2021

A Quantitative Analysis of the Relationship Between Dispositions and Technology Integration Knowledge of English Language Teachers

Moe D. Greene

2021

A Quantitative Analysis of the Relationship Between Dispositions and Technology Integration Knowledge of English Language Teachers

Moe Debbagh Greene
Virginia Commonwealth University

A QUANTITATIVE ANALYSIS OF THE RELATIONSHIP BETWEEN DISPOSITIONS AND TECHNOLOGY INTEGRATION KNOWLEDGE OF ENGLISH LANGUAGE TEACHERS

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Education at Virginia Commonwealth University.

by

Moe Debbagh Greene
M.A., Virginia Commonwealth University, 2015
PhD., Mohamed I University, Morocco, 2014

Chair: W. Monty Jones, Ph.D.,
Assistant Professor, Department of Teaching & Learning
VCU School of Education

Virginia Commonwealth University
Richmond, Virginia
June, 2021

Acknowledgement

I could not have completed this program or this dissertation without the help of many people, too many to name, over the years in different ways. Their love and support were essential to my success in this endeavor.

I would like to express appreciation to my advisor and dissertation chair, Dr. W. Monty Jones. His advice, direction and guidance provided support throughout the dissertation process. Moreover, I would like to thank committee members, Dr. Ross Collin, Dr. Brianne Leia Jackson, and Dr. Kathryn Murphy-Judy for their insightful and constructive feedback. I also would like to acknowledge the participants of the study who graciously gave of their time to complete the survey.

Big thanks goes out to the VCU Holmes Scholars Program, my colleagues in the VCU Global Education Office and VCU School of Education for mentorship and encouragement. Supportive colleagues and mentors are so important during the dissertation writing process. Thank you for giving me the support and the inspiration I needed to finish this dissertation.

Finally, thank you to my family and friends for keeping my mental health in check during this process and for their unwavering support throughout the journey

Table of Contents

List of Tables

List of Figures

List of Abbreviations

ACCET	Accrediting Council for Continuing Education and Training
ANOVA	Analysis of Variance
AVE	Average Variance Explained
CALL	Computer Assisted Language Learning
CB	Constructivist-oriented Teaching
CEA	Commission on English Language Accreditation
CFA	Confirmatory Factor Analysis
CK	Content Knowledge
CMC	Computer-Mediated Communication (CMC),
COVID-19	Coronavirus disease of 2019
CR	Composite Reliability
D-W	Durbin-Watson
DD	Design Disposition
EFA	Exploratory Factor Analysis
EFL	English as a Foreign Language
ELL	English Language Learners
ESL	English as a Second Language
HMLR	Hierarchical Multiple Linear Regression
ICT	Information Communication Technology
IRB	Institutional Review Board
MLR	Multiple Linear Regression
MSV	Maximum Shared Variance
MSV	Maximum Shared Variance

PCK	Pedagogical Content Knowledge
PK	Pedagogical Knowledge
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta Analysis
SAMR	Substitution, Augmentation, Modification, and Redefinition
SD	Standard Deviation
SDP	Structure-Disposition-Practice
SLA	Second Language Acquisition
SES	Socioeconomic Status
SPSS	Statistical Package for the Social Sciences
STARLITE	Sampling Strategy, Type of study, Approach, Range of years, Limits,Inclusion and Exclusion criteria, Terms, and Electronic sources
TAM	Technology Adoption Model
TCK	Technological Content Knowledge
TESOL	Teaching English to Speakers of Other Languages
TK	Technology Knowledge
TPACK/ TPCK	Technological Pedagogical Content Knowledge
TPK	Technological Pedagogical Knowledge
VCU	Virginia Commonwealth University
VIF	Variance of Inflation Factor

Abstract

A QUANTITATIVE ANALYSIS OF THE RELATIONSHIP BETWEEN DISPOSITIONS AND TECHNOLOGY INTEGRATION KNOWLEDGE OF ENGLISH LANGUAGE TEACHERS

By Moe Debbagh Greene, PhD.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Education at Virginia Commonwealth University.

Virginia Commonwealth University 2021

Chair: W. Monty Jones, Ph.D.,
Assistant Professor, Department of Teaching & Learning

VCU School of Education

The evolution of technology has made a profound impact on how English language teaching and learning is conceptualized and practiced. However, despite the pervasiveness of educational technological tools, their potential is generally overlooked. An examination of technology integration literature suggests a gap in understanding why teachers lack the necessary knowledge to successfully integrate technology in their teaching as well as an absence of a robust technology integration theoretical framework.

Technological pedagogical content knowledge (TPACK) was developed to explain the specific knowledge needed for effective technology integration. Several limitations, however, have been noted in regards to the ability of this framework to capture the

connections between the complexities of teachers' contexts and their technology integration knowledge. This dissertation advances current literature by opening a discussion on a more complex notion of context that includes teachers' subjective contextual variables. It draws on the work of Bourdieu to explain the complex network of contextual (field) and circumstantial influences that constitute habitus (dispositions).

The concept of habitus, alongside capital and field, offered an explanatory framework to examine the extent to which dispositions (habitus) predict TESOL teachers' technology integration knowledge. A nonexperimental quantitative design along with a hierarchical multiple linear regression analysis were conducted. The data were collected from 139 TESOL teachers in English language programs at the university level.

The results indicate that disposition variables were significant predictors of the outcome variable TPACK ($F= 4.536$, $p < .001$; model 5, $F=4.150$, $p < .001$). Study variables produced an R square of .336, which was statistically significant [$F (15,123) = 4.150$, $p < .001$]. The R square explained 33.6% of the variance in TPACK. The regression analysis results suggested rejection of the null hypothesis with 95% confidence. The strength of this research lies in explaining how teachers' dispositional factors interact with teachers' technology integration knowledge domains in the wider social context and how they collectively predict teachers' technology integration knowledge. The findings have implications for theory, practice and future research.

CHAPTER 1: Introduction to the Study

Research indicates that there has been an increased interest towards the use of technology in education (Aşık, İnce, & Vural, 2018; Baser, Kopcha, & Ozden, 2016; Warschauer & Healey, 2009). The tremendous growth in Information Communication Technology (ICT) has provided new opportunities and expectations among students, teachers and educators. There is a shared belief that technological tools and practices would benefit both teachers and students (Setiawan, Hamra, Jabu, & Susilo 2018). Research suggests that technology integration in teaching and learning can contribute to increases in student learning, engagement and motivation by providing individualized instruction, autonomy, assessment of student learning, feedback, flexibility and access to authentic learning resources (Hubbard, 2013; Setiawan, Hamra, Jabu, & Susilo 2018). The three broad benefits of incorporating technology in the classroom that have been extensively researched include cognitive, motivational and interactional gains.

Research indicates that the integration of technology in the classroom has implications on teaching methodologies, practices, and student learning (Graham, Borup, & Smith, 2012; Martin et al., 2011). Liu, Moore, Graham and Lee (2003) suggest that applications of technology in education have become more interactive and include a greater range of media tools. Many studies in English language teaching tend to emphasize student-centered learning approaches that focus primarily on building interpersonal skills, collaborating on learning tasks, or practicing communication skills in real-world situations with native speakers (Hubbard, 2013; Kessler, 2018; Liu, Wang & Koehler, 2019). Technology is valued in English language learning for the specific activities it promotes

(Baser, Kopcha, & Ozden, 2016). For example, blogs and Wikis are promoted as a means for knowledge construction (Alghasab, Hardman, & Handley; 2019; Li, 2012; Li 2013), computer-based communication tools for authentic interactions (Ahmadi, 2018; Dani, 2017) and natural language processing tools (e.g., parts-of-speech (POS) taggers, noun- and verb-phrase chunkers and grammar analysis) for developing specific language features such as articles, verb tenses, and relative clauses (Kessler & Hubbard, 2017; Lu 2018).

Current trends in technology-based instruction tend to highlight the pedagogical uses of new technologies. Several studies (Adams, 2017; Graham, Borup and Smith, 2012; Harris, Mishra & Koehler, 2009; Tai, 2013; Valtonen et al., 2017) found the emphasis is usually limited to affordances and constraints of different technological tools with little or no examination of the connections between technology, pedagogy and content. Little is known about the complexity of teachers' knowledge in designing and implementing effective teaching with technology in the context of specific subject areas.

The goal of this dissertation is to examine technology integration knowledge of English language teachers and contextual variables that predict effective technology integration. It advances current literature by opening discussion on a more complex notion of context that includes teachers' dispositional or subjective contextual variables as embodiment of social structures to understand teachers' technology integration knowledge. This chapter provides an overview of the general background, statement of research problem, theoretical framework, purposes, rationale, research questions and methodology associated with this study.

Background of Study

Teaching English to Speakers of Other Languages (TESOL) is a rapidly growing field due to a significant increase in the number of English Language Learners (ELLs) in public and private schools across the United States and abroad (Clair, 1995; Dunn, 2019; Hartshorn, Evans, Egbert & Johnson, 2017; Lin, 2019; Razfar & Simon, 2011). ELLs enrolled in grades K-12 cover 4% of all students enrolled in public schools in the United States (Xin & Affrunti, 2019). Baser, Kopcha and Ozden (2016) noted that English is the most frequently learned language in many parts of the world including China, Russia, Germany, Spain, Egypt, and Brazil. The number of international English language students enrolled in higher education institutions in the US between 2015 to 2016 was 300,741 (Xi, 2019) and 362,929 in 2018 (US. Immigration and Customs Enforcement, 2019). According to the 2018 Open Doors report, 78,098 English language learners were enrolled in 400 English language programs that were surveyed in the USA.

Shifts in student demographics have increased the need for skilled TESOL-trained educators to effectively instruct these students. The U.S. Bureau of Labor Statistics (2019) indicates adult literacy and high school equivalency diploma teachers which includes English language teachers held about 67,200 jobs in 2018. TESOL teachers are expected to have combined expertise in the areas of second language acquisition, linguistics, language teaching methodology, pedagogy and technology, among others (Rahimi & Pourshahbaz, 2019). The advance of technology has had significant implications for the teaching of the English language and for the technology integration knowledge and skills TESOL teachers are expected to have.

The use of technology for all facets of English language teaching and learning has dramatically increased as the reach of the Internet and computer systems continue to spread (Chapelle & Sauro, 2017). The implications for language teachers, students, and researchers are extensive. Research suggests that the evolution of technology has made a profound impact on how English language teaching and learning is conceptualized and practiced by making possible the transformation of the classroom environment from teacher-centered to student-centered (Alsuhaibani; 2019; Andrei, 2017; Belland, 2009; Van Olphen, 2008). Many researchers (Alsuhaibani; 2019; Angeli & Valanides, 2009; Mishra & Khoher, 2006) advocate for a transformative approach to the application of technology in the classroom which requires redefining the knowledge base that teachers need to have to develop successful learning experiences for their students.

Studies on technology integration offer valuable insights into how emerging technological tools have been adopted in English language teaching and learning at various points in history (Fuchs & Akbar, 2013; Healey, 2016; Salaberry, 2001; Seth, 2018; Yang & Walker, 2015). Research indicates that variations have been documented in what teachers mean by technology integration and what it means to them (Adams, 2017, Bellard, 2009, Harris, Phillips, Koehler & Rosenberg, 2017, Tai, 2013, Yang & Walker, 2015). Along the same line of thought, Bellard (2009) argues that the meanings assigned to technology integration range from using technology to make learning more efficient or effective, to the use of technology to help students solve problems. Current trends in technology integration suggest that different theoretical orientations and perspectives frame the type of teachers' knowledge required for effective technology integration by

highlighting relevant teaching practices deemed important in the context of English language teaching and learning.

Yang and Walker (2015) argue that technology integration in English language research is addressed from different perspectives including pedagogical and cognitive perspectives. They suggest technology integration models from a pedagogical perspective are limited to teachers' classroom practices as they are mainly concerned with designing instructional activities and determining pedagogical methods and tools for implementing them. Oliver and Townsend (2013) explain that the theoretical orientations that view technology integration as a process of selecting and implementing appropriate technological tools and methods in the classroom at the micro-level focus on personal and technical productivity skills to help teachers increase comfort with technology. Isolating skills and treating them as discrete elements are characteristics of the behaviorist model.

The aim of the pedagogical model is to create a learning environment that elicits technology integration responses. Teachers are taught how to use new tools such as Google tools, discussion boards, chats, concept mapping and online polling in stages to be able to support modes of student-student communication and student-teacher communication (Andrei, 2017; Lu & Lei, 2012; Oliver &Townsend, 2013). The cognitive processing model, on the other hand, guides the design of learning activities and the technology integration process (Yang & Walker, 2015). Its aim is to assist in learning new information as well as enabling modifications to existing knowledge (Lu & Lei, 2012; Papanikolaou, Gouli & Makri, 2014). Yang and Walker (2015) explain that it provides insights on how teachers can use technological tools to support learners' cognitive processes. This model

makes no reference to the factors (at the macro level) that shape how instructional activities are designed and delivered.

In recent years there has been a shift towards models that take context into consideration when discussing technology integration in teaching and learning (Adam, 2017; Olofson, Swallow & Neumann; Phillips, Koehler, Rosenberg, & Zunica, 2017; Porras-Hernández & Salinas- Amescua, 2013;). The underlying assumption of social models is that people draw upon available cultural resources to construct meaning and build accounts to carry on actions. They emphasize the importance of context and group collaborations in facilitating the learning process (Andrei, 2017; Marquardt & Waddill, 2004; Prawat, 1992). From this perspective, teachers use student learning communities to facilitate the negotiation of meaning or the co-construction of new experiences using technology. Learning communities are believed to help students network and create bounds beyond the classroom setting. In such situations, students construct their own norms through which meanings are negotiated (Marquardt & Waddill, 2004; Martin et al, 2011). The adoption of social models in technology integration could result in learning scenarios where students are involved in their own learning. Examples of activities incorporated in teaching with technology from a social model perspective include community engagement through digital networking, online journal reflections, and group assignments.

Kumaravadivelu (2006) explains the English language teaching profession's evolving perspectives, trends, and macrostructures in terms of three shifts: (a) from communicative language teaching to task-based language teaching, (b) from method-based pedagogy to postmethod pedagogy, and (c) from systemic discovery to critical discourse.

Kumaravadivelu (2009) argues that the challenge facing the English teaching profession is not how to design a new method, but how to devise a new way to promote teachers' pedagogic intuition. Emerging trends in the field of education and technology integration seek to address the complexity of teachers' knowledge, beliefs, and macrostructures that shape the micro-structures of a language classroom (Kumaravadivelu, 2006; Canagarajah, 2016). These shifts constitute a significant transition in English language teaching methods during the past fifteen years.

Andrei (2017) argues that analysis of empirical literature has identified six factors that influence teachers' technology integration including resources, teacher technology skills and pedagogical knowledge of technology integration, school context, teacher beliefs and attitudes, assessment and the culture of the school. Emerging teacher development models adopt modes of socialization into professional practices that promote collaboration, networking and development of reflexivity and awareness of one's beliefs in relation to the dominant theoretical and professional paradigms (Johnson & Golombek, 2002; Johnson, 2006). Shifts in the profession's collective thought and the definition of teacher knowledge development and technology integration ushered changes in educational methods and classroom practices from largely skills-based orientations to social orientations with its focus on contextualized communicative and collaborative practices.

In sum, technology integration is often framed within the dominant theoretical and professional trends, available digital technologies, teachers' knowledge of technology, and pedagogical domains (Adam, 2017; Harris, Mishra & Koehler, 2009; Tai, 2013). Given the tremendous potential of new technologies to enhance student's language learning (Andrei,

2017; Hubbard, 2013; Setiawan, Hamra, Jabu, & Susilo 2018), it is imperative to understand and examine English language teachers' technology integration knowledge and its interaction with the contextual variables. There is a need to extend current scholarship by investigating contextual predictors of teachers' technology integration knowledge and connecting teachers' cognitive and contextual characteristics.

Statement of the Research Problem

Language teacher education has undergone multiple epistemological shifts in recent decades due to emerging technologies and shifts in educational paradigms (Johnson, 2016; Kumaravadivelu; 2006; Setiawan, Hamra, Jabu, & Susilo 2018; Smith 2017; Van Olphen, 2008). In this context, teachers are confronted with a broader range of needs including using different technological tools in the classroom as well as aligning technology with pedagogy to increase student learning (Adams, 2017; Koehler, Mishra, Akcaoglu, & Rosenberg, 2016; Liu, Wang & Koehler 2019; Van Olphen, 2008). Research indicates that despite the potential benefits of technology integration in increasing student-learning outcomes, the ways teachers integrate technology in teaching are limited (Liu, Wang & Koehler 2019). They are restricted to traditional pedagogical goals, rather than innovative instruction that encourages students' active participation (Fraillon et al., 2014; Koehler, Mishra, Akcaoglu, & Rosenberg; Li, Jee, & Sun, 2018). The literature suggests that the potential emerging tools and practices present are generally overlooked.

According to the literature, technology is mostly used to deliver instructional content, present knowledge through audio and video files, test knowledge, support student homework, promote drill practice and support teacher transmission of knowledge (Chai,

Koh, & Tsai, 2010; Lim & Chai, 2008). In general, English language skills such as vocabulary, grammar and listening are commonly taught in isolation (Liu, Wang & Koehler 2019). Successful technology integration is challenging for many teachers. They often lack the knowledge to successfully integrate technology in their teaching and their use of technology tends to be limited in depth and scope (Adams, 2017; Aşık, İnce, & Vural, 2018; Graham, Borup &Smith, 2012). Adams (2017) explains that due to their lack of appropriate knowledge for successful technology integration, English language teachers often concentrate on making the best use of digital technologies, ignoring the effect of their use on student learning and their teaching approach.

Research suggests that English language teachers tend to rely upon the tools and practices that they used as learners themselves (Kessler & Hubbard, 2017; Setiawan, Hamra, Jabu, & Susilo, 2018). Technology is usually perceived as an addition to existing teaching procedures and practices (Adams, 2017; Koehler, Mishra, Akcaoglu, & Rosenberg, 2016). An examination of technology integration literature suggests a gap in understanding why teachers lack the necessary knowledge to successfully integrate technology in their teaching as well as an absence of a robust technology integration theoretical framework (Adams, 2017; Chai, Koh, & Tsai, 2013). Technological pedagogical content knowledge (TPACK) was developed in response to the absence of a robust theory to guide the integration of technology in education (Koehler & Mishra, 2005; Rosenberg & Koehler, 2015). Brantley-Dias and Ertmer (2013) argue that when TPACK was introduced, it was intended to provide a new means to discuss the tools teachers have

used in the service of teaching and learning and the specific knowledge they needed to be successful.

TPACK highlights knowledge of technology (TK), about specific technological tools ranging from chalk and blackboard to the Internet and mobile devices, of pedagogy (PK), about teaching techniques and strategies, and of content (CK), about the discipline or subject matter (Koehler & Mishra, 2005; Rosenberg & Koehler 2015; Tseng, 2018; Tseng, Cheng, & Yeh, 2019). Rosenberg and Koehler (2015) explain that these three bodies of core knowledge coalesce to comprise technological pedagogical knowledge (TPK), pedagogical content knowledge (PCK), and technological content knowledge (TCK).

Technological pedagogical content knowledge (TPACK), however, has failed to adequately explain the connections between technology, pedagogy, content and context (Adams, 2017). Research suggests that context is frequently missing when TPACK is described or operationalized (Porras-Hernandez & Salinas- Amescua, 2013; Rosenberg & Koehler, 2015; Swallow & Olofson, 2017). In their analysis of one hundred seventy TPACK focused publications, Rosenberg and Koehler (2015) reported that there is a wide variation in terms of how context is explained and interpreted. The conceptualization of context in the TPACK literature varies from teachers' epistemological beliefs to classroom and institutional resources.

There is a need to examine why teachers lack the necessary knowledge to successfully integrate technology in the classroom by investigating the variables that predict teachers' technology integration knowledge as defined by TPACK. A systematic analysis of the extent to which context is included in the studies examining the TPACK

framework, the meaning assigned to context when it is included as well as the subjective contextual variables such as dispositions that enable teachers to leverage technology resources is of considerable importance in advancing current literature. A theoretically grounded investigation of the wider complexities of how social and cultural variables interrelate to predict teachers' technology integration knowledge may offer a means to extend current research on TPACK toward an understanding of technology use in and across contexts.

Theoretical Framework

Technology integration is a complex task that requires a broader understanding of interactions among multiple components of knowledge (Koehler & Mishra, 2008). Rooted in Shulman's (1986) pedagogical content knowledge (PCK) model, TPACK has become a popular framework for explaining and examining the types of knowledge needed to achieve effective technology integration (Brantley-Dias & Ertmer, 2013). Brantley-Dias and Ertmer (2013) reported that TPACK has been conceptualized in four main ways: (a) as a new definition of technology integration; (b) as the integration of content, pedagogical, and technological knowledge (c) as the knowledge base needed for effective technology integration and (d) as a distinct body of knowledge. The TPACK theoretical framework is intended to provide a common language and simple labels that can be easily recognized for discussion of technology integration and instructional technological tools.

