own puzzles—asking “why” about their beliefs and practices—, investigated them, and developed their individual understanding of technology integration. During the investigation process, the teachers questioned their practices in their local contexts and continuously engaged in critical reflection processes either independently or together with colleagues. Throughout the process, the participants were able to raise awareness of their beliefs and practices, produce meaningful knowledge about technology, and gain understanding of their immediate context by investigating their puzzles. In this manner, the present study strengthens its potential as an approach to teachers’ professional development.

The present study also affirms the significance of the teacher community and the characteristics of a successful one. During the EP process, the teachers naturally formed a teacher community, becoming active learners to share their inquiries, learn from each other, and effect improvements in their practices. As not all gatherings of teachers become a teacher community (Grossman et al., 2000; 2001), teacher participants identified the culture of their community into four characteristics: understanding, trust, openness, and mutual development.

Finally, the present study contributes to the field of Korean language teachers’ education, specifically in-service teachers’ professional development. There is minimal research in previous literature regarding professional development for in-service teachers, as the primary focus of Korean teacher education has been to establish pre-service teacher education programs (Park & Choi, 2010; Park & Yoon, 2019). The call for attention in education programs for in-service experienced teachers has increased (Lee et al., 2017), yet very little has been done in this direction. Moreover, there is far less research done on teachers outside Korea and their beliefs about

technology. In this regard, this study can shed light on this field and promote more research on technology integration in the classrooms, in-service teachers' beliefs and practices, and adopting EP as a strategy of professional development.

Limitations

This study was limited by the small number of participants, the settings of the study, and my role as a researcher and teacher consultant. First, the small number of participants meant that they were able to collaborate more readily with each other, to engage frequently in casual conversations, and to build a sense of belonging, which facilitated an active EP process in a more collaborative working environment. In addition, I was able to investigate each case more deeply with multiple sources of data during the data collection phase. However, with such a small number and the short duration of the project, interpretation of results may have been limited by the unavailability of more diverse perspectives and the evolution of beliefs and practices.

Next, the settings of this study may have limited the findings of the study. Understanding the local context is the focus of the EP; thus, it is natural that teachers' understanding of the technology was largely dependent on the teaching environment of the study. The local context of the study included high school students who were themselves competent with technology in general, so their favorable attitude may have accelerated its integration and affected the results of the teacher participants' project—their findings all mentioned the benefits of technology. Moreover, as the program allowed teachers flexibility in modifying the curriculum and ready access to technology, it may have been atypically easy for them to actively try out diverse technologies, a situation that may not occur in other settings.

It is also important to note that the teacher participants had a previously developed relationship; experiences with each other may have increased the ease of building a teacher community. As all participants pointed out, they quickly became comfortable with each other, and this was partially because they already knew each other. Thus, if participants are unacquainted, the culture of the teacher community may be different or not even formed. As previous studies indicate, regular meetings could be a burden for some teachers, and in the worst case, could lead one or more to drop out of the project (Soomro, 2012).

Another limitation lies in my role as a researcher, teacher consultant, and participant observer. As I was fully involved with the program as the instructional lead and teacher consultant, I was able to observe participants' EP progress more than an outsider. Yin (2017) notes that participant observer in a case study has better accessibility to the evidence and thus is able to develop insider perspective. In order to understand and support the participants' EP progress just-in-time, it was important for me to observe them as one of the participants. However, although I made every effort to maintain neutrality and professionalism throughout the research process, my existing bias about technology and lack of experience as teacher consultant might have influenced the results of the study.

Suggestions for Future Research and Policy Recommendations

"[T]eachers are not empty vessels waiting to be filled with theoretical and pedagogical skills; they are individuals who enter teacher education programs with prior experiences, personal values, and beliefs that inform their knowledge about teaching and shape what they do in their classrooms."