Despite the contributions of TPACK in facilitating technology integration, its constructs have been proven through several studies to be extremely fuzzy and difficult to measure (Brantley-Dias and Ertmer, 2013). Brantley-Dias and Ertmer (2013) explain that

TPACK is neither well defined nor stable as its domains lack clear boundaries and they may be too large (vague or ambiguous) of a construct to enable reasonable application. TPACK constructs provide little explanation about the connections between teachers' backgrounds and their influence (Adam, 2017). Brantley-Dias and Ertmer (2013) argue that one of the disadvantages to using TPACK to discuss technology integration is that, in general, it tends to ignore a host of variables that have been shown to significantly affect the technology integration process including teachers' beliefs, attitudes, self-efficacy, goals, and classroom culture.

Several other limitations have been noted in the literature in regards to TPACK's ability to capture and explain the connections between the complexities of teachers' contexts and their use of technologies. Swallow and Olofson (2017) argue that although context has been described as central to the TPACK framework by its developers (Angeli & Valanides, 2009; Koehler & Mishra, 2008; Koehler, Mishra, Kereluik, Shin, & Graham, 2014), there is limited understanding of the interactions between particular contexts, teacher knowledge development, and classroom instruction. Harris, Mishra and Koehler (2009) as well as Rosenberg and Koehler (2015) also found that not only context is frequently missing when researchers describe TPACK in their work, the meaning of context has differed widely in research and how it is understood within teachers' and institutional epistemological beliefs.

Current TPACK scholarship suggests that future TPACK work may begin to focus more upon cycles of teachers' knowing and doing as well as the reasoning processes and teaching acts within particular teaching and learning contexts (Harris, Phillips, Koehler &

Rosenberg, 2017). The work of Pierre Bourdieu (1977) offers a theory that explains the complex network of contextual (field) and circumstantial influences on social practices. Pierre Bourdieu's (1977) theory offers the opportunity to advance the TPACK framework by opening the discussion on a more complex conception of context by including dispositions as embodiment of social structures and teachers' subjective contextual variables to understand technology integration and TPACK construction. Bourdieu (1977) suggests that practice results from relations between an individual's dispositions and their material and symbolic assets, and position in a field. Bourdieu's theory highlights connections between three elements: (a) habitus (dispositions), (b) field (context) and (c) capital.

The concept of habitus, alongside capital and field, offers an explanatory framework and theoretical vocabulary for understanding teachers' knowledge within the social milieu in which it is contained and generated. It represents an attempt to extend understandings around internalized practices, attitudes and beliefs which individuals carry within them while acknowledging their external social and historical factors (Costa et al., 2019). It functions as an internal archive of personal experiences rooted in an individuals' history and trajectories, which are linked to social categories such as ethnicity, economic status, income, level of education.

Habitus is framed within the social structures (fields) that produce or change it. It is broadly explained as an interpretive framework through which one perceives the social world and one's position in it, and as a process through which an individual thinks, perceives and approaches the world (Cockerham & Hinote, 2009; Belland, 2009).

Bourdieu (1977) defines habitus as a set of dispositions inculcated by, and in accordance with, the social context. He explains that these sets of dispositions are linked to the history and experience of individuals. They can be seen as a governing device or a cognitive map with an infinite yet strictly limited generative capacity of practices (Christ & Wang, 2008). As a product of socially situated conditions, habitus (a set of dispositions) is commonly conceptualized as a generative device which has the capacity to engender an infinite number of new and unique practices.

Just like habitus, field entails a historical background where individuals strive for different forms of capital that gives them a position and a place in the social structure (Bourdieu, 1984). Edgerton and Roberts (2014) explain that the concept of field refers to the norms governing a particular social sphere of activity such as family, school, higher education, politics, and economics. In general, fields are social domains defined in terms of networks of social relations and structures (Bourdieu, 1993; Czerniewicz, 2008; Grenfell, 1996; Swartz, 1997). Individuals in a field tend to share common norms and beliefs. An individual may occupy many fields whose boundaries are governed by shared rules and systems. For example, an English language teacher may occupy a number of fields including the university field, academic field and home field. These social fields include social norms, rules, membership, best practices, policies, procedures and channels of command, etc.

A related key concept, and one that plays an important role in Bourdieu's (1977) theoretical framework, is capital. It refers to assets and resources derived through developing and maintaining social relationships, networks, skills and knowledge (Dumais,

2002). Bourdieu (1977) identifies cultural, economic and social capital that individuals draw on in the process of negotiating social situations. Cultural capital is defined as the broad knowledge of culture that consists of "symbolic goods, skills, and titles" (Collin, 2011, p. 787). Economic capital consists of monetary income as well as ownership of assets. Social capital consists of networks of relationships through which individuals activate resources. Different environments require different forms of capital. Bourdieu's three types of capital: cultural, social, and economic explain dispositions and their relationship to the socialization processes. The underlying assumption when attempting to describe such a bidirectional relationship between thought and action is that knowledge acquisition is a form of design. According to Perkins (1986), conceiving knowledge as a form of design means understanding technology integration knowledge as structures adapted for a purpose embedded in its context of application.

Collin (2011) argues that actors assume specific positions by accruing and deploying particular forms of capital and by getting those efforts recognized and valued. A central aspect to the concept of capital is recognizing and knowing when, how and what form of capital is appropriate for specific situations. The value of capital is determined by the field through recognition by others. For example, a teacher's knowledge of and ability to use social media, which is an important skill, may have little or no value within the academic field. This suggests that a teacher's capital may vary in value across fields. Also, technology integration can be challenging and overwhelming if a teacher lacks appropriate habitus, does not possess the necessary capital or is uncomfortable with the social space of teaching.

The theoretical constructs of habitus, capital and field provide a lens through which to contextualize TESOL teachers' technology integration knowledge (TPACK). These key constructs that can be understood in relation to each other. Bourdieu's (1984) analogy of playing a game explains the dynamic relationships between these concepts and their complex interactions. Bourdieu's view is that adaptation to the demands of a field requires a certain "feel for the game" (Bourdieu 1984). Similar to a game, a social field has specific structures, group norms and rules, which constrain and regulate individuals' behavior. The performance of a player in a game depends on several factors such as their engagement with and understanding of the rules of the game.

As a player engages in the game over a period of time and with practice and deployment of appropriate capital, the rules become invisible and natural, resulting in a "feel for the game". The earlier a player enters the game, the less they are aware of the associated required learning to succeed. Analogous to games, successful individuals in particular social fields develop appropriate understanding of the rules and norms of the field by deploying recognizable forms of capital in that field. In relation to technology integration knowledge in teaching English language, teachers who have access to different forms of capital and have developed appropriate dispositions according to school rules and norms are more likely to have a feel for the technology integration game.

A growing body of literature is turning to Bourdieusian concept of habitus (dispositions) as a lens through which technology integration is explained (Belland, 2008; Johnson, 2019; Şule, Zühal, & Tuğba, 2019; Sterne, 2003). From this perspective, teachers respond to situations and deploy certain forms of capital in ways that reflect their habitus.

The assumption is that teachers develop certain dispositions toward viewing teaching and performing as teachers in specific ways. Combining the TPACK and the Bourdieusian theoretical frameworks will help us reveal contextual and dispositional patterns in teachers' technology integration knowledge, the nature of their technological knowledge and how these factors interact with context. The concept of habitus provides a theoretical lens to explain the TESOL teachers' technological, pedagogical and content capital by contextualizing their technological practices within the cultural norms and prevailing educational paradigms (fields).

Statement of Purpose

The purpose of this dissertation is to examine how the habitual dispositions of TESOL teachers and their interactions with the wider social context predict their technology integration knowledge (TPACK). It investigates whether teachers' dispositions asembodiments of social structures predict their knowledge of technology integration by connecting teachers' cognitive and contextual variables (field). The theoretical frameworks advanced by Pierre Bourdieu (1977) and Mishra & Koehler, (2009) guide the analysis of the TESOL teachers' technology integration knowledge and its interaction with dispositional contextual variables.

More specially, the Bourdieusian theoretical framework is used to examine whether the variables of habitus of English language teachers predict their TPACK. While the TPACK constructs provide a lens to measure teachers' technological, pedagogical and content knowledge, Bourdieu's concepts provide measures of dispositions and the social dimensions of teachers' technology integration knowledge. A statistical model that

incorporates pertinent measures of the TESOL teachers' varied dispositions (embodiment of social structures) and demographic factors was used. Such measures offer a better basis for understanding the forms of contextual dispositional factors that have most relevance for knowledge development of technology application in teaching. In other words, they provide a lens to investigate the embodied structures and patterns of socialization that translate into differences in technology integration knowledge.

Rationale

Using the Bourdieusian and TPACK frameworks to explain and frame the complexity and nature of teachers' knowledge encourages us to think critically about why technology integration is not always achieved given the wide availability of resources to support technology integration (Adam, 2017; Belland, 2009). Instead of attributing the lack of technology integration to resources and teacher beliefs about the role of technology in education, this dissertation suggests that teachers' technology integration can be explained by their habitus and social structures.

As a centerpiece of Bourdieu's explanation of social behavior, the concept of habitus consists of enduring dispositions towards actions deemed appropriate in particular social situations and settings (Cockerham & Hinote, 2009). It is a system of dispositions that capture how teachers carry their culture, experience, and history within themselves, and how they make choices to act in certain contexts (Bourdieu, 1994). Bourdieu's (1994 & 1977) theory provides a deeper understanding of the forces that shape teachers' technological pedagogical content knowledge. Using Bourdieu's (1977) concept of habitus, dispositions are examined in conjunction with field and capital. They suggest that TESOL

teachers have attributes, shared group normed experiences and internalized dispositions that incline them to approach technology integration in certain ways.

Given the importance of context in the development of teachers' TPACK, both teachers' subjective contextual factors and the surrounding social and economic environments merit further understanding. This dissertation contributes to the research in TPACK and technology integration in English language teaching by including an analysis of context (field) and dispositions, which have not been sufficiently theorized. It makes contributions toward addressing the conceptual challenges facing the understanding and application of context (Rosenberg & Koehler, 2015). It advances the TPACK framework by examining a more nuanced notion of context by including teachers' subjective contextual variables and dispositions to understand technology integration and TPACK construction. A theoretically grounded investigation of technology integration offers a means to extend current research toward an understanding of technology use in and across contexts, which may uncover digital inequalities and how they may be reproduced or transformed.

Results from this study can be used to provide guidance to promote effective technology integration that encourage students' active participation and knowledge building. They can provide educational technology researchers with important details about teachers' dispositions (habitus) towards technology integration knowledge (TPACK) and its importance in shaping teachers' practices. They could inform the initiatives and studies undertaken to understand the problems and challenges associated with lack of effective technology integration in English language teaching and learning. Education

administrators could gain insight into the types of institutional support that would encourage the use of technology for instructional purposes in English language teaching and beyond.

Research Questions and Hypotheses

- RQ1: What is the relationship between dispositions (habitus) of the TESOL teachers and their technological pedagogical content knowledge (TPACK)?
    - H10: There is no statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)
    - H1a: There is a statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)
- RQ2: Do dispositions (habitus) of the TESOL teachers predict their technology integration knowledge (TPACK)?
    - H20: There is no statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)
    - H2a: There is a statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)

Methodology

A nonexperimental quantitative design was used to address the research questions. The EFL-TPACK survey developed by Bostancıoğlu and Handley (2018) provided measures of content knowledge (CK), pedagogical knowledge (PK), technology knowledge (TK), technological content knowledge (TCK), pedagogical content knowledge (PCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPCK) of the TESOL teachers. It includes a total of 36 items that measure teachers' TPACK knowledge: 6 TK items, 4 PK items, 5 CK items, 6 TCK items, 6 TPK items 3, PCK items and 6 TPCK items.

The data that pertain to technology integration knowledge was collected from the TESOL teachers in English language programs at the university level. Participants were asked to complete the survey items by rating the degree to which they agree with the statements where 1 = strongly disagree and 5 = strongly agree. Higher scores indicate the participants' proficient ability and knowledge to incorporate technology, pedagogy, and content in teaching. The survey is a valid and reliable instrument that addresses the specific pedagogical and technological approaches valued in TESOL contexts. Bostancıoğlu and Handley, 2018 explain that the composite reliability (CR) levels are all above 0.70, confirming that the model is reliable and the Average Variance Explained (AVE) levels are higher than 0.50 for all factors, confirming convergent validity. Discriminant validity is indicated by the square root of the AVE values for each factor. They are all greater than the inter-factor correlations as well as the Maximum Shared Variance (MSV).

The survey consists of two additional sections developed by the researcher based on Bourdieu's (1977) theories and the study's conceptual framework. One section includes open ended question items that measure dispositions as embodiment of social structures. The last section elicits demographic information from participants, including age range, gender, and ethnicity. Framing dispositions with Bourdieu's theory of habitus required the use of an instrument not only to capture teachers' technology integration knowledge, but also to measure dispositions as part of teachers' trajectories of practice. The underlying assumption is that teachers respond to situations and deploy certain forms of capital in ways that reflect their habitus and development of their dispositions toward viewing teaching and performing as teachers in specific ways.

The structure-disposition-practice (SDP) conceptual framework (Edgerton & Roberts, 2014) was developed to capture the dialectic relationship habitus, capital and field. The operationalization of dispositions (habitus) included family background, individuals' level of education, location (field) and years of experience, employment status, context levels, technology use, and demographic data. The structural properties of family background were operationalized by an index of family socioeconomic status (SES) and income. The last section of the survey elicits demographic information from participants, including age, gender, ethnicity, native and nonnative status and foreign languages fluency.

These measures are consistent with Bourdieu's (1984) emphasis on the importance of capital and field in the development of habitus (dispositions). Given that habitus reflects the internalization of exterior structures, it was necessary to obtain structural properties or

variable categories that could provide context for teachers' experiences which are the basis upon which habitus originates. Measures rooted in family background and individual's location within the educational field closely capture each teacher's "feel for the game", which is an indicator of the likelihood of a teacher's technology integration knowledge development.

A hierarchical multiple linear regression (HMLR), a method of multiple linear regression (MLR) in which variables are introduced into the analysis in blocks (Field, 2017), was conducted to determine if teachers' dispositions (habitus) could predict their TPACK. A systematic measurement of variables that characterize teachers' dispositions (habitus) provided a basis for predicting the nature of English language teacher knowledge. The strength of this analysis lies in explaining how teachers' dispositions interact with the TPACK structures in the wider social context (field) and how they collectively predict teachers' technology integration. It presents an attempt to overcome the dichotomy between structure and agency in technology integration while acknowledging the external and social factors that constrain and/or promote technology integration that encourages students' active participation and knowledge building.

Summary

This chapter provided an overview of the general background, statement of research problem, theoretical framework, purposes, rationale, research questions and methodology associated with this study. Teachers are expected to conduct effective teaching with technology. This demand is marked by important changes in the history of the TESOL teaching profession and computer-assisted language learning. There is a shared

belief that technology as a facilitating tool would benefit both teachers and students. Setiawan, Hamra, Jabu and Susilo (2018) argue that cognitive, motivational and interactional gains are the three broad benefits of incorporating technology into classroom work.

Research (Adams, 2017; Aşık, İnce, & Vural, 2018; Graham, Borup &Smith, 2012) suggests that teachers lack the knowledge base for effective technology integration. The aim of this dissertation is to determine the extent to which dispositions as defined by habitus predict TESOL teachers' technology integration knowledge using a nonexperimental quantitative approach. Guided by Bourdieu's (1977) concept of habitus and the TPACK framework, this study considers the social and cultural milieu (field) in which technology practices occur. The assumption is that teachers' TPACK cannot not be adequately understood without the consideration of the broader milieu of their technology practices. The results will inform the initiatives and studies undertaken to understand the problems and challenges associated with lack of effective technology integration in English language teaching and learning. They advance current literature by opening discussion on a more complex notion of context that includes teachers' subjective contextual variables and dispositions to understand teachers' technology integration knowledge development. The remainder of this dissertation is organized into the following chapters: The second chapter reviews applicable literature review; the third chapter explains the research methodology used for data collection; the fourth chapter presents results of analysis of data; the fifth chapter concludes this dissertation and makes recommendations for future studies.

CHAPTER 2: Review of the Literature

This chapter includes a general overview of the technological pedagogical content knowledge (TPACK) and Bourdieu's theoretical frameworks. The first section investigates the extent to which dispositions as embodiment of social structures are included in the studies examining the TPACK framework in English language teaching and learning research through a systematic review of literature. The second section presents a discussion of literature on Bourdieu's concept of habitus (sets of dispositions) and its relation to capital and field. The structure-disposition-practice (SDP) framework is used to explain and operationalize dispositions in relation to technology integration.

Section 1: TPACK framework

Background

Researchers and educators introduced several frameworks that examine teachers' use of technology in the classroom and effective technology integration in teaching and learning (Bernacki, Crompton, & Greene, 2020; Mishra & Koehler, 2006; Tai, 2013). Technology integration frameworks, such as substitution, augmentation, modification, and redefinition (SAMR) (Puentedura, 2006 as Hamilton, Rosenberg, & Akcaoglu, 2016), technology adoption model (TAM) (Davis, 1989) and technological pedagogical content knowledge (TPACK) (Mishra & Koehler, 2006) frameworks have been introduced to facilitate the design of learning experiences that promote technology integration. Korucu-Kis and Ozmen, (2018) explain that while some frameworks emphasize the incorporation of technology with pedagogy, others highlight the role beliefs play in a

successful implementation process.

Examining several frameworks for technology integration, Tai (2013) found that the Hampel and Stickler (2005) framework focused mainly on the technological skills that teachers need to have, but provided no clear connections between content and technology. Hubbard and Levy's (2006) framework addressed both the technical and pedagogical knowledge as well as the skills that teachers need for successful integration of technology; however, these elements were not presented as being connected within a coherent framework. According to Tai (2013), the practicality of many of the frameworks presented was limited and often they had not been extensively examined. Along the same line of thought, Korucu-Kis and Ozmen (2018) argue that several of these frameworks lack coherence. They introduced a framework that addresses student teachers' technological awareness, beliefs, knowledge, and skills simultaneously. The proposed framework is intended to provide a common language for teacher educators to discuss how technology integration can be achieved in classrooms.

References to technology integration knowledge, as a critical component of teacher knowledge, did not begin to appear in the literature until the late 1990s and early 2000s (Brantley-Dias & Ertmer, 2013). The term TPACK as a conceptual framework that describes the knowledge base for teachers to effectively teach with technology began to gain widespread popularity in 2006 due to Mishra and Koehler's research. As a conceptual construct, TPACK has led to a variety of definitions as well as methods for measuring and facilitating its development (Brantley-Dias & Ertmer, 2013). Voogt, Fisser, Roblin, Tondeur & Braak (2013) indicate that different views on TPACK have developed over time

including: 1) TPACK as extending Shulman's (1987) pedagogical content knowledge which is explained in the publications of Niess (2005) and Cox and Graham (2009); 2) TPACK as a unique and distinct body of knowledge which is evident in the publications of Angeli and Valanides (2009); and 3) TPACK as a conceptual framework that connects three domains of knowledge and their intersections and in a specific context which can be found in the publications of Koehler and Mishra (2006).

TPACK suggests a holistic view of the entire knowledge base teachers need for effective technology application in their classrooms (Mishra & Koehler, 2006). TPACK as knowledge refers to something teachers possess, such as concepts, rules, and procedures (Willermark, 2018). Mishra and Koehler (2006) explain that TPACK is about teachers, incorporating technological knowledge into the structure of pedagogical content knowledge and the surrounding context. TPACK stresses the knowledge of how to work with and apply technological resources. It highlights knowledge of technology (TK), about specific technological tools ranging from chalk and blackboard to the Internet and mobile devices, of pedagogy (PK), about teaching techniques and strategies, and of content (CK), about the discipline or subject matter (Koehler & Mishra, 2005; Rosenberg & Koehler 2015; Tseng, 2018; Tseng, Cheng, & Yeh, 2019).

Equally important to the model are the intersections among these bodies of knowledge represented as pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPACK) (Koehler, Mishra, Kereluik, Shin & Graham, 2014). As such, TPACK outlines seven different types of knowledge required for

technology integration to occur. It is a transformation of Shulman's (1987) PCK as it illustrates how subject and topic specific activities can be combined with technology to facilitate student learning. Koehler et.al. (2014) suggests that TPACK in this sense goes beyond knowledge of content, pedagogy, and technology taken individually but rather exists in a dynamic relationship.

Despite that fact that context is identified as an important component of TPACK (Koehler & Mishra, 2008; Koh, Chai, & Tay, 2014; Mishra & Koehler, 2006; Phillips, Koehler, Rosenberg, & Zunica, 2017; Porras- Hern_andez & Salinas-Amescua, 2013; Rosenberg & Koehler, 2015; Swallow & Olofson, 2017), prior research has found that context is frequently missing when TPACK is described (Porras-Hernández & Salinas-Amescua, 2013; Rosenberg & Koehler, 2015). There is a need to investigate the extent to which context is included in the studies examining the TPACK framework, the meaning assigned to context when it is included as well as the subjective contextual variables such as dispositions that enable teachers to leverage technology resources.