(Freeman & Johnson, 1998, p. 401)

This study's limitations suggest opportunities for future research. As the present study had few participants and was conducted in a short summer program, I recommend that future studies carry out similar research with a larger and more diverse sample over a longer period. Moreover, as school contexts differ, for example, student populations, flexibility to integrate technology into the curriculum, and accessibility of technology, research in varied contexts would be worthwhile. The students in the classrooms of the teacher participants in the current study were high school students who mostly came to the summer program for fun, which required teachers to seek frequent attention shifts and tangible resources to hold their attention. In addition, the student population was thoroughly competent with technology, and the classrooms were fully equipped, adding more impetus to use technology in the classroom. This implies that further studies analyzing different student groups and school settings would be useful to gain broader understanding about technology integration.

Inarguably, the importance of technology in education is continuously growing. At present, the need for teachers' professional development in terms of technology integration is becoming more urgent as instruction is quickly moving online due to the global pandemic (Gruber & Bauer, 2020; Shin & Borup, 2020). The present study attempted to unpack how Korean language teachers perceive technology integration in their classrooms and why their use of technology had been rudimentary. Considering that a myriad of workshops introducing new skills and programs have not been effective in promoting teachers' adoption of technology in practice, this study

demonstrated that the use of EP, starting from the teachers' own questions and investigating them in their own teaching contexts, generates meaningful awareness of the relationship between content, pedagogy, and technology, encouraging them to use technology appropriately in their classrooms. As education moves into the "new-normal" phase, exploring and tracing teachers' beliefs and practices regarding technology uses after COVID-19 should be reserved for a more extensive study.

The US Department of Education stated, "we need to work to ensure that every new teacher is prepared to select and use the most appropriate tools to support transformative teaching and learning" (Stokes-Beverley & Simoy, 2016, p. 5). The role of technology in education and teachers' technology competency will be more important than ever. What needs to precede in teacher education programs should be understanding individual teachers' beliefs and practices regarding technology integration, not merely introducing new programs. In this regard, as the present study suggested, EP could be utilized as an alternative model of teacher education and professional development program allowing teachers to investigate their own question areas, develop deeper understanding of their own teaching practice and context, and find appropriate ways to integrate technology into their curricula.

Hence, I recommend that EP become a more integral part of teachers' regular professional development. Rather than a professional development program being introduced in a one-time workshop, EP can encourage teachers to develop sustainably by examining about their own questions in a local context with their students and colleagues. While the current study limited its scope to technology use, any other area related to teaching and learning could be suggested to support teachers' personal and professional development.

In the case of Korean language education, studies and policies on in-service teachers' training and professional development are still in their infancy. As Korean language teachers are all over the world working with diverse student populations and settings, existing education programs—inviting teachers to Korea or providing lecture series online—are insufficient to address the various needs and issues. Thus, I hope this alternative model may shed light on the need for teacher education and promotion programs.

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Appendix 1. EP Workshop Material

Exploratory Practice: Finding your puzzles

1. **What is Exploratory Practice?**

Exploratory practice is an indefinitely sustainable way for classroom language teachers and learners, while getting on with their learning and teaching, to develop their own understandings of life in the language classroom.

(Hanks, 2017)

2. **Exploratory practice project**

EXPLORATORY PRACTICE INVOLVES

A. PRACTITIONERS WORKING TO UNDERSTAND:

a) what they want to understand, following their own agendas;
b) not necessarily in order to bring about change;
c) not primarily by changing;
d) but by using normal pedagogic practices as investigative tools, so that working for understanding is part of the teaching and learning, not extra to it;
e) in a way that does not lead to 'burn-out', but that is indefinitely sustainable;

B. IN ORDER TO CONTRIBUTE TO:

f) teaching and learning themselves;
g) professional development, both individual and collective. (Allwright, 2000)