Systematic Literature Review of TPACK

Method for Review of the Literature and Study Selection. This systematic literature review examines recent studies that utilized the TPACK framework in TESOL. More specifically, it investigates how context is described in those studies, the meaning assigned to it and the extent to which dispositions defined by Bourdieu 's (1977) concept of habitus are addressed. The review seeks to discuss the levels of context (micro, meso and macro) that are included in the operationalization of TPACK, the extent to which dispositions as embodiment of social structures have been included in the

operationalization of TPACK and how the TPACK framework is applied to identify TESOL teachers' technology integration knowledge.

The current systematic literature review was conducted in consideration of previous systematic reviews on the topic, mainly Kelly (2010), Porras-Hernandez and Salinas-Amescua (2013), Chai, Koh and Tsai (2013, Rosenberg & Koehler (2015) and Willermark (2018). While the aforementioned reviews were considered throughout this review process, two reviews provided a framework to conduct the current review: a) Rosenberg and Koehler's (2015) review that examined the extent to which context is included in publications on TPACK in all subject areas, and the meaning of context when it is included, b) Willermark's (2018) review that examined the general characteristics of recent TPACK articles as well as the approaches used to identify teachers' application of TPACK. While these reviews did not specifically look at the applications of TPACK in English TESOL, the current review was influenced by their search strategies, search terms, limits and coding categories.

A review protocol, which explains all aspects of the literature review (including method, literature search strategy, sample, coding and data analysis), was developed according to Booth's (2006) criteria. Booth's (2006) criteria, referred to as the STARLITE guidelines, were followed to systematically categorize and analyze recent publications on TPACK as it relates to context and to minimize the effect of possible bias of the review process. Booth's (2006) criteria are commonly represented with the mnemonic STARLITE (sampling strategy, type of study, approach, range of years, limits, inclusion and exclusion criteria, terms, and electronic sources). It was designed according to the structure and

recommendations of other systematic reviews including Chai, Koh and Tsai (2013), Rosenberg and Koehler (2015), and Willermark (2018) in regards to limits, search and coding categories.

The database selection was preceded by exploratory searches of Virginia Commonwealth University (VCU) Libraries' general holdings as well as those of numerous databases including EBSCO, ERIC, ProQuest, PsycINFO and JSTOR, Google Scholar, dissertation searches through ProQuest and Scholar's Compass. The search strategy employed in this initial search involved several stages; searching literature databases and hand searching of the leading journals in research on technology integration using reference lists from primary sources. The search was conducted in all databases listed above along with a comparison of the indexed journals. The databases that were selected due to their coverage of TPACK in English language teaching were EBSCOhost covering Academic Search Complete, Applied Science & Technology Index, education etc.; ERIC (Education Resources Information Center); JSTOR; and Web of Science. They include educational technology journals and teacher education journals.

Electronic sources were searched using the following descriptors: technological pedagogical content knowledge OR "TPACK" OR "TPCK" AND ESL OR EFL OR TESOL OR English as a Second Language OR English Language AND Context OR Dispositions OR Habitus. The search terms used were related to TPACK, English language and context. The search included similar terms to those used by Chai, Koh and Tsai (2013), Rosenberg & Koehler (2015) and Willermark (2018), and additional terms to reflect this review's focus on language and context. The broad search terms were used to get a

comprehensive search result and the Boolean search terms AND and OR were included to allow for as many results as possible due to variations in descriptions applied to English as a second language teaching and learning.

The descriptors placed in parentheses ("TPACK", "TPCK.") narrowed the search to studies that included either one. The second set of terms (context, dispositions, habitus, English as a second language, TESOL, EFL, ESL, English language teaching and learning) limited the results to studies examining context and English as a second language. The search was limited to articles published between 2009-2019. The years were selected in order to overlap with previous systematic literature reviews, mainly Chai, Koh and Tsai (2013): 2003-2011; Rosenberg and Koehler (2015): 2005–2013; and Willermark (2018): 2011 to 2016.

Once all publications were collected, using the search strategy procedures described above, the following inclusion criteria were utilized to evaluate each research study:

- The study is written in English
- The study is peer-reviewed
- The study examines English language education (TESOL, ESL or EFL focused)
- The study is empirically based (quantitative, qualitative or mixed methods)
- The study is published between 2009–2019

- "TPCK," "TPACK," or "technological pedagogical content knowledge" included in the title, keywords, or abstract (or introduction if an abstract is not included)
- The study explicitly addresses context (including dispositions) in the description, explanation or operationalization of TPACK
- The study explicitly states intention to explore TPACK
- The study involved pre-service or in-service teachers

In addition, the following is a list of exclusion criteria:

- The study is purely theoretical (systematic reviews, meta-analyses, position papers, conceptual and conference papers were excluded)
- The study is not in the area of TESOL

To be included in the review, the article had to contain empirically based research. Title, keywords and abstract (or introduction if an abstract is not included) were manually and systematically reviewed in order to decide whether a study met the inclusion criteria. In case of doubt, the publication was kept for full-text reading. Primary sources deemed relevant were listed on a master reference list and a copy of each publication was obtained.

The TPACK studies coded in this systematic literature review includes references to context in the description of TPACK. Using Willermark's (2018) coding scheme, self-reporting of TPACK was divided into three subcategories: general TPACK which refers to situations where TPACK is estimated using, for example, ranking statements; specific TPACK which refers to authentic or fictitious TPACK situations with specific scenarios; and experienced TPACK where actual experiences of conducted teaching

activities of planning or implementing teaching TPACK is self-reported. Such categorization of TPACK is based on the definition of TPACK as knowledge.

TPACK that is based on performance and defines TPACK as competence was also reviewed. TPACK as performance highlights planning, implementing and evaluation of teaching activities. The data was also coded qualitatively using a coding scheme adopted from Porras-Hernandez and Salinas-Amescua's (2013) framework and utilized in Rosenberg and Koehler (2015). It places TPACK within multiple levels of context. Porras-Hernandez and Salinas-Amescua (2013) categorized contextual factors into three main levels: micro, meso and micro.

Porras-Hernandez and Salinas-Amescua (2013) explain that the micro level includes the factors at the classroom or learning environment, which may involve available resources, norms and policies. The meso level is concerned with the factors at the school or the larger setting that the classroom or learning environment is located within. It is defined as the social, cultural, political, organizational, and economic conditions established in the local community and the educational institution such as the availability of resources and support staff. The macro level addresses the social, political, technological, and economic conditions such as state and national curricular standards, rapid technological developments worldwide and national and global policies.

The categorization of publications in this systematic literature review based on Porras-Hernandez and Salinas-Amescua's (2013) levels of context also includes identification of teachers' dispositions as a representation of habitus. The following table summarizes data coding and data segmentation processes adapted from Porras-Hernandez

and Salinas-Amescua (2013) as well as Rosenberg Koehler's (2015) review.

Table 1

Coding Schemes for TPACK Context

Variable	Description	Possible code
Definition of TPACK	TPACK as knowledge (general, specific or experienced) or TPACK as performance	1 (included) 0 (not included)
Micro	Factors at the classroom level	1 (included) 0 (not included)
Meso	Factors at the school level	1 (included) 0 (not included)
Macro	Factors at the societal level	1 (included) 0 (not included)
Teacher	Factors related to the teacher as such dispositions (habitus)	1 (included) 0 (not included)

Only studies with explicit focus on English language and context (including dispositions) in the definition of conceptualization of TPACK were coded for micro, meso, macro and teacher. The coding variables were found in the abstract, introduction, literature review, methods, and data analysis sections of the selected articles. Following Rosenberg and Koehler's (2015) coding strategy, the definition of TPACK is coded "1" only if TPACK is referred to as general, specific, experienced or performed knowledge. The inclusion of context categories (contextual levels and teachers' dispositions) were coded "1" each if they are included in the study and "0" if they are not present. An article could be coded "1" or "0" for multiple categories or variables.

The conceptual framework for coding procedures exhibits construct validity as it is grounded in prior empirical and theoretical research on the nature of context. It was adapted from prior research including Porras-Hernandez and Salinas-Amescua (2013),

Rosenberg & Koehler (2015) and Willermark (2018). The selected articles for this review were coded for explicit contextual criteria. In borderline cases, an external researcher with insight into the field was consulted. Problems in coding were discussed throughout the process and the articles were reviewed by more than one person when necessary. Regular meetings were scheduled with a librarian with expertise in the field of education throughout the database search to ensure that the review and search criteria were applied consistently and exhaustively.

The following table summarizes how Booth's (2006) criteria were utilized in the study section process.

Table 2

The STARLITE Application to the Systematic Literature Review on TPACK and Context

Mnemonics	Criteria review	Process
S	Sampling strategy	Comprehensive review of empirically based studies on TPACK and TPACK contextual factors in English language
T	Type of study	Primary research studies that are empirical in design (qualitative, quantitative, and mixed methods)
A	Approach	Search of literature databases
R	Range of years	Studies published between 2009–2019
L	Limits	The study is required to be written in English and empirically based within the subject area of the English language
I	Inclusion & exclusion criteria	The study is English language, TESOL, ESL or EFL focused; "TPCK," "TPACK," or "technological pedagogical content knowledge" included in the title, keywords, or abstract (or introduction if an abstract is not included); The study explicitly addresses context or dispositions in the description, explanation or operationalization of TPACK; The study explicitly states intention to explore TPACK; The study involves preservice or in-service teachers; the study is peer reviewed and is empirically based.

		A study was excluded if it is not in the area of the English language teaching and learning, does not involve pre-service or in-service teachers and is not in English or is not empirically based (systematic reviews, meta-analyses and position papers, conceptual papers and conference papers were excluded).
T	Terms used	Technological pedagogical content knowledge OR "TPACK" OR "TPCK" AND ESL OR EFL OR TESOL OR English as a Second Language OR English Language AND Context OR Dispositions OR Habitus
E	Electronic source	Electronic database searches include EBSCOhost covering Academic Search Complete, Applied Science & Technology Index, education etc.; ERIC (Education Resources Information Center); JSTOR; and Web of Science

The PRISMA flow diagram was used to present the flow of information throughout the systematic review process. After screening for duplicates, all articles were evaluated according to the inclusion and exclusion criteria. This phase of the screening process was straightforward as the focus was mainly on whether there was a mention of TPACK in the title, keywords, or abstract (or introduction if an abstract is not included) and English language, context or depositions in the rest of the article. If one or more criteria were absent or unclear, the article was considered for full review during the next screening. All the articles that met the inclusion and exclusion criteria were listed on a master reference list and a copy of each publication was obtained. The second screening phase included a complete review of the article.

The search yielded a total of 365 (65 of them were obtained from ERIC, 46 from EBSCOhost, 55 from JSTOR and 197 From Web of Science) following a filtering procedure regarding English language and context. The number of studies that met the inclusion criteria after the final review was 24. Considering that several recent studies

(Redmond & Peled, 2019; Tseng, 2018) reported that research on TPACK has been lagging behind, the number of studies that met the inclusion criteria is relatively higher than expected. TPACK has been mainly applied in the discipline areas such as math and sciences.

The following PRISMA diagram maps out the number of records identified, included and excluded in this systematic review.

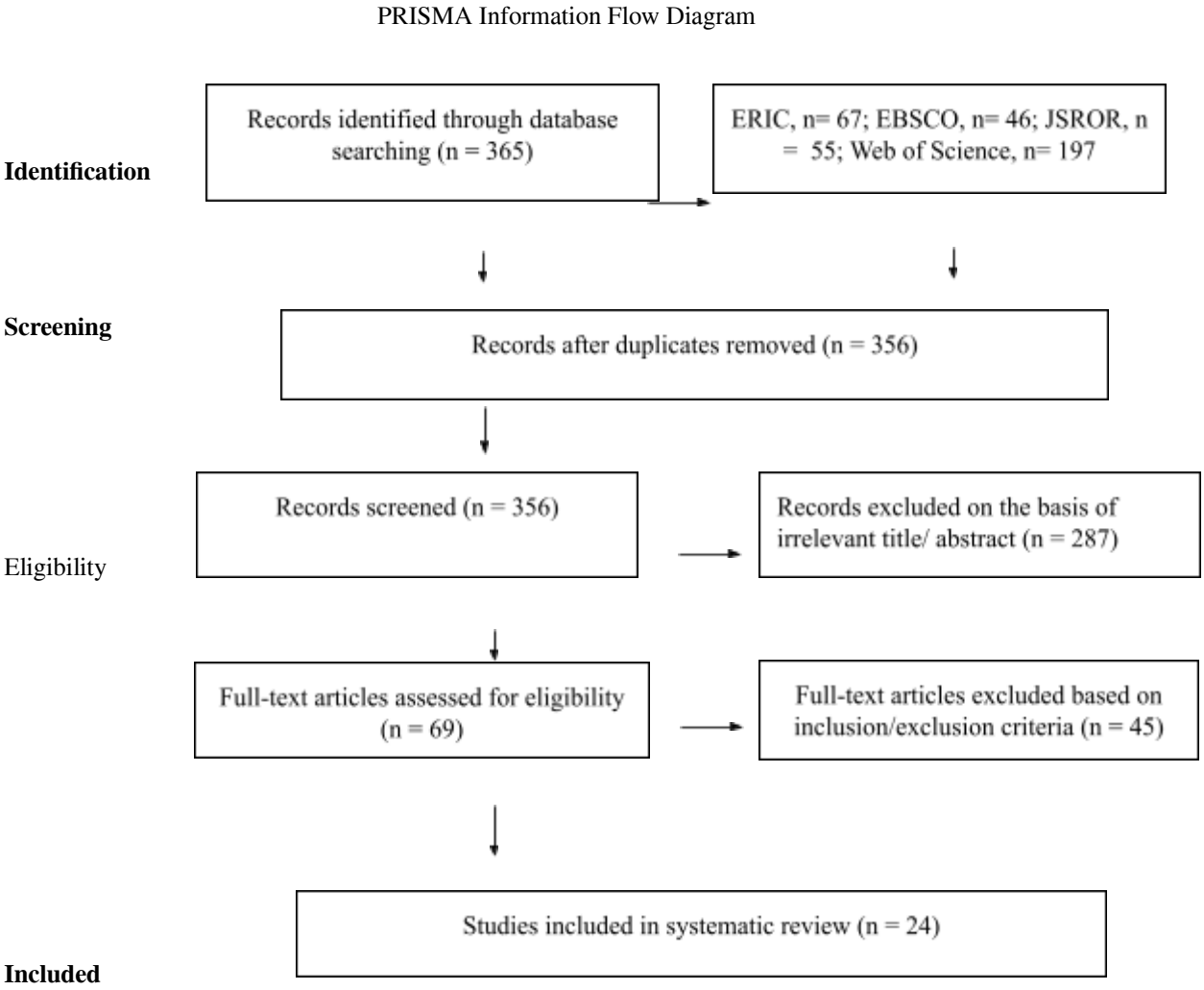

Figure 1. Flow PRISMA diagram of the screening and selection procedure

Studies were categorized according to the nature of the review: studies that explicitly address TPACK context in English as a second language teaching and learning. The "1" (included) and "0" (not included) codes were computed in the analysis of the data to determine the application of TPACK in English language teaching. Computed frequencies and percentages of context levels (micro, meso, macro) and teacher factors using the "1" (included) and "0" (not included) codes were examined to determine the extent to which context was included in those studies, the meanings assigned to it and the extent to which dispositions defined by Bourdieu 's (1977) concept of habitus were addressed.

TPACK Research Studies. A total of 24 out of the initial 365 identified articles were included in this review. As shown in the graph (Figure 2) below, relatively few articles were included from the years of 2009 through 2015, 4 total. There was a clear increase of the articles that met this study's inclusion and exclusion criteria in 2016 through 2019. Most studies were published in 2018 followed by 2019.

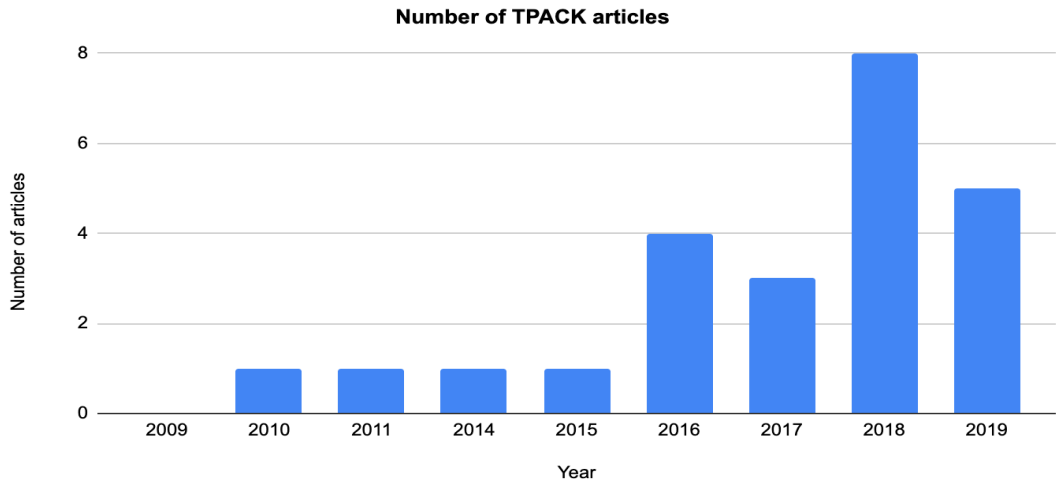

Figure 2: Distribution of the selected number of TPACK articles published between 2009 and 2019 (n= 24)

The highest number of articles, (45.83%), was found in educational technology journals (e.g., Education and Information Technologies, Australian Journal of Educational Technology, and Educational Technology & Society). 33.33% were published in language subject based journals (e.g., Journal of Asia TOEFL, Computer Assisted Language Learning and Journal of Basic Writing), 12.5% in cross discipline journals (e.g., Journal of Qualitative Research in Education and Educational Research and Reviews), and 8.33% in teacher education journals (e.g., Journal of Teacher Education and Educators and Asia-Pacific Journal of Teacher Education). The data on the number of publications found in each journal are reported in the Figure 3 below.

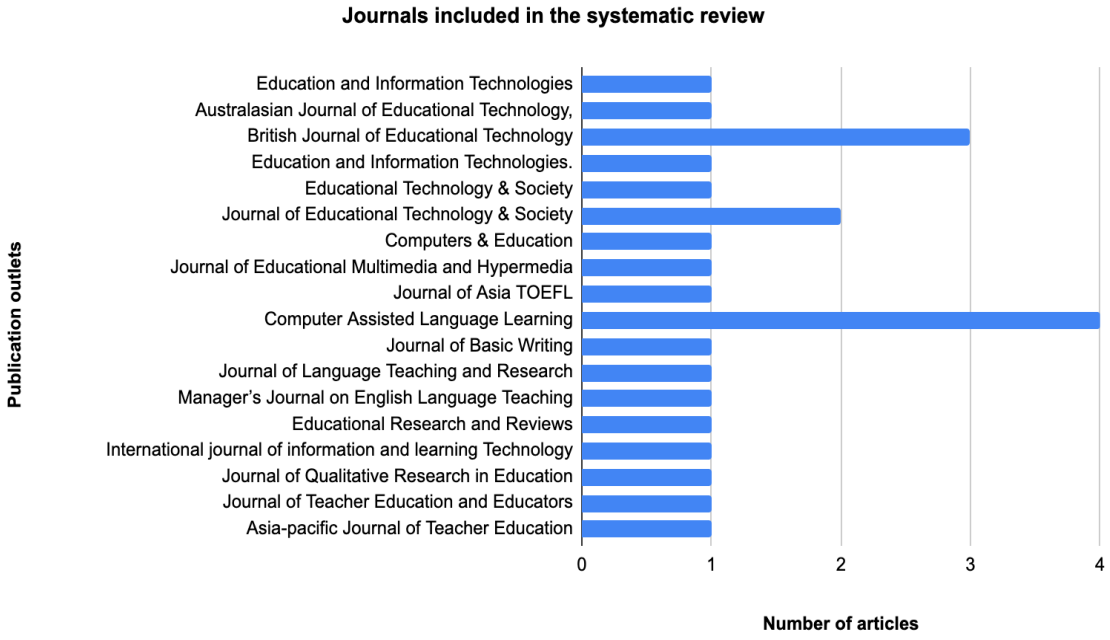

Figure 3: Distribution of the selected TPACK articles in peer reviewed journals (n=18)

As indicated in Appendix A, that data show that eight studies--Baran, Canbazoglu,

Albayrak and Tondeur (2019); Baran and Uygun (2016); Chai, Koh and Tsai (2010); Dong et al., (2015); Joo, Park and Lim (2018); Khine, Ali and Afari (2017); Redmond and Peled (2019); and Sang, Tondeur, Chai and Dong (2016)-- included in the review expended the study of TPACK to include other subject discipline areas such as social sciences education, science education, elementary mathematics education, secondary biology education and languages. The majority of selected studies used qualitative methods (37.5%; n= 9) for data collection, followed by quantitative (33.33%; n=8) and mixed methods studies (29.16%; 7). The distribution of percentages of the sample groups showed that pre-service teachers are the most common object of study at %54.16% (n= 15). In-service teachers constituted 29.16% (n=7). Both pre-service and in-service teachers were included in 8.33% (n= 2) studies. EFL students constituted 8.33% (n= 2). Information about each article, including authors, year of publication, publication outlet, methods, sample groups are included in the appendix A.

The data were analyzed to determine the inclusion of context in journal articles that were selected. Studies that explicitly discussed context in reference to the TPACK framework were coded for micro, meso, macro, and teacher. The frequencies and percentages of context levels included in the definition, explanation or operationalization of TPACK are presented in the following table.

Table 3

Context Level Frequencies and Percentages

Context level	Frequencies	Percentages

Micro	23	46.93877551
Meso	11	22.44897959
Macro	15	30.6122449
Total	49	100

Context level frequencies and percentages indicate that contextual factors were included inconsistently among the selected journal articles. Context variables and their meanings are usually aligned with the dimensions of the TPACK framework used in study. Following the coding procedures outlined in this review, it was found that classroom factors (micro), school factors (meso) and societal factors (macro) constituted 46.93%, 22.44% and 30.16% respectively. The graph below presents the data in regards to the inclusion of context levels.

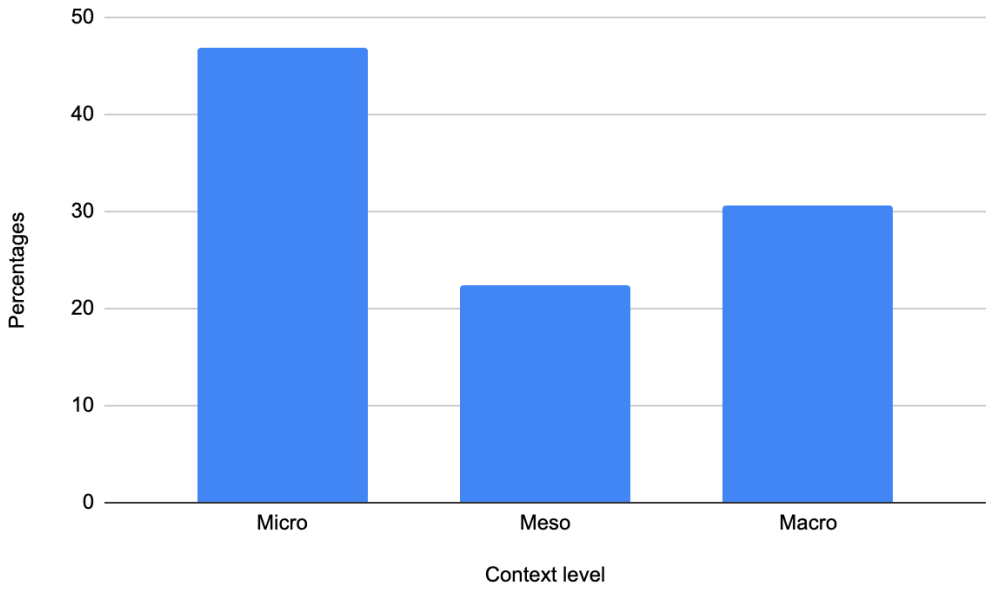

Figure 4: Context level percentages

Factors related to teachers were addressed more frequently (75%). The variables that were reported in the selected articles include teachers' beliefs, perceptions, background, self-efficacy, and professional roles. These variables were usually framed as part of context knowledge that affects technology integration. A few studies emphasized student factors such as their perceptions, attitudes and background. Student variables were presented as exerting an influence on student learning and perceptions of the teachers' TPACK application. The findings suggest that contextual factors deemed important to the conceptualization of the TPACK framework are more likely to be addressed and considered by researchers in context of their study.

Following Willermark's (2018) coding procedures, the selected articles were analyzed according to how TPACK was approached and applied either through self-reporting and/or performance evaluation. The main objective of such identification was to determine whether TPACK was defined as knowledge or as competence. The data show that although approaches to TPACK were often determined through a combination of instruments such as surveys and class observations to triangulate findings, TPACK was commonly determined through self-reporting at 81.82% compared to performance evaluation of teaching activities, which constituted 18.18%.

Self-reporting was divided into three subcategories: general TPACK, specific TPACK, and experienced TPACK. The data indicate that the application of general TPACK constituted 70.73% and experienced TPACK was 29.62%. Specific TPACK was not used in any of the articles that were reviewed. Self-reporting provided data regarding teachers' self-efficacy, beliefs and attitudes highlighting teachers' own perspectives and

belief systems. Self-reporting reflects an approach where TPACK is viewed exclusively as knowledge that teachers possess regardless of their context. The majority of the studies were conducted with pre-service teachers using subject-specific instruments to capture their TPACK.

Several studies included in this literature review (e.g., Baser, Kopcha, & Ozden, 2016; Bostancıoğlu, & Handley, 2018; Tseng, 2016; Sang, Tondeur, Chai, & Dong, 2016; Tseng, 2018) were conducted with the aim of TPACK survey validation and/or adaptation in the English language subject area. Survey completion where participants were asked to numerically rate statements on a 5 point Likert scale was the most frequently used TPACK approach. Survey questions were designed to estimate specific knowledge base English language teachers were expected to possess. The most commonly used and referenced TPACK surveys were developed by Mishra and Koehler (2006); Archambault and Crippen (2009); Schmidt et al., (2009); Archambault and Barnett (2010); Chai, Koh and Tsai (2010); Lux, Bangert and Whittier (2011); Sahin (2011); Chai, Chin, Koh and Tan (2013); Chai, Ng, Lee, Hong and Koh (2013); Yeh, Hsu, Wu, Hwang and Lin (2014); and Baser, Kopcha and Ozden (2016).

Unlike general TPACK, self-reporting on experienced TPACK involved teachers' discussions or interviews on the developing and conducting lesson plans through the TPACK lens (e.g., Turgut, 2007; Setiawan, Hamra, Jabu, & Susilo, 2018, and Tseng, 2018). Performance evaluation of teaching activities, where TPACK is defined as competence, usually involved class observations or pre-and post- TPACK assessments (e.g. Tseng, Cheng, & Yeh, 2019; Tseng, Cheng, & Lin, 2011). In all cases performance was

assessed based on external evaluators using a TPACK assessment.

TPACK, which necessitates awareness of beliefs, attitudes and dispositions, is an important element in the teachers' knowledge construction process. The link between teachers' dispositions and TPACK was explicitly addressed in 1 journal article out of 24 articles selected for this review. Dong et al., (2015) studied teachers with regards to seven factors of technological pedagogical content knowledge, their beliefs about constructivist-oriented teaching (CB) and design disposition (DD). The findings indicate that design disposition consistently predicts both pre-service and in-service teachers' TPACK, which highlights the importance of design disposition for TPACK advancement. Dong et al., (2015) developed and validated a nine factor-model instrument to explore teachers' TPACK profiles and their development. Overall, the TPACK framework in the data gathered illustrates the interplay between levels of context (micro, meso and macro) and teacher factors.

Analysis of TPACK Studies. The findings of this review which focused on analysis of context levels used in studies published from 2009 to 2019 in the area of English language teaching and learning, the application of TPACK in those studies and the extent to which dispositions were included in the description and operationalization of TPACK further our understanding of TPACK and its enactment. The results supplement previous review studies with more recent work on TPACK (e.g., Chai et al., 2013; Rosenberg & Koehler; 2015; Willermark, 2018) by providing an analysis of how the TPACK framework has been applied in English language subject area.

The results show that the highest number of the selected articles was found in an

educational technology journal. Such distribution of articles indicates that education technologists, rather than content specialists, are more interested in research on the TPACK framework in the area of English as a second language. The literature also indicates that TPACK is employed to develop teachers' technology integration knowledge in different learning contexts and subject areas such as science (Alayyar, Fisser, & Voogt, 2012; Arslan, 2015; Bilici, Yamak, Kavak, & Guzey, 2013), mathematics (Agyei & Voogt, 2012; Evans, Nino, Deater-Deckard, & Chang, 2015; Niess, 2013) and languages (Ansyari, 2015; Boschman et al., 2016; Liu, & Kleinsasser, 2015; Saudelli & Ciampa, 2016). It further suggests the need for collaboration between education technologists and content specialists. Such collaboration could shape the depth of the studies in the main English language journals such as the TESOL journal, TESOL Quarterly and the ELT journal. It can lead to a deeper consideration of how technology impacts students' learning and teacher knowledge development.

The results also show that several studies were conducted with the aims of survey validation (e.g., Baser, Kopcha, & Ozden, 2016; Bostancıoğlu, & Handley, 2018; Khine, Ali, & Afari, 2017; Sang, Tondeur, Chai, & Dong, 2016; Tseng, 2016) survey adaptation (e.g., Liu, Wang, & Koehler, 2019; Tseng, 2018) and examination of TPACK applications and teaching processes (e.g., Bandi-Rao, & Sepp, 2014; Baran, & Uygun, 2016; Debbagh, & Jones, 2018; Setiawan, Hamra, Jabu, & Susilo, 2018; Turgut, 2017). It is clear from these studies that English language teachers seem to use technology for the purpose of motivating students, but rarely providing them with opportunities of technology-enhanced interaction (Tseng, 2018). There is a need for a robust TPACK theoretical framework that

articulates various TPACK considerations and how these various forms of TPACK could be measured and used to support developing technology integrated instructional practices in the context of English language learning and teaching.

In many studies, TPACK is determined through a combination of several instruments including lesson plans, classroom observations, interviews and self-reported surveys. Although the majority of studies used qualitative methods for data collection, the TPACK framework was commonly determined through self-reporting, which is consistent with the results from previous literature reviews including Chai, Koh and Tsai (2013, Rosenberg & Koehler (2015) and Willermark (2018). Self-report measures, open-ended questionnaires, performance assessments, interviews and observation were identified to be the commonly applied measurement methods in TPACK focused studies (Koehler, Shin, & Mishra, 2011; Willermark, 2018). Willermark (2018) found that teacher self-reporting was the most frequently applied approach used to identify teacher TPACK, while performance evaluations on teaching activities were less frequent.

The focus on survey development, validation and self-reporting suggests that the measurement of TPACK has caused scholarly debate about the validity and applicability of the existing measurements. Bostancıoğlu and Handley (2018) argue that several of these the TPACK instruments, Chai, Chin, Koh and Tan (2013) and Baser, Kopcha and Ozden (2016), for example, appear to be influenced by the dominant theories in education such as social-constructivist, communicative learning and socio-cultural theories to the exclusion of other theories of second language acquisition. Bostancıoğlu and Handley (2018) proposed an assessment of TPACK in the English language subject area which does not

prescribe a particular approach or theory. Also, the use of qualitative and mixed method approaches in TPACK survey development is a clear indication of a TPACK trend that strives to develop assessments in specific content areas taking contextual factors into consideration.

That data indicate that the majority of the selected articles used qualitative methods followed by quantitative and mixed methods, which corresponds with the results of Chai, Koh and Tsai (2013) and differ from the results of Willermark (2018) where quantitative method constituted the most frequently applied method, followed by mixed methods and qualitative method. The findings in literature review suggest that the TPACK framework has attracted much attention within the school context and in research (Koehler, Mishra, Kereluik, Shin, & Graham, 2014). It has been widely used in quantitative (Chai, Koh, & Tsai, 2010; Chai, Chin, Koh, & Tan, 2013; Dong et al., 2015; Kale, 2014; Kavanoz, Yuksel, & Ozcan, 2015), qualitative (Anderson, Barham, & Northcote, 2013; Liu & Kleinsasser, 2015; Liu, Tsai, & Huang, 2015; Phillips, 2016) and mixed methods research studies (Ansyari, 2015; Baser, Kopcha, & Ozden, 2016; Boschman, McKenney, Pieters, & Voogt, 2016; Tai, 2015) examining knowledge of integrating technology into teaching for both pre-service and in-service teachers.

There is a need to reexamine how the methods followed in studies on TPACK in English language teaching and learning are reviewed. Coding procedures in this review for research methods posed a challenge as the research methods followed were not always mentioned. The classification of journal articles was often inferred based on other information provided. The research method classification given in a study was used when

available even if it was deemed a wrong identification for that particular study. For example, Turgut's (2017) study was classified as mixed methods as the data were collected through a TPACK scale (Schmidt et al., 2009) with open-ended questions and classroom observations. The author claims that the qualitative data from the open-ended question part of the survey was analyzed through phenomenological data analysis. There was no clear explanation of how the data was analyzed through a phenomenological approach.

Consistent with the findings in previous literature reviews (e.g., Porras-Hernandez & Salinas- Amescua, 2013; Rosenberg & Koehler, 2015), the data suggest that the meaning of context has differed widely, from teachers' micro factor and subjective dispositions to institutional resources and sociocultural contextual factors. The increase in TPACK publications that take contextual factors into consideration in recent years as evidenced by the data gathered for this review indicate a growing interest in the contextual factors related to teachers' TPACK. The inclusion of context is, however, characterized by a dominating presence of micro-level context at the classroom level. The belief is that teachers' knowledge and access to technology influences the ways they incorporate technology into teaching. Meso and macro contextual levels are not always taken into consideration, which correspond with the results of Tseng, Cheng and Yeh (2019) that show that the teachers' use of technology was moderated predominantly by teacher-centric factors at the micro level of context.

The examination of meso and macro contextual factors along with teachers' dispositions and habitus, which were not consistently present in the reviewed articles, will certainly help further our understanding of how teachers' TPACK is rooted in context.

Porras-Hernandez and Salinas- Amescua (2013) argue that external conditions are important elements that shape instruction at the micro level. Dispositions in the form of habitus, on the other hand, may explain the value assigned to education, student and teacher roles as well as access to resources and capital. Porras-Hernandez and Salinas-Amescua (2013) explained that while external contextual variables may explain teachers' technology integration process, teachers' subjective variables can bring to light not only the teachers' technology integration process, but also the knowledge construction that takes place in a given situation. There is a need to understand both objective and subjective contextual factors that influence TPACK development and its enactment in instructional settings.

The results of this literature review provide clear evidence that the study of TPACK is extended across various contexts in the English language subject area. The majority of the articles in this review define TPACK as a unique body of knowledge that can be examined through self-reporting. This view has implications on how TPACK is carried out in practice and how it is investigated. Many researchers advocate for a transformative approach to the application of technology in the classroom while conceptualizing TPACK as a distinct body of knowledge that is stable across contexts (Angeli & Valanides, 2009; Mishra & Khoher, 2006; Willermark, 2018). Although the studies in the data set and beyond agree that TPACK stems from Shulman's (1986) PCK, there is no consensus on whether TPACK as a stable knowledge can transform practice.

Using Mishra and Koehler's explanation of TPACK, Van Olphen (2008b) stresses that the knowledge base required for a sound integration of technology in language

teaching entails the following: (a) an understanding of how linguistic and cultural concepts can be represented using technology; (b) educational approaches to language teaching that draw from socio-constructivist philosophies to develop students' language and cultural competence; (c) an awareness of what facilitates or hinders the acquisition of language and the development of language competence and how technology, specifically computer assisted language learning (CALL) or computer-mediated communication (CMC), can revamp common problems that students ordinarily face; (d) an awareness of students' previous knowledge, and particularly a knowledge of second language acquisition (SLA) and cognitive development theories; and (e) an understanding of how current and emerging technologies can be used to advance present knowledge and to develop new epistemologies and sustain previous ones.

The added value of TPACK from the perspective that defines TPACK as a distinct body of knowledge, Voogt, Fisser, Roblin, Tondeur and van Braak (2013) argue, is how technology can support learning conceptual and procedural knowledge of a particular subject domain. As such, examining how context levels influence teachers' knowledge construction and the application of TPACK will help identify the type of support needed for teachers' knowledge development. Meso and macro contextual factors help explain the conditions under which teaching with technology is most effective at the micro level. It is imperative that researchers in the English language subject area seek consensus that is grounded in evidence-based practice and context on the specific knowledge domains required for effective technology integration.

A critical perspective of teachers' TPACK knowledge development across contexts

and the roles teachers are assigned in the classroom is vital to understanding the paradigm shifts that inform teachers' practices. Recent developments in the TESOL/bilingual education have changed the role of teachers in the curriculum in the classroom. A teacher is no longer perceived as a behaviorist, positivist and top-down knowledge carrier, but a reflective facilitator who is sensitive to students' diverse needs and previous experiences (Al-Amri, 2010; Canagarajah, 2016). The structure of teachers' beliefs, dispositions and background knowledge can play a crucial role in their decision- making process and how technology is applied in the classroom.

The implication is that not all grand and universal solutions to technology integration using TPACK are in sync with local linguistic, educational, social, cultural, and political needs. Kumaravadivelu (2006) showed how the contextualization of adapted knowledge does not always result in exact application of intended goals. Kumaravadivelu (2006) reported on instances that resulted in creating language and psychological barriers to learning.

Section 2: Bourdieu's Theoretical Framework

Background

A growing body of literature has used Bourdieu's concept of habitus as a lens through which technology integration is examined in teaching and learning (Belland, 2008; Johnson, 2019; Şule, Zühal, & Tuğba, 2019; Sterne, 2003). The underlying assumption of Bourdieu's theory (1977, 1984, 1986 & 1993) is that teachers respond to situations and deploy certain forms of capital in ways that reflect their habitus (dispositions). Accordingly, teachers develop certain dispositions or embodiment of social structures

toward viewing teaching and performing as teachers in specific ways. As a centerpiece of Bourdieu's explanation of social behavior, the concept of habitus consists of enduring dispositions towards actions deemed appropriate in particular social situations and settings (Cockerham & Hinote, 2009). Habitus, alongside other Bourdieuian key concepts, offers an explanatory framework for the conceptualization and application of dispositions in education research.

Sterne (2013) argues that habitus as a set of dispositions presents a theoretical underpinning and applicability in linking social structures, individual practices, contextual variables and teachers' technological pedagogical knowledge. Bourdieu's theory has much to offer the study of technology due to its distinctive approach to the relationships between embodied experience and social structures. Technologies are embodied in lived practice through habitus rooted in social structures. Sterne (2013) explains that technologies are always organized through (and as) techniques of the body. As part of habitus, technological tools are ways of experiencing and negotiating several fields. As a set of one's dispositions in a field and one's access to and possession of certain kinds of capital resources, habitus connects field and capital.

The use of Bourdieu's concepts of habitus, field, and capital helps to overcome binary divisions in examining technology integration (technology/society and technology/funding). Adams Becker et al. (2017) argue that technology integration outside of the binary oppositions approach goes beyond gaining isolated technology skills toward generating a deep understanding of digital environments, enabling new adaptations and co-creation of technological practices. It goes beyond the application of theoretical and

conceptual frameworks such as technological pedagogical content knowledge (TPACK) that explain technology integration in simplistic ways to the exclusion of important factors that impact technology integration such as teachers' subjective variables and their individual histories. The application of Bourdieu's theory is consistent with what has been called an 'epistemological break' with the 'common sense' of technology" (Sterne, 2003). The epistemological break occurs the moment the conventional lenses that are rationalized to sustain certain forms of knowledge are questioned and extended.

This epistemological break in technology integration entails going beyond the commonsense frameworks that attempt, Kumaravadivelu (2009) argues, to portray the entire language teaching operations as a simple endeavor that entails a hierarchical relationship between approach, method, and technique without any consideration or analysis of the complex connections between learning and other variables that affect learning at diffident levels including societal demands and institutional resources. This epistemological break also requires an understanding of the nature of teachers' habitus in the field of education and their technological capital.

There is a strong correction between pedagogy and people's culture and habitus (Adam, 2017; Cheng, Cheng, & Tang, 2010; Gay, 2010; Jenks, 1993; Kansanen, Tirri, & Meri, 2000; Kukari, 2004; Richardson, 2001; Wong, 2005). Bourdieusian framework recognizes teachers' prior knowledge and the contextual factors that shape how teachers' act within the education field including administrative constraints, preferred teaching methods, technological resources and curricula. Within the Bourdieusian framework, technology is not simply a thing that fills a predetermined social purpose. Technologies are

little crystallized parts of habitus as a set of dispositions (Sterne, 2003). In other words, they are cultural products whose meanings and functions are shaped by the field or context where they are used.

Given the potentially great explanatory power of Bourdieu's framework, subjecting his concept of habits to empirical investigation is critical. This dissertation applies quantitative methods of investigation to Bourdieu's concept of habitus and teachers' technology integration knowledge within the TPACK framework. The structure-disposition-practice (SDP) theoretical framework rooted in Bourdieu's concepts of habitus, capital and field is used to account for limitations of the technological pedagogical content knowledge (TPACK) model, in particular, how socially structurally conditioned dispositions predict English language teachers' technology integration knowledge.