3. **Seven Principles of Exploratory Practice**

- P1: 'Quality of life' for language teachers and learners is the most appropriate central concern for practitioner research in our field.
- P2: Working primarily to understand the quality of life, as it is experienced by language learners and teachers, is more important than, and logically prior to, seeking in any way to improve it.
- P3: Everybody needs to be involved in the work for understanding.
- P4: The work needs to serve to bring people together.
- P5: The work needs to be conducted in a spirit of mutual development.
- P6: Working for understanding is necessarily a continuous enterprise.
- P7: Integrating the work for understanding fully into existing curricular practices is a way of minimizing the burden and maximizing sustainability. (Allwright & Hanks, 2009)

4. **Procedures of Exploratory Practice**

1) Identify a puzzle area
2) Refine your thinking about that puzzle area
3) Select a particular topic to focus upon
4) Find appropriate classroom procedures to explore it
5) Adopt them to the particular puzzle you want to explore.
6) Use them in class
7) Interpret the outcomes
8) Decide on their implications and plan accordingly

5. **Further Readings**

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Appendix 2. Sample of Observation Note

OBSERVATION NOTE

Date		Time	
Teacher		Learning goals	
Number of students		Etc.	
Types of technology visible in classroom			

Observation

Appendix 3. IRB Approval Letter

Education and Social/Behavioral Science IRB
4/2/2019

Submission ID number:	2019-0271
Title:	Understanding teacher's beliefs and practices in technology use in language classroom through exploratory practice
Principal Investigator:	FRANCOIS V TOCHON
Point-of-contact:	JAERIN AHN, FRANCOIS V TOCHON
IRB Staff Reviewer:	CASEY PELLIEN

The ED/SBS IRB conducted a review of the above referenced initial application. The study was determined to meet the criteria for exempt human subjects in accordance with the following category(ies) as defined under 45 CFR 46:

Category 2: Research involving the use of educational tests, surveys, interviews [NOTE: If children are involved in the research it can only be determined to be exempt under this category if the research is limited to educational tests or observation of public behavior, the investigator(s) cannot participate in the activities being observed, and the identities of the subjects either cannot be readily ascertained or the disclosure of the subjects' responses would not put them at risk.]

To access the materials the IRB reviewed and accepted as part of the exemption determination, please log in to your ARROW account and view the documents tab in the submission's workspace.

Although the human subjects research described in the ARROW application referenced above was determined to meet the federal criteria for exemption and thus does not require continuing review, please be aware of your responsibilities related to the conduct of the research and when additional IRB review is required. Prior to starting research activities, please review the Investigator Responsibilities for Exempt Human Subjects Research guidance (https://kb.wisc.edu/images/group99/shared/BSIR_Exempt.pdf) which includes a description of the types of changes that must be submitted to ensure the research continues to comply with the conditions of the exemption and/or category(ies) of exemption.

If you have general questions, please contact the Education and Social/Behavioral Science IRB at 608-263-2320. For questions related to this submission, contact the assigned staff reviewer.

Appendix 4. Consent Form

University of Wisconsin-Madison

Consent to Participate in Research

Study Title for Participants: Understanding teacher's beliefs and practices in technology use in language classroom

Formal Study Title: Understanding teacher's beliefs and practices in technology use in language classroom through exploratory practice.

Lead Researcher: Francois Tochon / 608-263-9992

Where Lead Researcher works: University of Wisconsin-Madison

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Description of the study

We invite you to take part in a research study about teachers' beliefs and practices of technology use in language classroom. We are inviting you because you are a language instructor at University of Wisconsin-Madison. The purpose of this research study is to explore language teacher's beliefs about teaching and technology, how he/she uses technologies in language classroom and how he/she develops his/her technology-related teaching practice through exploratory practice. We are doing this research in order to deeply understand teacher's belief, thinking process and decision-making regarding technology use and draw implications for future teacher education programs. The purpose of this consent form is to give you the information you need to decide whether to be in the study. Ask questions about anything in this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study. This process is called "informed consent."

What will happen in this study?