The structure-disposition-practice (SDP) theoretical framework examines the dialectic relationship between contextual levels by integrating social structural properties, individuals' dispositional properties, and their practices within particular social contexts (Edgerton, & Roberts, 2014; Edgerton, Peter, & Roberts, 2014; Edgerton, Roberts, & Peter, 2013) Within this framework, the properties of habitus stem from several sources including location (field) and family background (capital) (Bourdieu, 1977, 1984, 1986). Variations in social class and other demographic factors are associated with variation in habitus. It is suggested that patterns of socialization translate into differences in habitus in the form of internalized dispositions (Bourdieu, 1977, 1984, 1986). As such, teachers from different social classes are expected to differ in cultural capital and dispositions (habitus) they bring

to bear on the technology integration process.

Bourdieu's Theoretical Framework

Bourdieu's theoretical constructs serve as theoretical and methodological tools for systematic analysis of social phenomena. His theoretical framework accounts for the social and cultural relations, systems and structures that encompass individuals' behavior. The dualistic relationship between the individual (embodied) and the social world (objective) is intrinsic in all Bourdieu's theoretical constructs (Beckman, Apps, Bennett & Lockyer, 2018). Bourdieu (1984) uses the following equation to summarize the key concepts of his theoretical framework to explain how practice is a product of relationships between habitus, capital and field: [(habitus)(capital)] + field = practice (Bourdieu, 1984).

Habitu. Cockerham and Hinote (2009) argue that the concept of habitus originates with Edmund Husserl who used the term to describe habitual action that is intuitively performed. It was expanded by Bourdieu to include a much wider range of behavioral dispositions mediated by social structures (Cockerham & Hinote, 2009). As such, Bourdieu's habitus should not be mistaken for the common notion of habit as a mechanical adoption behavior. Bourdieu's habitus is viewed as a series of cumulative collections of internalized dispositions (Bourdieu, 1977; Winkle-Wagner, 2010). Reay (2004) suggests that the concept of habitus lies at the heart of Bourdieu's theoretical framework. It takes many shapes and forms in Bourdieu's theory and the sociological research of other academics including as embodiment of social norms and experiences that mediates between social structures and individual action, as a compilation of collective and individual trajectories, as a complex interplay between past and present and as an agency.

Habitus as embodiment refers to ways in which the body is in the social world and the ways in which the social world is in the body. Social structures are incorporated into the wholeness of the body, shaping how an individual thinks and behaves (Bourdieu, 1977; Reay 2004). As embodiment, habitus captures the way in which dispositions are reflected through words, thoughts and feelings and through bodily hexis (Bourdieu, 1977). According to Wacquant (2016), the roots of habitus are to be found in the notion of hexis, which is a repository of ingrained dispositions reflected in us through how we act and carry ourselves. Accordingly, habitus is composed of mental attitudes and perceptions expressed through thinking, feeling and ways of being conveyed through their relationship with the social and cultural structures. Reay (2004) argues that embodiment reveals how experiences shape individual behaviors and dispositions.

According to Bourdieu (Bourdieu, 1977), habitus is closely linked to an individual's position in a field or social structure. Social structures include education, social status, class, ethnicity and family income. Habitus is produced by the conditionings associated with a particular position in the field and is thus the embodiment of social structures. Bourdieu (1977) argues that these social structures are embodied within individuals—that is, incorporated into their bodies. According to this perspective, the body (including taste, style, looks and mannerisms) for example, is an indicator of status. Status, in turn, is a reflection of various experiences and deployment of different forms of capital, which may be economic (such as income and martial resources), cultural (such as education and cultural knowledge), or social (such as family networks and peers). These forms of capital take on a symbolic value when recognized and accepted in a field.

Bourdieu's argument is that individuals carry these social structures around, and they serve as a value judgment on individuals. An action which the body can internalize in the context of education is being able to teach or explain a lesson while typing on a computer. This action is highly valued for an educator in a field that encourages the use of technology in education and it is difficult to attain in settings where there is no value assigned to computer use in education.

As a compilation of collective and individual trajectories, habitus is viewed as a multi-layered concept in which experiences are linked with components of history at the individual and the social levels (Reay, 2004; Bourdieu, 1990). Reay (2004) explains that a person's individual history including the whole collective history of family and class to which an individual belongs constitute habitus. There is uniformity as well as divergence in the habitus of members of the same class. Although there are identical histories of individuals and no identical forms of habitus, there are classes of individuals and classes of habitus (Bourdieu, 1990; Bourdieu, 1977). Belland (2009) notes that each individual has a unique habitus and people who have similar life experiences tend to have similar dispositions. Several researchers have worked with the notion of class habitus including Bridge (2001), and James (1995). Bourdieu draws on both qualitative and quantitative data in his study of class habitus in *Distinction* to illustrate how homogeneous class-based histories produce homogeneous class-based practices.

As a complex interplay between past and present, habitus is historical and is linked to the participants' history (Reay, 2004). Reay (2004) explains that habitus is rooted in family upbringing and conditioned by one's position in a field or a social structure.

Individual's encounters with different fields including socialization within the family allow for habitus transformation. It is important to note that although habitus reflects the social position in which it was constructed (Reay, 2004; Swartz, 1997), it changes based on new encounters with the world. Habitus continually adjusts to current contexts (Reay, 2004; Winkle-Wagner, 2010). As such, it is a product of different fields and the positions occupied within those fields. Past influences an individual's present dispositions and engagement with others. According to Swartz (1997) habitus frames an individual's present perception and future anticipation based on past experiences.

Habitus has also been conceptualized as a transforming device that generates a wide repertoire of possible actions enabling the individual to draw on transformative and constraining courses of action (Reay, 2004). While habitus allows for individual agency, it also predisposes behaving in a certain way (Reay, 2004). Bourdieu came to see habitus as a structuring structure generating action instead of simply a reflection of structures (Bourdieu, 1977; Collin, 2011). As such, while habitus represents the objective internalization of social conditions in the mind and body and provides practical dispositions toward action, it is capable of being creative (Cockerham & Hinote, 2018). In other words, habitus services as a cognitive map that guides an individual's unconscious and purposeful dispositions. Shusterman (1999) argues that habitus provides a middle ground for purposeful behavior as well as the behavior carried out without giving them much thought.

Reay's (2004) mapping of habitus as multi-faceted concept with four key aspects (habitus as embodiment, habitus as a complication of collective and individual trajectories,

habitus as a complex interplay between past and present and habitus as agency) provides categories that can be used to empirically describe and examine the way TESOL teachers view and experience the world of technology in education. Teachers' practices within a school field are shaped by their varied habitus (such as past experiences and individual trajectories), meaning that teachers perceive and engage with technology in different ways. The habitus acquired in the embodied form from generation to generation underlies the structuring of technology integration experience. For example, a teacher whose family encourages the use of technology for learning at home may successfully transfer that embodiment of technological use into school, perhaps extending the use and application of technology in teaching and learning. On the other hand, a teacher who has not had family and history experiences with technology for learning may perceive technology practices in the school field as unfamiliar and irrelevant.

Capital. Habitus is also defined in terms of an inherited type of capital, and different classes adopt a habitus analogous to their social class (Bourdieu, 1977, Swartz, 1997). Bourdieu (1977, 1984, 1986, 1993) identifies three forms of capital: economic, social and cultural capital. Economic capital consists of monetary income as well as ownership of assets. Social capital consists of networks of relationships through which individuals activate and access resources. Cultural capital is defined as the broad knowledge of culture that consists of "symbolic goods, skills, and titles" (Collin, 2011, p. 787). Bourdieu (1977) delineates three forms of cultural capital: embodied, objectified, and institutionalized. Walther (2014) illustrates that individuals mobilize these forms of capital to enter and utilize social fields. They appear to be distinct, but in reality, they are very

linked to each other. They can be viewed as a form of exchangeable currency.

Economic capital refers to resources, material wealth and assets that can be converted into money (Bourdieu 1986). Economic capital includes all kinds of material resources such as financial resources and assets. According to Bourdieu, all other forms of capital are derivative of economic capital (Bourdieu 1986). The convertibility of different forms of capital establishes the strategies that ensure the production of economic capital (Bourdieu, 1986). While economic capital can be transferred directly from one generation to another, it can also be transferred in the form of symbolic capital including attainment of educational credentials (Swartz, 1997). Individuals with power have the ability to convert economic capital into cultural capital and vice versa (Bourdieu, 1993). Bourdieu believes that economic capital is the most important form of capital. As such, an empirically informed Bourdieusian investigation includes references to economic capital.

Social capital is a network-based resource that includes relationships and the networks of relationships. Individuals mobilize their social capital resources to secure material or symbolic profits (Bourdieu 1986). It is the aggregate of resources, which are linked to the possession of institutionalized beneficial relationships. The social capital resources provide social support and social leverage (Bourdieu 1986). An individual's social capital is measured by the size and/or number of networks, the capital that the members of the network possess and are able to convert, and the individual's ability to derive benefit from those network-based resources (Bourdieu 1986). Social capital requires continuous cultivation and active engagement for maximum and sustainable potential returns.

Cultural capital is recognized as one of Bourdieu's signature concepts (Swartz, 1997). It enables researchers to view culture as a resource and as an assembly of cultivated dispositions. Bourdieu (1986) distinguishes between three forms of cultural capital. Embodied cultural capital, which refers to disposition of mind and body, is internalized by individuals (into their habitus) overtime and it includes knowledge, skills, taste, and lifestyle. Objectified cultural capital concerns the possession of cultural goods. It consists of physical objects that can be acquired using economic capital and by direct transfer from others. Institutionalized capital relates to academic qualifications, which grant cultural competence to the individual. According to Collin (2011), actors assume specific positions by accruing and deploying particular forms of capital and by getting those efforts recognized and valued. A central aspect to the concept of capital is recognizing and knowing when, how and what form of capital is appropriate for specific situations.

Consistent with Bourdieu's theory, all forms of capital are viewed as a consequence of economic capital (Bourdieu, 1986). A teacher may have economic and social capital to have access to technological tools in their home, but these technological tools are only considered objectified cultural capital if they are used to develop the teachers' own technological skills and knowledge (cultural capital). Education provides teachers with a level of academic and symbolic qualifications that can secure and advance other forms of capital. A teacher who has connections, networks and resources may derive benefit from those forms of capital in developing their own technology practice and knowledge that promote learning according to acceptable norms.

Field. Bourdieu (1993) describes field as a social space with its own rules and laws

endowed with specific principles of practices. It is the space where certain forms of capital are given a price and evaluated. Edgerton and Roberts (2014) explain that field refers to the norms governing a particular social sphere of activity such as family, school, higher education, politics, and economics. In general, fields are social domains defined in terms of networks of social relations and structures rather than physical space (Bourdieu, 1993; Swartz, 1997). Bourdieu (1977) argues that practices are best understood in light of examination of fields, which are characterized by their own particular regulative principles: the ‘rules of the game’ or ‘logic of practice’.

Wacquant (2011) argues that fields are places of power relations where practices of agents are not arbitrary. The internalization of field-specific rules enables agents to anticipate future tendencies and opportunities. Each field has its own ways of behaving and unique unwritten rules or what Bourdieu (1993) referred to as doxa. Bourdieu (1993) describes doxa as a form of tacit knowledge that influences individuals' understanding of a field. It is the framework of knowledge through which we think-- the underlying assumptions and codes that structure our ways of thinking. Bourdieu (1993) argues that each field requires a specific form of doxa and each participant enters a field with a particular form of doxa-related habitus.

Individuals encounter many fields which comprise beliefs and values in their life. Teachers, for example, occupy a number of fields including the school field, the home field and the social field of their family. An individual's position within a field derives from the interrelation of their habitus and the capital they mobilize in that field (Bourdieu, 1993). Teachers occupy a number of fields including home and university. Each is defined in

terms of the social relations, systems, rules and policies. Teachers' homes are physical spaces. Like universities, and they are also social spaces defined by family members' beliefs and values. Accordingly, teachers as actors in the field of education are defined by their relational position within the field's distribution of capital. The ability of a teacher to appropriate the capital that is valued in a given field depends on their ability to decode unspoken assumptions and doxa or hidden curriculum of that field.

Grenfell (2008) suggests that individuals from different social classes tend to gravitate towards the fields that match their dispositions. The theory is that individuals feel more comfortable in the fields that match their habitus (Bourdieu, 1984). People's practices are the consequences of their habitus and cultural capital interacting within the context of a given field. Fields are structured by two competing principles of social hierarchy: the distribution of economic capital and the distribution of cultural capital (Bourdieu, 1984; Grenfell, 2008). The underlying assumption in Bourdieu's theory is that those with a high volume of cultural capital are most likely to be able to determine dispositions within a society. Those with lower volumes of overall capital accept proposed dispositions and habitus.

Habitus in Bourdieu's Structure-Disposition-Practice (SDP) Framework

Bourdieu's theoretical framework (1977, 1984, 1986, 1993) attempts to explain social practices by examining the mechanisms that bring them about. Bourdieu's core concepts particularly habitus, capital and field provide a conceptual framework that includes knowledge (individual's repertoire), dispositions (habitus) and social structures (field). Bourdieu's main argument in the selected literature is that practice is the result of

structural forces located within a field and their interactions with habitus and capital (Bourdieu, 1984). Practice is understood as a product of the relations between habitus, capital and field. Drawing on Bourdieu's theoretical framework, a structure-disposition-practice (SDP) model was developed to explain both the variables comprising the model (habitus, capital and field) and the relationships between them and the teachers' technology integration knowledge.

The dialectic relationship between habitus, capital and field is compared to a price signal that moderates the adjustment of the underlying practices and dispositions of habitus within a particular field (Edgerton, & Roberts, 2014; Edgerton, Peter, & Roberts, 2014; Edgerton, Roberts, & Peter, 2013). Taken together, they hold significant explanatory potential that can be incorporated into a structure–disposition–practice (SDP) explanatory framework (Edgerton, & Roberts, 2014; Edgerton, Peter, & Roberts, 2014; Nash, 2002) that seeks to address whether habitus as a set of dispositions predicts teachers' technological, pedagogical content knowledge (TPACK) in English language teaching (TESOL). Such framing can help generate practical, actionable knowledge of the mechanisms underlying continuous lack of technology integration in English language teaching.

Bourdieu (1984) argues that systems have structural properties and that properties of social systems can be referred to as social structures located with fields. Bourdieu' theory describes the nature of social structural relationships that produce certain practices. Individuals are located within the social structural properties of families, which in turn are located within the class system endowed with different forms of capital. Individual's

practice is a function of the acquired capital in a field, which creates a certain form of habitus (Edgerton, & Roberts, 2014; Bourdieu, 1984; Nash, 2002). Individuals come into a field equipped with capital that may or may not be valued in that field. The most highly resourced individuals have the best opportunities for securing desired ends in a field (Collin, 2011). Nash (2002) argues that Bourdieu regards family assets as forms of capital with value in their appropriate field of practice. These resources take the form of wealth, knowledge, and social connections.

The structure-disposition-practice (SDP) conceptual framework presumes that families are located in a socioeconomically stratified societal structure and differ in the material and capital accessible to them. Individual positions within family social structures located within fields generate socialized dispositions in the form of habitus, which in turn generate certain types of practice. In other words, structural properties of families differentially condition dispositions and enable or restrict the adoption of particular practices (Edgerton, & Roberts, 2014; Edgerton, Peter, & Roberts, 2014; Edgerton, Roberts, & Peter, 2013; Nash, 2002). According to Bourdieu (1984), embodied social and cultural structures of a certain social group produce actions which follow certain dispositions. In this sense, habitus as embodiment of dispositions is analogous to an inherited type of capital (Bourdieu, 1977). Put it differently, habitus as an internalized set of dispositions is linked to the concept of embodied cultural capital.

In the structure-disposition-practice (SDP) conceptual framework, social structures located within fields serve as a set of cultural codes and principles that regulate practice. The embodiment of habitus is rooted in the structure of family (Bourdieu, 1984). In the

conceptual framework used in this dissertation, the structural properties of family is operationalized by an index of family socioeconomic status (SES), encapsulating some of the main dimensions along which families vary in terms of their potential to provide educational, social, and cultural resources. In order to measure the resources present within a family, the index consists of measures including family and individual income. These measures form the family background variable that is consistent with Bourdieu's (1984) emphasis on the importance of capital rooted in family resources in the development of habitus.

The measure of family background serves as a proxy measure for cultural capital inculcated into an individual's habitus. Family background is an indicator of cultural resources that create a habitus predisposing an individual towards certain practices (Bourdieu, 1977, 1984, 1986, 1993). Another related variable to individual structural properties is education (Bourdieu, 1984). Education plays a role in the process of socioeconomic differentiation as it makes possible particular sets of skills and capital. Bourdieu (1984) notes that the educational system inculcates cultural capital within individuals regardless of levels of cultural capital present within the family. Some researchers (Reay, David & Bowe 2001; Swartz, 1997) conceptualize education in terms of 'institutional habitus' and suggest that institutional habitus interacts with individual habitus.

Educational attainment serves as an indicator that links individuals' habitus to social structures. In the context of the present study, the operationalization of habitus includes individuals' level of education. Bourdieu's concept of field was operationalized

according to categories of contextual levels developed by Porras-Hernandez and Salinas-Amescua (2013): micro, meso and macro. It includes context levels in addition to program location and employment status. Individual's complex interplay between past and present, which links to individual's history, were operationalized in terms of experience in teaching and technology use. Variations in demographic variables are associated with variation along each of these dimensions of habitus. Individual's demographic data of interest include ethnicity, gender, age, foreign language fluency and native/ nonnative status.

A distinction is made between two main forms of the operationalization of habitus: a) as a form derived from structural properties rooted in family background and b) as a form derived from structural properties rooted in the individual's location (fields). Such operationalization is aligned with Bourdieu's (1984) theoretical framework. The goal is to show that the technology integration knowledge of the TESOL teachers, the dispositions generating those practices (family background and education) and the sets of relations constituting social structures located within fields of family and education are connected and linked to teachers' knowledge of technology integration. Indicators of economic, social and cultural capital are representative of structural properties of families. Reay (2004) argues that mutually constitutive dynamics exist between cultural capital and habitus in that habitus, through its influence on practice, mediates the acquisition of cultural capital.

An important methodological implication of using the structure-disposition-practice (SDP) framework is that the three components of the framework (structure, disposition,

practice) are interrelated and are linked to habitus. They offer synergistic insights into the interplay of micro- and macrostructures. Quantitatively, SDP provides indicators appropriate for the analysis of a teacher's technology integration knowledge. In this dissertation, measures of dispositions that include indicators of cultural capital and economic capital are used to adequately capture the role of these core concepts and provide a more complete picture of teachers' technology integration knowledge through disposition–practice–field dynamics. They are used to predict how dispositions as defined by habitus predict technology integration knowledge as defined by TPACK.

Summary

The purpose of this literature review was to provide a comprehensive review of the extent to which context including dispositions (habitus) is used in TPACK as it relates to the English language subject area, the application of TPACK, and the levels of context when it is included. The TPACK empirical studies that were reviewed were published between 2009 and 2019. A total of 24 out of the initial 365 identified articles were included in this review. The key findings indicate that the highest number of articles was published in 2018, followed by 2019. The majority of studies were found in educational technology journals. Qualitative methods were the most common research approach used. Context level frequencies and percentages indicate that contextual factors were included inconsistently among the selected journal articles. The data also indicate that classroom factors at the micro level were addressed more frequently. Although the data show that approaches to TPACK were often determined through a combination of instruments such as surveys and class observations, TPACK was commonly determined through

self-reporting, which provided data regarding teachers' beliefs and attitudes.

The structure-disposition-practice (SDP) framework based on Bourdieu's theoretical framework is used to explain and operationalize the variables related to the concept of habitus. The goal was to demonstrate that elements of Bourdieu' theory provide measures of dispositions that can be used to predict English language teachers' technology integration knowledge. The concept of habitus provides an understanding of how dispositions are connected with the forms of cultural and economic capital and field (or different levels of fields including micro, meso and macro levels). The structure-disposition-practice (SDP) framework provides a lens to conceptualize habitus by linking it to family background and individual properties. The operationalization of teachers' technology integration knowledge is guided by a theoretical lens that views TPACK knowledge as context bound.

CHAPTER 3: Methodology

The purpose of this dissertation is to examine the TESOL teachers' cognition and its context as it relates to technology, pedagogy and content knowledge through a quantitative method study. It examines the extent to which dispositions (habitus) predict English language teachers' technological, pedagogical and content knowledge (TPACK). The theoretical frameworks advanced by Mishra & Koehler (2009) and Pierre Bourdieu (1977) guide the analysis of the TESOL teachers' technology integration knowledge and its interaction with dispositional contextual variables (field). This analysis includes teachers' subjective contextual variables as they relate to dispositions to understand the type of the technology integration knowledge that promotes effective technology integration.

Teachers' knowledge of technology integration is measured by examining the TPACK constructs including technological knowledge (TK), pedagogical knowledge (PK), content knowledge (CK) and their interactions. Rosenberg and Koehler (2015) explain that these three bodies of core knowledge coalesce to comprise technological pedagogical knowledge (TPK), pedagogical content knowledge (PCK), technological content knowledge (TCK), and technological pedagogical content knowledge (TPCK). Research (e.g., Graham 2011, Schmidt et al., 2009, Mishra & Koehler 2006) indicates that these TPACK constructs have been widely adopted as a theoretical basis to assess teachers' technology integration competencies and knowledge.

Bourdieu's concepts provide measures of the social and cultural dimensions of teachers' technology integration knowledge and social structures (context). They offer a better basis for understanding the forms of contextual dispositional factors that have most relevance for knowledge development of technology integration knowledge in teaching. In other words, they provide a lens to investigate the embodied structures and patterns of socialization that translate into differences in technology integration knowledge. Using the concept of habitus as a lens, a statistical model that incorporates pertinent measures of teachers' background, their varied contextual levels (micro, meso and macro) and demographic factors was applied. This chapter provides the basis for the methodology that was undertaken in this dissertation. The following sections present research questions, a description of the research design, participants, instrumentation, data collection, data analysis, reliability and validity of the instrument as well as study limitations. The chapter concludes with a summary.

Research Question and Hypotheses

This dissertation is guided by the following questions that investigate whether the habitus of English language teachers predict their TPACK--technology integration knowledge.

- RQ1: What is the relationship between dispositions (habitus) of the TESOL teachers and their technological pedagogical content knowledge (TPACK)?
- H10: There is no statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)

- H1a: There is a statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)
- RQ2: Do dispositions (habitus) of the TESOL teachers predict their technology integration knowledge (TPACK)?
- H2$_0$: There is no statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)
- H2a: There is a statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)

Study Design

Quantitative methodology was chosen in order to examine possible trends in the data and to provide information that can be generalized and incorporated into practice on a greater scale (Creswell, 2014; Creswell & Clark, 2007; McMillan, 2016). Quantitative research is defined as the act of employing empirical methods and statements to collect data and analyze relationships among variables (Creswell, 2014). In order to obtain and analyze quantitative data for this study, a nonexperimental quantitative approach was used. The researcher determined that this approach was appropriate for the current study due to the nature of the research questions that seek to test theoretical hypotheses and examine the relationships among the independent variable of dispositions and the dependent variable of TPACK.

In particular, hierarchical multiple linear regression was applied to predict the dependent variable of TPACK with a set of independent variables of dispositions (Cohen, 2001; Jeong & Jung, 2016). Multiple linear regression, which is an extension of simple linear regression, shows the influence of two or more independent variables on a dependent variable (Cohen, 2001; Jeong & Jung, 2016). In other words, as a data-analytic strategy, multiple linear regression demonstrates how a dependent variable changes when any of the independent variables varies. Jeong and Jung (2016) explain that hierarchical multiple linear regression involves theoretically based decisions for how predictors are entered into the analysis.

The variables that were examined in this study are outlined in the table below. The TPACK constructs provided a framework to measure teachers' technological, pedagogical and content knowledge variables and Bourdieu's theoretical concept of habitus provided measures of dispositional dimensions of teachers' knowledge variables. The structure-disposition-practice (SDP) conceptual framework (Edgerton & Roberts, 2014) that was developed and explained in the second chapter in alignment with Bourdieu's theoretical framework guided the operationalization and categorization of the variables.

Table 4

Overview of Study Variables

Construct	Variable Name		Type of Variable	Categorical or Continuous
Habitus (set of dispositions)	Family background	Socioeconomic status (SES)	Independent	Categorical

		Family income	Independent	Categorical
		Individual income	Independent	Categorical
	Education	Level of education	Independent	Categorical
	Field	Employment status	Independent	Categorical
		Program location	Independent	Categorical
		Context levels	Independent	Categorical
	Individual's trajectories	Technology use	Independent	Categorical
		Years teaching in current program	Independent	Categorical
		Years teaching total	Independent	Categorical
	Demographics	Ethnicity	Independent	Categorical
		Foreign language proficiency	Independent	Categorical
		Gender	Independent	Categorical
		Native/non-native status	Independent	Categorical
		Age	Independent	Categorical
Technological pedagogical content knowledge (TPACK)	Technological knowledge (TK)		Dependent	Continuous
	Pedagogical knowledge (PK)		Dependent	Continuous
	Content knowledge (CK)		Dependent	Continuous
	Technological pedagogical knowledge (TPK)		Dependent	Continuous
	Pedagogical content knowledge (PCK)		Dependent	Continuous
	Technological content knowledge (TCK)		Dependent	Continuous
	Technological pedagogical content knowledge (TPCK)		Dependent	Continuous

Participants

The target population for this study included male and female TESOL teachers in English language programs at the college or university level in the United States. Nonprobability sampling was used in the data collection process. Participants were chosen from English language programs at public and private universities and institutions that are currently accredited by national or regional accrediting bodies including the Commission on English Language Accreditation (CEA) and the Accrediting Council for Continuing Education and Training (ACCET).

Ownership and governance of these programs and the organizational structures in which they exist vary significantly. They include programs within universities or colleges as well as independent institutions. They may be governed by individual proprietors, corporate managers or have a direct reporting line within the administration of a university or a college with a regional or national institutional accreditation. These programs exist as stand-alone single-owner schools, or part of a larger, multi-site institution.

English language programs with regional or national accreditation undergo a self-appraisal process as well as site visits by third-party reviewers, which provide quality control and assurance of conformity to peer reviewed practices and standards (Hansen, 2018; Reeves, 2019). The peer review process covers a range of program areas from teacher qualifications to marketing strategies and student services (Karaferye, 2017; Szasz, 2009). The participants recruited for the study were expected to meet nationally or internationally recognized qualifications. Accreditation standards require that instructors

demonstrate adequate training and knowledge of teaching and learning principles that enable them to make informed decisions about classroom practices and instruction.

Participation selection criteria chosen for this study is consistent with the qualifications required for teaching in an English language program that's nationally or internationally accredited. The 2019 CEA standards, for example, explain that educational requirements include a bachelor's degree which is considered the baseline qualification for teaching in a postsecondary language programs and a master's degree which is considered the baseline qualification for teaching college or university preparation courses. Education in English as a second or foreign language (ESL/EFL/ TESOL) teaching is highly preferred. In cases where a bachelor's or a master's degree is not in ESL/EFL/ TESOL, evidence of possessing a knowledge base and skill set in English language acquisition, pedagogy and culture are required.

Accordingly, the selection criteria for this study included having, at a minimum, a specific knowledge base and skill set in language teaching methodology, second language acquisition, knowledge of the nature and structure of English language, intercultural and practicum experience, which all accredited programs require. The survey used for this study was sent to listservs of these programs in addition to phone calls to several program directors to ensure the receipt of the survey and to request encouraging faculty to complete it. The data selection process provided an adequate number of participants due to the size and number of programs accredited in the United states. For example, CEA has accredited

more than 300 programs and ACCET has accredited more than 250 programs as of April of 2020.

Instrumentation

Several TPACK surveys have been designed to estimate specific technology integration knowledge English language teachers are expected to possess. The most commonly used and referenced TPACK surveys are developed by Mishra and Koehler (2006); Archambault and Crippen (2009); Schmidt et al., (2009); Archambault and Barnett (2010); Chai, Koh and Tsai (2010); Lux, Bangert and Whittier (2011); Sahin (2011); Chai, Chin, Koh and Tan (2013); Chai, Ng, Lee, Hong and Koh (2013); Yeh, Hsu, Wu, Hwang and Lin (2014); Baser, Kopcha and Ozden (2016); and Bostancıoğlu and Handley (2018). The most frequently used TPACK approach in survey completion is numeric ranking of statements on a five-point Likert scale.

The EFL-TPACK survey developed by Bostancıoğlu and Handley (2018) was chosen for this study due to its alignment with the theoretical framework and research questions of this study. The survey is theory and technology independent and it does not prescribe a particular approach to language teaching or the use of particular technological tools. The survey development underwent a rigorous process that included generation of item pool, content validation, and construct validation. This process resulted in high levels of reliability and validity for each survey section.

The EFL-TPACK survey provides measures of content knowledge (CK), pedagogical knowledge (PK), technological knowledge (TK), technological content

knowledge (TCK), pedagogical content knowledge (PCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPACK) of the TESOL teachers. It includes a total of 36 items that measure teachers' TPACK knowledge: 6 TK items, 4 PK items, 5 CK items, 6 TCK items, 6 TPK items 3, PCK items and 6 TPCK items.

The seven constructs of TPACK are defined by Bostancıoğlu and Handley (2018) as follows:

- Technological Knowledge (TK)—knowledge of the application of technologies used in learning environments.
- Pedagogical Knowledge (PK)—knowledge of practices, procedures, or methods necessary for teaching and learning including educational theories and assessment.
- Content Knowledge (CK)—knowledge of the subject matter including language proficiency, language awareness, and knowledge of culture.
- Technological Content Knowledge (TCK)—knowledge of subject matter representation with technology including how technology can be used to represent language, content and culture in different ways.
- Technological Pedagogical Knowledge (TPK)—knowledge of the application of teaching approaches and general pedagogical strategies applied to the use of technology.

- Pedagogical Content Knowledge (PCK)—knowledge of teaching methods, general pedagogical strategies and lesson planning to make the subject matter more understandable to the learners.
- Technological Pedagogical Content Knowledge (TPCK)—knowledge of using various technologies to implement teaching methods for different designated subject content and to communicate relevant information to students and peers.

Bostancıoğlu and Handley's (2018) survey uses a five-point Likert scale to measure participants' responses for domain specific survey items. Participants complete the survey items by rating the degree to which they agree with the statements where 1 = strongly disagree and 5 = strongly agree. Higher scores indicate the participants' perceived proficient ability and knowledge to incorporate technology, pedagogy, and content in teaching. The survey consists of two additional sections developed by the researcher according to the structure-disposition-practice (SDP) conceptual framework that was developed in the second chapter based on Bourdieu's (1977) theory.

The operationalization of dispositions included family background, individuals' level of education, location (field) and years of experience, employment status, context levels, technology use, and demographic data. The structural properties of family background were operationalized by an index of family socioeconomic status (SES) and income. The last section elicits demographic information from participants, including ethnicity, gender, native and nonnative status, foreign languages fluency and age.

Habitus in the survey is operationalized as a multidimensional measurement that links background factors, capital and field. The measures of habitus are conceptualized within the structure-disposition-practice conceptual framework (SDP) which captures the dialectic relationship between context levels by integrating social structural properties and individuals' dispositional properties within particular social contexts (Edgerton & Roberts, 2014). (A copy of the survey is available in Appendix B).

Procedures

Data Collection

The data was collected from the TESOL teachers who are teaching in accredited English language programs at US institutions or universities using QuestionPro Survey--an online electronic web-based survey system. The survey was sent via email from the researcher's university email account to listservs of accredited English language programs. Several phone calls were made to English language program directors to ensure the receipt of the survey and to request encouraging their faculty to complete the survey. The email included a disclosure statement, as required by the Institutional Review Board (IRB), as well as a link to the survey. Approval from the Institutional Review Board (IRB) was granted before the survey was distributed.

The participants were informed about the purpose of the study and they were asked to consent to participation and terms of data use. The completion of an electronic consent form serves as an indication of acknowledgment that survey participation was voluntary. Participants were given three weeks to complete the survey during summer 2020. Two

reminder notifications were sent before the survey due date: one during the second week and another one the day before the survey was due. A period of two weeks was chosen in order to allow the researcher to evaluate participants' responses. Basic descriptive statistics were run throughout the data collection period to ensure the receipt of adequate data. The participants had the option of entering a raffle to win one of eight $50 gift cards upon the completion of the survey. The funding was made possible by VCU School of Education.

Data Analysis

Once the data collection period had expired, the researcher downloaded the data into an SPSS file for analysis with SPSS Version 27 software. The data were first reviewed for potential random entry errors. Descriptive statistics, such as distribution and central tendency, was used to organize and describe the characteristics of the data. Table 4 above lists the independent and dependent variables used for statistical evaluation.

Inferential statistical analysis conducted with SPSS includes hieratical multiple linear regression which was used to estimate relationships among variables and show the influence of independent variables of habitus on the dependent variable of technological pedagogical content knowledge (TPACK). In particular, hierarchical multiple linear regression was applied to explain and predict a dependent variable with a set of independent variables (Cohen, 2001). A strength of this analysis, which allows for the examination of the variation in the dependent variable of TPACK with each subsequent addition of an independent variable of habitus, is that the order of entering variables is

based on a logical and theoretical background. The following table summarizes the data management and analysis plan used for statistical evaluation.

Table 5

The Data Management and Analysis Plan

Variable		Measure	Analysis
Independent Variable	Dispositions (habitus)	Family background, education, field, individual trajectories and demographic data	Descriptive statistics
Dependent Variable	Technological Pedagogical Content Knowledge (TPACK)	(Bostancıoğlu & Handley, 2018) EFL-TPACK survey	Hierarchical multiple regression

The order of predictors in hierarchical multiple linear regression analysis was guided by the structure-disposition-practice framework (SDP) developed in the study. The study variables account for both material and cultural resources that serve to mold individuals' dispositions, demonstrating a link between background factors, cultural capital and field (Bourdieu, 1977). The structure-disposition-practice (SDP) framework suggests that family background and individual's location in a field serve as an indicator of cultural and economic resources that create a habitus which predisposes TESOL teachers towards developing specific technology integration knowledge (TPACK) in teaching and learning.

The analysis conducted consisted of examining: a) the significance (p value) of the model, b) the R2 value to describe the variance explained by the sequence of predictors in the model, and b) the variance accounted for as variables are added (Jeong & Jung, 2016). R-Square Change (ΔR2), which shows the amount of unique variance attributed to a set of predictors, is noted and presented in the results' section. The regression equation used took the following form:

$$yi = \beta 0 + \beta 1xi1 + \beta 2xi2 + \ldots \beta pxip + u_0$$

Independent variables are denoted by *x* and a dependent variable by *y*. The outcome of hierarchical multiple linear regression represents the best prediction of a dependent variable from several continuous or/ or dichotomous independent variables (Jeong & Jung, 2016). Multiple regression analysis provided a systematic model to quantify TESOL teachers' dispositions towards technology integration knowledge. It reflects the manner in which habitus generates practices distinctive to teachers according to context.

Reliability and Validity of the Research Instrument

Reliability refers to the extent to which the measurement is free from error (McMillan, 2016). One of the most widely used estimates of reliability is internal consistency. Cronbach's alpha is usually applied to compute internal consistency reliability estimates as it facilitates the process of calculating correlation of survey items. Alpha is expressed as a number between 0 and 1, and 0.7 is the acceptable reliability coefficient that indicates validity and accuracy to the interpretation of a data set (Reynaldo, 1999). Internal consistency estimates reliability by grouping questions that measure the same concept in a

survey instrument. The validity and reliability checks as well as factor correlations reported by Bostancıoğlu and Handley (2018) are included in the table below.

Table 6

Reliability and Validity of CFA Results (Bostancıoğlu &Handley, 2018)

	CK	TPCK	PCK	TK	TCK	TPK	CR	AVE	MSV
CK	*0.81*						0.90	0.65	0.32
TPCK	0.26	*0.76*					0.89	0.58	0.43
PCK	0.57	0.46	*0.73*				0.89	0.54	0.32
TK	0.27	0.22	0.22	*0.73*			0.86	0.53	0.07
TCK	0.38	0.61	0.56	0.25	*0.73*		0.87	0.53	0.47
TPK	0.34	0.66	0.50	0.26	0.69	*0.76*	0.89	0.58	0.47

CR: Composite reliability; AVE: Average variance extracted; MSV: Maximum shared variance.

As indicated in the table above, the composite reliability (CR) levels are all above 0.70, confirming that the model is reliable and the Average Variance Explained (AVE) levels are higher than 0.50 for all factors, confirming convergent validity. Discriminant validity is indicated by the square root of the AVE values for each factor (in italic and underlined). They are all greater than the inter-factor correlations as well as the Maximum Shared Variance (MSV) (Bostancıoğlu &Handley, 2018). Overall, all correlations between the subscales are positive which indicates that the EFL-TPACK questionnaire has logical consistency. Bostancıoğlu and Handley (2018) reported that correlations between the

EFL-TPACK subscales are moderate to good. The strongest correlation is between TPK and TCK (r = 0.69). The lowest correlations exist between TK and PCK (r = 0.22), and TPCK (r = 0.22).

Reliability and validity of the research instrument was established by Bostancıoğlu and Handley (2018) through statistical analysis including Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) and in consultation with a panel of international CALL experts. Expert reviewers performed an instrument review to ensure that each item on the instrument adequately measured the TPACK concepts in the context of English language teaching and learning. Comments from those reviewers were incorporated into the instrument development (Bostancıoğlu & Handley, 2018). The survey was also piloted by the researcher of this study before the data was collected. During the pilot phase, two experts in the field were asked to review the reliability and alignment of the survey question items with the proposed theoretical framework (content validity of the survey).

To have valid and unbiased results when using multiple linear regression, the researcher tested for the assumptions of independence of errors, multicollinearity, normality, homoscedasticity, linearity and non-zero variance. Independence was tested using the Durbin-Watson (D-W) statistic. A Variance of Inflation Factor (VIF) was performed to assess multicollinearity. Data were screened for normality using the normal P-P plot of standardised residuals, the histogram of the regression model standardized residuals and Shapiro Wilk's test of normality. Homoscedasticity, linearity was tested by

examining the scatterplot of residuals. The assumption of non-zero variance was tested by examining variance is descriptive statistics.

Limitations

The following limitations should be taken into consideration in regards to the design and scope of the study: First, careful consideration should be made in terms of generalizability of the data to a larger population due to the use of a self-reported measure and due to dependence on participants' willingness and availability to complete the survey. McMillan (2016) argues that how participants are selected from a larger population has implications for the extent to which the results can be generalized. Also, participants with limited technological knowledge and/or access to the internet might have had difficulties completing or accessing the survey, which may result in the homogeneity of the participants.

Another limitation that should be considered is the length of time between the predictor and criterion variables. In most cases, predictions involving a short time span are more accurate than those involving a long time span due to the possibility of the influence of other variables (McMillan, 2016). Moreover, the nature of this study's criterion variables, teachers' technology integration knowledge, are hard to predict as they are affected by many other variables. As such, conclusions could not be made regarding the extent to which changes in the independent variable cause differences in the dependent variable. A non-experimental quantitative research design limits making such conclusions.

Despite these limitations, a decided benefit of the study includes finding associations and predictions between variables. Reio (2016) argues that nonexperimental research provides a foundation to establish that a hypothesized relation exists between two variables as predicted by theory. This study makes profound contributions to the field by testing theoretical assumptions in regards to dispositions and technology integration knowledge. The study was conducted in a context where the relationships among variables are unknown due to limited research in this area (Adams, 2017; Koehler & Mishra, 2008; Koh, Chai, & Tay, 2014; Phillips, Koehler, Rosenberg, & Zunica, 2017; Porras-Hern_andez & Salinas-Amescua, 2013). The study has significant implications in shaping technology integration in English language teaching and in redefining the TPACK model as it provides a multifaceted view into the teachers' TPACK knowledge base and how the components of technology, pedagogy, and content are manifested in context.

Summary

This chapter provided justification for choosing a nonexperimental quantitative design with hierarchical multiple linear regression. The research design is appropriate for the current study due to the nature of the research questions. The emphasis is placed on examining the extent to which dispositions (habitus) predict English language teachers' technological, pedagogical and content knowledge (TPACK). The EFL-TPACK survey developed by Bostancıoğlu and Handley (2018) was used to collect data. The survey consists of two additional sections developed by the researcher to measure dispositions . The reliability and validity of the survey were discussed.

The data analysis for this study consists of a two-step process: presenting descriptive statistics and testing the hypothesis using hierarchical multiple regression analysis. The data was collected from the TESOL teachers who are teaching in accredited English language programs at US institutions or universities using QuestionPro. The technology integration knwowlege (TPACK) variables were used to conduct an analysis that posits discrimination among the different variables of habitus. The study has significant implications in shaping technology integration in English language teaching practice and research. The next chapter presents overall results and data analysis.

CHAPTER 4: Data Analysis and Results

This study used hierarchical multiple linear regression analysis, a method of multiple regression in which variables are introduced into the analysis in blocks (Field, 2017), to investigate the extent to which dispositions (habitus) predict TESOL teachers' technological, pedagogical and content knowledge (TPACK). The theoretical frameworks of Mishra & Koehler (2009) and Pierre Bourdieu (1977) guided the operationalization and analysis of TESOL teachers' technology integration knowledge (TPACK) and its interaction with dispositional contextual variables or fields. Data were gathered using the EFL-TPACK survey developed by Bostancıoğlu and Handley (2018). Bourdieu (1977)'s theories informed the development of two additional survey sections that measure and operationalize dispositions as embodiment of social structures, including contextual levels (fields) and demographic data.