If you decide to participate in this research study, the researchers will give a thirty-minute long workshop on exploratory practice. Then, the researchers will schedule an individual in-depth interview with you to investigate your prior language teaching and learning experiences and ask you to think about a puzzle (problem) that you want to

investigate during your regular teaching period. When the teaching session starts, the researchers will observe your classroom to discover how you use technology in your classroom and the observation may include video recording and you would be invited to an individual or group conferences to share your progress and reflections. In the end of the teaching week, you will be invited to the second interview and the follow up interview three months after the program.

As part of the study we will collect the audio recordings of your interviews and video recordings of your teaching practices. The audio recordings are being collected for transcription to be analyzed. A written copy of the recordings will be made for use in the research. The video recordings are being collected for individual/group conferences for studying your belief and teaching practice. Recordings will be kept for three months and destroyed following completion of the study. Recordings will not be used for purposes outside of the study or in any papers or publications. You may also choose not to be in video recordings. If you do not agree to video-record your teaching practice, researchers will not record your practice and video conference will be replaced with conferences based on field notes.

The transcription of the recordings will be kept indefinitely, meaning we have no plan to destroy the transcription. The transcription may be used in the future for future research or publications. The transcription will be edited to remove all of your identifying information before they are banked.

You may skip any question in the interview that you do not wish to answer, choose the days of video-recording and the type of conferences—either group or individual—that you would like to participate in.

How long will I be in this study?

You will be part of the study for about four months. You will come to UW-Madison campus for five to six study visits over four weeks and a follow-up interview after three months. Each visit will take about an hour.

Do I have to be in the study? What if I say “yes” now and change my mind later?

No, you do not have to be in this study. Taking part in research is voluntary. This means that you decide if you want to be in the study. If you decide now to take part, you can choose to leave the study at any time.

If you decide to be in the study, the researchers will tell you about new information or changes in the study that may affect your health or your willingness to continue in the study. Let the researchers know if you choose to leave the study. If you decide not to

take part in the study, or if you choose to leave the study, your choice will not affect any relationship you have with or any affiliated organizations. No matter what decision you make, and even if your decision changes, there will be no penalty to you.

Will being in this study help me in any way?

Being in this study may help you learn more about your teaching practice regarding technology use. However, we cannot promise this will happen. Even if the study does not help you directly, your participation in this study may help other people in the future by helping us learn more about language teacher's beliefs and practice regarding technology use.

What are the risks?

There is a risk that your information could become known to someone not involved in this study.

How will researchers keep my research information confidential?

We have strict rules to protect your personal information. We will limit who has access to your name, address, phone number, and other information that can identify you. We will also store this information securely. We may publish and present what we learn from this study, but none of this information will identify you directly without your permission.

However, we cannot promise complete confidentiality. Federal or state laws may permit or require us to show information to university or government officials responsible for monitoring the safety of this study. We may also have to tell appropriate authorities, if we learn during the study that you or others are at risk of harm (for example, due to child or elder abuse, or suicidal thoughts).

With appropriate institutional permissions and confidentiality protections, we might use information that we collect during this study for other research or share with other researchers without additional consent from you or your legally authorized representative.

What if I have questions?

If you have questions about this research or you feel you have been harmed by participating in this study, please contact the Lead Researcher, Francois Tochon, at 608-263-9992 or Jaerin Ahn at 608-571-9694. If you have any questions about your

rights as a research subject or have complaints about the research study or study team, contact Institutional Review Board at 608-263-2362.

Agreement to participate in the research study

If you sign the line below, it means that:

- You have read this consent form.
- You have had a chance to ask questions about the research study, and the researchers have answered your questions.
- You want to be in this study.

_____

Printed Name of Research Participant

Signature of Research Participant Date

Optional) If you check in the box below, it means that:

- You have agreed to be video-taped.

□ I agree to be video-taped

****You will receive a copy of this form****