The purpose of this chapter is to present the results of the descriptive and inferential statistics for the hierarchical multiple regression analyses for the two research questions. An assessment of the key assumptions is conducted. Each research question and associated hypotheses are addressed separately. Relationships between and among independent variables and the dependent variable as well as their significance were identified and reported. The sections of this chapter include variable summary, data screening, data evaluations, power analysis, descriptive statistics and inferential statistics. The chapter summary presents key points that were addressed throughout the chapter.

Data Analysis Procedures

The data collected for this study were processed and examined using the IBM Statistical Package for the Social Sciences (SPSS) Version 27 software. Before data analysis was conducted, several steps were taken to ensure the validity of the findings including data cleaning and data evaluation.

Variable Summary

The study's theoretical framework informed the identification of the best combination of variables that predicts TESOL teachers' technology integration knowledge. The following are the research questions and associated hypotheses that were established to test the significance of each predictor variable in the multiple regression analysis:

- RQ1: What is the relationship between dispositions (habitus) of the TESOL teachers and their technological pedagogical content knowledge (TPACK)?
- $H1_0$: There is no statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)
- H1a: There is a statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)
- RQ2: Do the dispositions (habitus) of the TESOL teachers predict their technology integration knowledge (TPACK)?
- $H2_0$: There is no statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)

- H2a: There is a statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)

The constructs used in the linear regression analysis were computed sums of variables based on associated individual survey items. Dummy variables were generated for all categorical variables. The order in which the variables were entered into the hierarchical multiple regression model in the IBM SPSS software was guided by the structure-disposition-practice (SDP) conceptual framework developed based on Bourdieu's theory. The outcome variable of the study was entered into the dependent variable dialog box in SPSS. Predictor variables were entered into the independent variable dialog boxes subsequently. The following table presents the order in which the variables of the study were entered into the hierarchical regression model in SPSS.

Table 7

Hierarchical Multiple Regression Order of Variables

Block	Dependent variable	Mesure	Predictor Variable	Measure
1	TPACK domains	Scale	Socioeconomic status	Ordinal
			Individual income	Ordinal
			Family income	Ordinal
2	TPACK domains	Scale	Level of education	Ordinal
3	TPACK domains	Scale	Employment status	Nominal
			Program location	Nominal

			Context levels	Ordinal
4	TPACK domains	Scale	Technology use	Ordinal
			Years teaching at current program	Ordinal
			Years teaching total	Ordinal
5	TPACK domains	Scale	Ethnicity	Nominal
			Foreign languages fluency	Nominal
			Gender	Nominal
			Native/non-native status	Nominal
			Age	Ordinal

The determination of the entrance of the variables into the model was informed by the literature review and the theoretical framework for the current study. The measures of dispositions were conceptualized within the structure-disposition-practice conceptual framework (SDP), which captures the dialectic relationship between micro meso and macro contextual structures by integrating social structural properties, individuals' dispositional properties, and their practices within particular social contexts (Edgerton & Roberts, 2014). The operationalization of dispositions included family background, individuals' level of education, location (field), years of teaching experience and demographic data. Family background was operationalized by an index of socioeconomic status (SES) and income. Demographic data was collected for ethnicity, foreign languages fluency, gender, natiave/non-native status and age.

Data Cleaning

The data were initially screened for incomplete records and missing values across all survey response items. The Listwise deletion function in SPSS was used to identify missing data in the study prior to deleting entries with missing data manually. The researcher's approach to missing data was to remove those cases with missing information. The cases that were dropped from the analysis had a missing value in at least one of the selected variables for the study. To avoid bias, hierarchical multiple regression analysis was performed only on cases which have a complete set of data. Survey completion rate was 77.95%. From a data set of 194 responses, forty two (n=42) responses were removed for incomplete records and/or missing data, leaving an initial sample size of 152. Survey records indicate that the missing data was due to participants dropping out before successfully completing the survey.

After additional data screening, thirteen (n=13) participants were disqualified as they did not provide specific information to verify that they were teaching at an accredited institution in higher education. There was no information to document that they served in a faculty position in higher education to qualify for the study. The final sample size was 139 participants. The remaining data were further screened for evidence of bias and existence of outliers or unusual cases. Outliers can cause skewed results and affect the estimates of the regression coefficients.

Data Evaluation

Another step in processing the data and assessing model fit was to analyze data residuals for evidence of bias in two stages: a) casewise diagnostics and b) assumption testing. Casewise diagnostics was used to identify cases that have a large influence on the

model whereas assumption testing was used to assess model fit. Assumption testing included assessments of independence of errors, multicollinearity, normality, homoscedasticity, linearity and non-zero variance.

Outliers. Casewise diagnostics was used to identify cases that have a large influence on the model and existence of outliers. In an ordinary sample, 95% of cases have standardized residuals within about ±2 (Field, 2013). The following is a summary table of casewise diagnostics outside these limits.

Table 8

Casewise Diagnostics

Case Number	Std. Residual	TPACK Domains	Predicted Value	Residual
36	-2.002	125	151.03	-26.034
43	-3.226	96	137.95	-41.948
58	-2.602	102	135.83	-33.835

Dependent Variable: TPACK domains

This study had a sample of 139. It is expected to have about 7 cases (5%) with standardized residuals outside these limits. The Casewise Diagnostics table (included in Appendix C) indicates that 97.72% of cases lie within the ±2 limit. The table also shows that case number 43 has a standardized residual outside the extreme range of the ±3 limit (Field, 2013). Cook's distance was examined to analyze the influence of the three cases listed in the Casewise Diagnostics table on the model. Any observation with a Cook's Distance greater than 1 indicates a high influence. The following table presents a summary of Cooks' distance statistics.

Table 9

Case Summaries

Case Number	Cook's Distance
36	.01727
43	.16919
58	.12671

The Case Summaries table indicates that there were no observations that have Cook's distance greater than 1. There were no influential points in the data. The Residuals Statistics table below summarises the nature of the residuals in the current study. It provides information about the spread of values that the model predicts and the range of error within the model. A minimum value equal or below -3.29 and a maximum value equal or above 3.29 in standardised residuals indicate absence of outliers.

Table 10

Residuals Statistics (a)

	Minimum	Maximum	Mean	Std. Deviation	N
Std. Residual	-3.226	1.817	.000	.944	139
Predicted Value	133.99	181.39	159.17	8.733	139
Std. Predicted Value	-2.883	2.544	.000	1.000	139
Standard Error of Predicted Value	2.611	7.622	4.292	1.025	139

Adjusted Predicted Value	136.78	186.54	159.25	8.851	139
Residual	-41.948	23.627	.000	12.277	139
Stud. Residual	-3.555	1.884	-.003	1.008	139
Deleted Residual	-50.936	26.185	-.083	14.025	139
Stud. Deleted Residual	-3.737	1.904	-.005	1.018	139
Mahal. Distance	4.572	46.414	14.892	7.900	139
Cook's Distance	.000	.169	.009	.020	139
Centered Leverage Value	.033	.336	.108	.057	139

(a) Dependent Variable: TPACK domains

Independence of Errors. The assumption of independence of errors was tested using Durbin-Watson (D-W) statistics. It was calculated from the residuals in multiple regression analysis. Generally, a Durbin-Watson (D-W) value between $1.5 < d < 2.5$ would mean that the assumption has been met (DeBoer, et al., 2014). Durbin-Watson (D-W) statistics generated from SPSS for the current study indicates that the data met the assumption of independence of errors, (Durbin-Watson value = 1.969).

Table 11

Durbin Watson Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
5	.580	.336	.255	13.004	1.969

Multicollinearity. Multicollinearity occurs when moderate to high intercorrelations are present between predictor variables (Stevens, 2009). It inflates standard errors, which impacts the results of regression analysis and their significance. The absence of multicollinearity presumes that predictor variables are not closely related. A Variance of Inflation Factor (VIF) was performed to assess multicollinearity for the current study. A VIF value that is greater than 10, or a Tolerance value is less than 0.1 is an indication of multicollinearity (Field, 2013; Stevens, 2009). Collinearity diagnostics indicates that the multicollinearity assumption was satisfied as the following table shows.

Table 12

Collinearity Statistics

Model	Tolerance	VIF
Socioeconomic status	.746	1.340
Individual income	.518	1.930
Family income	.576	1.736
Level of education	.792	1.263
Employment status	.888	1.126
Program location	.913	1.095
Context levels	.903	1.107
Technology use	.889	1.125
Years teaching at current program	.529	1.889
Years teaching total	.460	2.174
Ethnicity	.911	1.097

Language	.858	1.165
Gender	.844	1.184
Native/non-native status	.849	1.178
Age	.640	1.562

a Dependent Variable: TPACK domains

Normality. The assumption of normality assumes that the distribution between the predictor variables and the outcome variable follow a bell shaped curve (Field, 2013). Data were screened for normality using normal the P-P plot of standardised residuals, the histogram of regression standardized residuals and the Shapiro-Wilk test of normality. Residuals presented in the histogram of standardised residuals were found to be normally distributed. Also, the normal P-P plot of standardised residuals below shows that most values are close to the trend line.

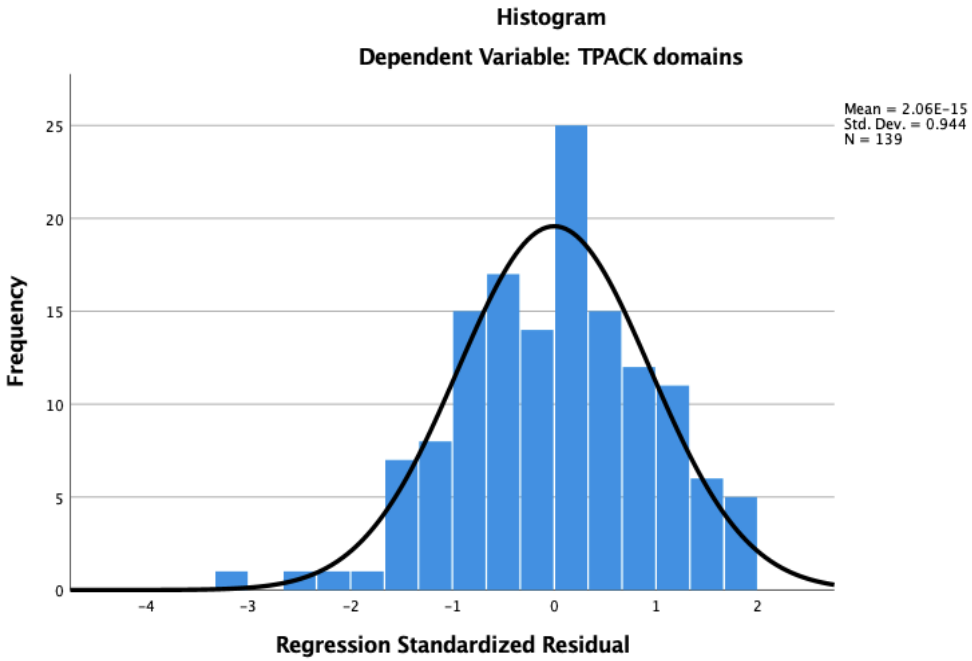

Figure 5. Histogram of the regression model standardized residuals

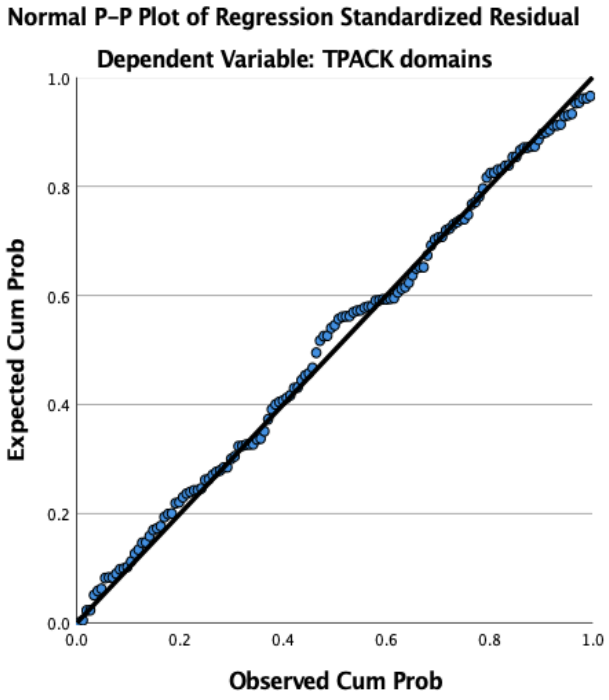

Figure 6. Normal P-P plot of standardised residuals

The assumption of normality of the outcome variable was examined by reviewing the Shapiro-Wilk test of normality. Residuals were found to be normally distributed. The Shapiro-Wilk test was non-significant ($p>.05$), which indicates that the distribution of the sample does not deviate from a normal distribution (Field, 2013). The Test of Normality table below includes the Shapiro-Wilk test results.

Table 13

Test of Normality

	Kolmogorov-Smirnov (a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.057	139	.200*	.985	139	.124
Standardized Residual	.057	139	.200*	.985	139	.124

*This is a lower bound of the true significance

a. Lilliefors Significance Correction

Homoscedasticity and Linearity. Homoscedasticity, homogeneity of variance or equal variances across groups, was tested by examining the scatterplots of residuals. A visual examination of the scatterplot of standardized residuals was conducted to ensure that the independent variable was equal in variability across the range of independent variables. This assumption is violated when the results of the standardized residuals indicate heteroscedasticity, not demonstrating normality in distribution (Field, 2013). Heteroscedasticity impacts the overall statistical power of the regression analysis. The visual examination of the scatterplot of standardized residuals included below shows that the assumption of homoscedasticity was met. There was no existence of any clear curvilinear, clustering or cone patterns.

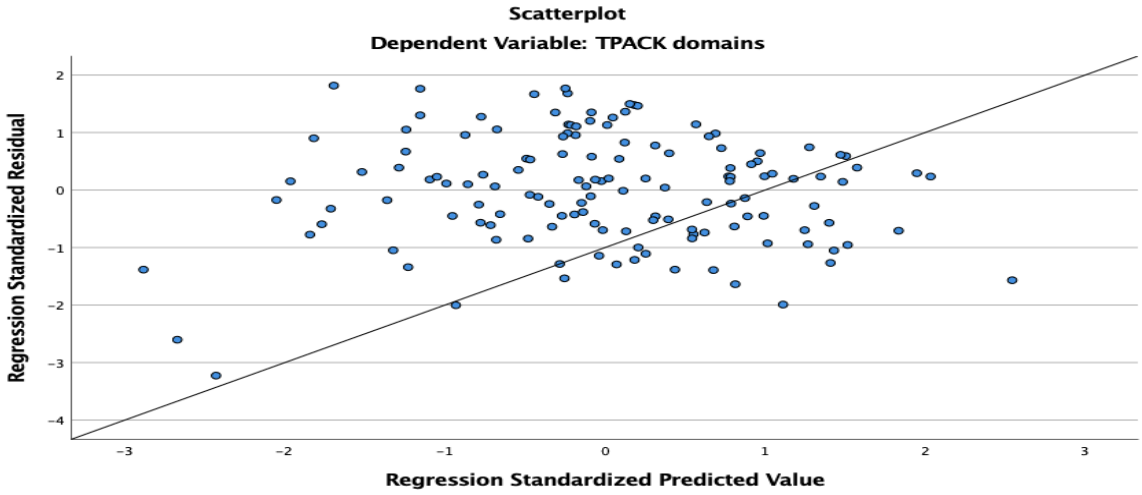

Figure 7. Residuals scatterplot of standardized residuals

Linearity was tested by visually inspecting the scatterplot of standardized residuals as well as the residual plots between each predictor variable and the dependent variable. The scatterplot of standardised residuals presented above shows that the assumption of linearity was met. The data generally formed a straight line with no curves.

Non-Zero Variance. The assumption of non-zero variance was tested by examining variance included in the descriptive statistics in the table below. This assumption is met when the predictors have some variation in value. In other words, they do not have variance of 0 (Field, 2013) as shown in the table below.

Table 14

Descriptive Statistics- Variance

	N	Min	Max	Mean	Std. Deviation	Variance
Socioeconomic status	139	1	5	2.94	.549	.301

Individual income	139	1	11	5.59	2.183	4.765
Family income	139	1	11	7.96	2.791	7.789
Level of education	139	1	4	3.02	.583	.340
Employment status	139	1	3	1.07	.333	.111
Program location	139	1	3	1.50	.695	.484
Context levels	139	1	3	1.65	.729	.532
Technology use	139	1	4	3.21	.747	.558
Years teaching at current program	139	1	6	3.92	1.465	2.146
Years teaching total	139	2	6	5.06	1.051	1.104
Ethnicity	139	1	7	1.64	1.602	2.565
Foreign languages fluency	139	1	4	1.61	.747	.558
Gender	139	1	4	1.77	.471	.222
Native/non-native status	139	1	2	1.14	.345	.119
Age	139	1	7	3.72	1.167	1.363
Valid N (listwise)	139					

Power Analysis

Effect size, alpha, and sample size were considered to ensure proper power. Power analysis was computed using G-Power Analysis. A power of 0.99 was achieved based on an input criteria of f2 = 0.506, $\alpha = .05$, sample size = 139 and 15 predictor variables. The squared multiple correlation coefficient (R2 = .336) of multiple linear regression resulted

in effect size of 0.506. A sample size of 139 was sufficient to meet the minimum power required to avoid low statistical power threats to validity. The study's sampling method gave confidence that the sample was representative of the population being studied. The following is the distribution plot for G-power analysis.

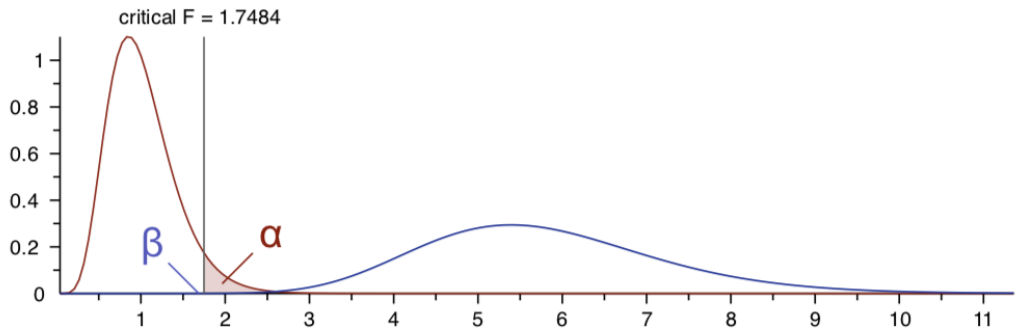

Figure 8. G-power distribution plot

Results of Hierarchical Multiple Linear Analysis

This section reports the results of hierarchical multiple regression analyses conducted for this study. The results include descriptive statistics and inferential statistics for the research questions. A description of the demographics of the sample and multiple regression descriptive statistics are provided. Each research question and associated hypotheses are addressed separately.

Participant Demographics

The researcher's intention was to draw a sizable and heterogeneous sample so that the results could be generalized to the target population. The identified population was TESOL teachers who were teaching in accredited English language programs in post

secondary education in the United States. Surrey invitations were sent to the participants through email. Survey completion rate was 77.95%. One hundred ninety (n=194) responses were submitted, which included 55 incomplete and disqualified entries. The final analyses included 139 responses. Specific demographic information was collected from the participants including gender, age, ethnicity, foreign languages fluency, level of education, years of teaching experience, employment status, socioeconomic status, family income and individual income. Frequency percentages are provided for each variable below to highlight the make-up of the sample.

The ratio of females to males who responded to the survey was 21:7. The majority of the respondents (74.8%, n = 104) were female, 24.5% (n = 34) were male and 0.7% (1) were other. The age of the participants ranged from 18 to 75+ with more than 60% between the ages of 35-54. More than 30% of the participants reported falling within the range of 45-56 years of age (n = 43, 30.9%) as shown in the following table.

Table 15

Age Distribution of Survey Respondents (n = 139)

Age	N	%
18-24	1	0.7%
25-34	20	14.4%
35-44	41	29.5%
45-54	43	30.9%
55-64	24	17.3%
65-74	9	6.5%

75 years or older	1	0.7%

The participants identified as Caucasian (79.9%, n=111), Latino/Hispanic (7.2%, n=10), Middle Eatern (3.6%, n=5), Asian (2.2%, n=3), African (1.4%, n=2) and Other (4.5%, n=8). More than 80% identified as native English language speakers (86.3%, n=120). Several participants were able to speak one or more foriegn languages fluently including Spanish (25.17%, n=35), French (8.36%, n=12), German (7.19%, n=10), Portuguese (1.43%,n= 2), Arabic (6.47%, n=9), Mandarin (2.15%, n=3), Japanese (2.15%, n=3), Russian (2.15%, n=3) and others (11.5%, n=16). About 80% of the participants held a masters degree in education (79.1%, n=110). The following table presents the distribution of survey respondents' level of education.

Table 16

Level of Education Distribution of Survey Respondents (n = 139)

Level of Education	N	%
College Degree BA BS	6	4.3%
Some Graduate School	4	2.9%
Master Degree MA MSc MEd	110	79.1%
Doctorate PhD MPhil	19	13.7%

Years of teaching experience consisted of five ranges: > 2 years (1.4%, n= 2), 3-5 years (7.9%, n=11), 6-10 years (19.4%, n=27), 11-15 years (25.2%, n=35), and < 15 years

(46.0%, n=64). More than 35% (35.2%, n=49) of the participants taught in their current program for more than eleven years. Teachers with less than one year of teaching experience in their current program were less frequently observed (5.3%, n = 8) as the following table shows.

Table 17

Years Teaching in Current Program Distribution of Survey Respondents (n = 139)

	N	%
Less than 1 year	8	5.8%
1-2 years	18	12.9%
3-5 years	26	18.7%
6-10 years	38	27.3%
11-15 years	23	16.5%
More than 15 years	26	18.7%

The majority of the participants were employed full time (65.4%, n= 91). About 62% (n=86) of the English language programs were located in urban areas. As for their socioeconomic status distribution, 0.7% (n=1) reported that they were poor, 12.9% (n=18) working class, 80.6% (n=112) middle class, 2.9% (n=4) affluent and 2.9% (n=4) other. Approximately forty percent (42.5%, n= 59) were classified as having a family income between $40,000 and $79,000. The individual annual income of the participants ranged from less than $9,000 (n=6) to more than $ 99,000 (n=7). More than 20 % (23%, n=32)

had an annual income between $50,000 and $59,000. The following table presents the annual individual income distribution of survey respondents.

Table 18

Annual Individual Income Distribution of Survey Respondents (n = 139)

	N	%
Less than $9,000	6	4.3%
$10- $19,000	3	2.2%
$20,000 - $29,000	12	8.6%
$30,000 - $39,000	18	12.9%
$40,000 - $49,000	28	20.1%
$50,000 - $59,000	32	23.0%
$60,000 - $69,000	22	15.8%
$70,000 - $79,000	7	5.0%
$80,000 - $89,000	2	1.4%
$90,000 - $99,000	2	1.4%
More than $99,000	7	5.0%

Descriptive Results

The study variables used in the statistical analysis were summarized and presented in Table 7 in the variable summary section above. The descriptive statistics table below presents the mean and standard deviation for each of the fifteen variables.

Table 19

Multiple Regression Descriptive Statistics

	Mean	Std. Deviation	N
TPACK domains	159.17	15.066	139
Socioeconomic status	2.94	.549	139
Individual income	5.59	2.183	139
Family income	7.96	2.791	139
Level of education	3.02	.583	139
Employment status	1.07	.333	139
Program location	1.50	.695	139
Context levels	1.65	.729	139
Technology use	3.21	.747	139
Years teaching at current program	3.92	1.465	139
Years teaching total	5.06	1.051	139
Ethnicity	1.64	1.602	139
Foreign languages fluency	1.61	.747	139
Gender	1.77	.471	139
Native/non-native status	1.14	.345	139
Age	3.72	1.167	139

The outcome variable, a continuous type variable, used in the analysis was technological pedagogical content knowledge (TPACK). It was calculated from the sums

of seven TPACK domains data gathered from a 5-point Likert scale. Its mean and standard deviation (M= 159.17; SD= 15.066) are higher compared to other variables. The independent variables with the smallest means and standard deviations are employment status (M= 1.07; SD= 333) and family income (M= 7.96 ; SD= 2.791) consecutively. The standard deviation for the predictor variables illustrate a limited variability of score distribution. Small variances limit the degree to which variables can correlate with other variables in a study.

Quantitative Results

A hierarchical multiple regression was conducted to examine the extent to which dispositions (habitus) predict the technological, pedagogical and content knowledge (TPACK) of TESOL teachers. Individual variable beta β weights and coefficients for all independent variables were investigated to examine individual variable relationships with the dependent variable and to show the proportion of variance that can be accounted for by each variable. Hierarchical multiple regression was conducted in stages, which allowed for individual beta (β) weights to be considered while holding all other independent variables constant. Statistical significance of each model represented by a block was measured at the $p < .05$ level.

RQ1: What is the relationship between dispositions (habitus) of the TESOL teachers and their technological pedagogical content knowledge (TPACK)?

- $H1_0$: There is no statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)

- H1a: There is a statistically significant relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)

In conducting multiple regression analysis, correlation coefficients between variables and their statistical significance were examined to determine the direction of their correlation. The correlation table for the study variables shows that correlation coefficients between every pair of independent variables and their statistical significance were weak to moderate, ranging between $r = -.249$, $p < .002$ and $r = .576$, $p < .001$. This confirms the absence of multicollinearity. The correction table also shows that correlations between the predictor variables and the dependent variable (TPACK) were weak to moderately strong. The model summary table included below presents the values of multiple correlation coefficients for each hierarchical multiple regression model. The value of *R*, the multiple correlation coefficient, shows the quality of the prediction of the independent variables on TPACK.

Table 20

Hierarchical Multiple Regression Analysis Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.190a	.036	.015	14.956	.036	1.679	3	135	.175
2	.198b	.039	.011	14.986	.003	.463	1	134	.498
3	.223c	.050	-.001	15.074	.011	.483	3	131	.695
4	.512d	.262	.204	13.442	.212	12.244	3	128	<.000

5	.580e	.336	.255	13.004	.074	2.754	5	123	.021

edictors: (Constant), Family income, Socioeconomic status, Individual income

a. Predictors: (Constant), Family income, Socioeconomic status, Individual income

b. Predictors: (Constant), Family income, Socioeconomic status, Individual income, Level of education

c. Predictors: (Constant), Family income, Socioeconomic status, Individual income, Level of education, Employment status, Program location, Context levels

d. Predictors: (Constant), Family income, Socioeconomic status, Individual income, Level of education, Employment status, Program location, Context levels, Technology use, Years teaching at current program , Years teaching total

e .Predictors: (Constant), Family income, Socioeconomic status, Individual income, Level of education, Employment status, Program location, Context levels, Technology use, Years teaching at current program , Years teaching total , Ethnicity, Foreign languages fluency, Gender, Native/non-native status, Age

f. Dependent Variable: TPACK domains

The value of R indicates the strength of the correlations between the predictors and the outcome variables for each model. The value of R in the fifth model is .580, which is a moderate relationship. Based on the value of R, dispositions positively correlate with TPACK. *R*-squared shows the amount of variance in TPACK that is explained by the predictor variables entered in each model. The *R*-squared values of the first three models (model 1 R2= .036; model 2 R2= .039; model 3 R2=.050) suggest that these models are a poor fit, as only 3.6%, 3,9% and 5% of the variance in TPACK are explained by the predictor variables in these models consecutively. The inclusion of three more variables in the fourth model seems to explain a large amount of the variation in TPACK as it increased from 5% to 26.2%. Additional predictor variables in the fifth model increased the variation in TPACK to 33.6%. The fifth model, which is statistically significant ($p<.001$ accounts for 33.6% of the variation in the outcome variable. This implies that 66.4% of the variation in TPACK cannot be explained by all the predictors alone.

The *F*-ratio, shown in the Analysis of Variance (ANOVA) table, explains whether the study's multiple regression models are a good fit for the data.

Table 21

Hierarchical Multiple Regression ANOVA Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1126.658	3	375.553	1.679	.175
	Residual	30198.537	135	223.693		
	Total	31325.194	138			
2	Regression	1230.531	4	307.633	1.370	.248
	Residual	30094.663	134	224.587		
	Total	31325.194	138			
3	Regression	1559.769	7	222.824	.981	.448
	Residual	29765.425	131	227.217		
	Total	31325.194	138			
4	Regression	8196.910	10	819.691	4.536	<.001
	Residual	23128.284	128	180.690		
	Total	31325.194	138			
5	Regression	10525.514	15	701.701	4.150	<.001
	Residual	20799.680	123	169.103		
	Total	31325.194	138			

The table shows that the independent variables in the first three models do not statistically predict the dependent variable. These models are a poor fit. However, the

predictor variables of the fourth model and the fifth model are significant predictors of the outcome variable (model 4, $F= 4.536$, $p < .001$; model 5, $F=4.150$, $p < .001$). The correlation direction and the significance of the final block of regression analysis suggests that the null hypothesis should be rejected.

RQ2: Do dispositions (habitus) of the TESOL teachers predict their technology integration knowledge (TPACK)?

- $H2_0$: There is no statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)
- H2a: There is a statistically significant predictive relationship between dispositions (habitus) of the TESOL teachers and their technology integration knowledge (TPACK)

The regression coefficient table included below provides estimates of the model parameters (the beta values) and the significance of their values. It presents how much the dependent variable (TPACK) varies with a set of predictor variables when all other predictor variables are held constant. B values in the coefficients table show how much the dependent variable will change if a predictor variable changes by one unit while other variables are held constant (Field, 2013). Standardized beta values indicate the number of standard deviations that scores in the dependent variable would change if there was one standard deviation unit change in a predictor variable.

Table 22

Summary of Hierarchical Regression Analysis for Variables Predicting TPACK

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	144.285	7.136		20.219	<.001
	Socioeconomic status	4.880	2.475	.178	1.972	.051
	Individual income	.428	.722	.062	.594	.554
	Family income	-.235	.567	-.044	-.415	.679
2	(Constant)	140.569	9.000		15.620	<.001
	Socioeconomic status	4.800	2.483	.175	1.934	.055
	Individual income	.272	.759	.039	.359	.720
	Family income	-.243	.569	-.045	-.428	.670
	Level of education	1.617	2.377	.063	.680	.498
3	(Constant)	141.277	11.197		12.618	<.001
	Socioeconomic status	5.197	2.571	.189	2.021	.045
	Individual income	.274	.764	.040	.358	.721
	Family income	-.323	.580	-.060	-.557	.579
	Level of education	1.393	2.399	.054	.581	.562
	Employment status	-2.086	3.875	-.046	-.538	.591
	Program location	-.876	1.862	-.040	-.470	.639
	Context levels	1.799	1.824	.087	.987	.326
4	(Constant)	120.879	11.420		10.585	<.001
	Socioeconomic status	4.010	2.374	.146	1.689	.094
	Individual income	.584	.694	.085	.841	.402
	Family income	-.031	.527	-.006	-.058	.954
	Level of education	-.399	2.166	-.015	-.184	.854

	Employment status	-3.057	3.575	-.068	-.855	.394
	Program location	-.732	1.663	-.034	-.440	.661
	Context levels	1.930	1.635	.093	1.181	.240
	Technology use	8.974	1.573	.445	5.706	<.001
	Years teaching at current program	-1.837	1.036	-.179	-1.772	.079
	Years teaching total	.841	1.467	.059	.573	.567
5	(Constant)	128.662	13.428		9.582	<.001
	Socioeconomic status	2.797	2.335	.102	1.198	.233
	Individual income	.623	.705	.090	.884	.378
	Family income	.129	.523	.024	.248	.805
	Level of education	-1.733	2.133	-.067	-.813	.418
	Employment status	-3.374	3.530	-.075	-.956	.341
	Program location	-.737	1.665	-.034	-.442	.659
	Context levels	2.143	1.597	.104	1.342	.182
	Technology use	8.787	1.573	.435	5.587	<.001
	Years teaching at current program	-2.360	1.039	-.230	-2.273	.025
	Years teaching total	2.194	1.553	.153	1.412	.160
	Ethnicity	.721	.724	.077	.996	.321
	Foreign languages fluency	4.153	1.599	.206	2.597	.011
	Gender	1.759	2.557	.055	.688	.493
	Native/non-native status	-10.078	3.485	-.231	-2.892	.005
	Age	-1.455	1.185	-.113	-1.228	.222

a Dependent Variable: TPACK domains

Three predictors were entered into the first block of the hierarchical multiple regression analysis with TPACK as the outcome variable: socioeconomic status, individual income and family income. This model corresponds to an R square value of .036 and an adjusted R square value of.015, which suggests that the model explains about 3.6% of the total variance in the data. The F-value of 1.679 [F (3, 135), p=.175] suggests that the model does not have significant predictive power when compared to the sample mean. The results of this multiple regression suggests that there is no significant relationship between the model predictors (socioeconomic status: t=1.972, p>.05, n=139, individual income (t=.594, p=.554, n=139] and family income t=-.415, p=.679, n=139) and TPACK after controlling for other study viables.

The inclusion of the fourth predictor variable, level of education, in the second block of multiple regression analysis does not reliably improve the predictive ability of the model. The overall model is not statistically significant, F (4, 134) = 1.370, p= .248. As such, it is not a significant predictor of TPACK. The results of multiple regression suggest that there is no significant relationship between the predictors in the model including level of education (t=.680, p=.498) and TPACK.

Three predictors were entered into the third block of the hierarchical multiple regression: employment status (t=-.538, p=.591), program location (t=-.470, p=.639) and context levels (t=.987, p=.326). The model produced an R square of .050, which is not statistically significant [F(7,131) = .981, p= .448]. It explains 5% of the variance in

TPACK. The model is not a significant predictor of TPACK as it is not sensitive to identify significant individual predictors.

Three more variables were interred into the fourth block: technology use ($t=5.787$, $p < .001$), years teaching in current program ($t=-1.772$, $p=.079$) and years teaching total($t=.473$, $p=.567$). The total variance explained by the model is 26.2% ($F (10, 128) = 4.56$; $p < .001$). The introduction of these independent variables explains an additional 21.2% of variance in TPACK. However, most of this predictive power comes from the predictor of technology use ($t=5.787$, $p < .001$). This suggests that the null hypothesis should be rejected with 95% confidence.

Four additional predictor variables were entered into the fifth block of regression analysis: ethnicity ($t=.996$, $p=.321$), foreign languages fluency ($t=2.597$, $p < .01$), gender ($t=.668$, $p=.493$), native/non-native status($t=-2.892$, $p < .005$), and age ($t=-1.228$, $p=.222$). They produced an R square of .336, which is statistically significant [$F (15,123) = 4.150$, $p < .001$]. It explains 33.6% of the variance in TPACK. The F-value of 4.150 ($p < .001$) suggests that the model is a significant predictor of TPACK. However, most of the predictive power of this model comes from the technology use ($t=5.787$, $p < .001$); years teaching in current program ($t=-2.273$, $p < .05$); foreign languages proficiency ($t=-2.597$, $p < .01$) and native/ non-native status speaker ($t=-2.892$, $p < .005$). The regression analysis results suggest that the null hypothesis should be rejected with 95% confidence.

Fifteen independent variables were included in the fifth stage of the regression model. However, only four variables were shown to significantly predict TPACK. Their

standardized betas indicate the degree to which TPACK is affected when all other predictors are held constant:

- Years teaching in current program (standardized β =-.230). This value indicates that as years teaching in current program increases by one standard deviation (SD=1.465), TPACK decreases by .230 standard deviations. The standard deviation for TPACK is 15.066. For every 1.465 years spent in a program, teachers' TPACK decreases by 3.46.
- Native/ non-native status (standardized β =-.231). This value indicates that as native/non-antive status increases by one standard division (SD=.345), TPACK decreases by .231. The standard deviation for TPACK is 15.066.
- Technology use (standardized β =.445). This value indicates that as technology use increases by one standard deviation (SD=.729), TPACK increases by .445 standard deviations. The standard deviation for TPACK is 15.066.
- Foreign languages proficiency (standardized β = .206). This value indicates as language increases by one standard deviation (SD=.747), TPACK increases by .206 standard deviations. The standard deviation for TPACK is 15.066.

The data suggest a significant negative relationship between TPACK and years of teaching in current programs and native/non-native status. This suggests that for every one standard deviation increase in any of these variables, a decrease is predicted in TPACK. Teachers' technology integration knowledge is negatively impacted by their length in their current program and their native/non-native status. The results also show that teachers' technology integration knowledge is positively impacted by their frequent use of

technology and their foreign languages fluency status. These four variables are strong predictors of teachers' TPACK.

A sample size of 139 achieved power of 0.99. Squared multiple correlation coefficient (R2 = .336) of regression analysis resulted in an effect size of 0.506. According to Cohen's f2 method of effect size, this is a large effect size. The measure of effect size is an indication of the strong relationship between the predictors and the outcome variables (Field, 2013). The higher the effect size is, the stronger the relationship is and the greater the expected magnitude of the effect is on teachers' technological content knowledge (TPACK).

Summary

This chapter discussed study variables, multiple regression assumptions, and descriptive and inferential results of multiple regression analyses. A hierarchical multiple regression analysis, a method of multiple regression in which variables are introduced into the analysis in blocks, was selected to examine the extent to which teachers' dispositional context predicts their TPACK (technological, pedagogical and content knowledge). Five hierarchical regression analyses were conducted regressing fifteen independent variables selected for the study. Data elevation and assessments of parametric assumptions (independence of errors, multicollinearity, normality, homoscedasticity, linearity and non-zero variance) showed that all assumptions were satisfied. .

A summary of regression analysis statistics indicated that dispositions operationalized according Bourdieu (1977)'s theories predict teachers' TPACK. More specifically, the study revealed that the TESOL teachers' technology integration

knowledge is negatively impacted by their length in their current program and their native/non-native status. The results also showed that teachers' technology integration knowledge is positively impacted by their frequency of technological use and their foreign languages fluency status. These four variables are strong predictors of teachers' TPACK. Other constructs operationalized in the study to define dispositions including level of education, years teaching, family and individual income, contextual levels, age and gender are not strong predictors of TPACK.

CHAPTER 5: Summary, Conclusions, and Implications

Integrating technology into classroom learning experiences has proven to be difficult for many teachers. While access to technological tools has improved, research shows that the transformative use of technology in instruction remains limited (Fraillon et al., 2014; Li, Jee, & Sun, 2018; Liu, Wang & Koehler 2019). Buabeng-Andoh (2012) argues that technology itself does not provide the magical ingredient for teaching and learning, but it is a powerful educational tool when used in the right context with an understanding of its advantages and limitations. Technological pedagogical content knowledge (TPACK) has emerged as a representation of the knowledge required for contextually authentic and pedagogically appropriate technology integration (Abbitt, 2011; Koehler & Mishra, 2005). The components and interplay among TPACK domains form the basis for the knowledge required for effective technology knowledge.

In an effort to bring clarity to the issue of English language teachers' technology integration knowledge, the current study examined the relationship between teachers' technological pedagogical content knowledge (TPACK) and dispositions in the context of English language teaching. This chapter provides a summary of the study and discusses the findings from the statistical analysis of the data. Additionally, it offers possible explanations of the results and considers practical and theoretical implications of the findings. Finally, recommendations are made for future research in light of the conclusions drawn from the study.

Summary of the Study

Education has undergone multiple epistemological shifts in recent decades due to emerging technologies and shifts in educational paradigms (Johnson, 2016; Kumaravadivelu; 2006; Setiawan, Hamra, Jabu, & Susilo 2018; Van Olphen, 2008). The implications of emerging technologies for language teachers, students, and researchers are extensive. Research suggests that the evolution of technology has made a profound impact on how English language teaching and learning is conceptualized and practiced by making possible the transformation of the classroom environment from teacher-centered to student-centered (Alsuhaibani; 2019; Andrei, 2017; Belland, 2009; Van Olphen, 2008). Many researchers (Alsuhaibani; 2019; Angeli & Valanides, 2009; Mishra & Khoher, 2006) advocate for a transformative approach to the application of technology in the classroom, which requires reframing and reconceptualization of teachers' technology integration knowledge.

Research (Fraillon et al., 2014; Koehler, Mishra, Akcaoglu, & Rosenberg; Li, Jee, & Sun, 2018; Liu, Wang & Koehler 2019) indicates that despite the potential benefits of technology integration in increasing student-learning outcomes, the ways teachers integrate technology in teaching are limited. They are restricted to traditional pedagogical goals, rather than innovative instruction that encourages students' active participation and teacher-directed student use of technology for the purpose of knowledge building. The potential emerging tools and practices present are generally overlooked.

The Technological Pedagogical Content Knowledge (TPACK) framework explains the knowledge constructs required for effective technology integration (Koehler & Mishra, 2008). Several limitations, however, have been noted in regards to the ability of this

framework to capture and explain the connections between the complexities of teachers' contexts and their use of technologies. Olofson and Swallow (2017) argue that although context has been described as central to the TPACK framework by its developers (Angeli & Valanides, 2009; Koehler & Mishra, 2008; Koehler, Mishra, Kereluik, Shin, & Graham, 2014), there is limited understanding of the interactions between particular contexts, teacher knowledge development, and classroom instruction. Research (Harris, Mishra & Koehler, 2009; Rosenberg & Koehler, 2015) indicates that context is frequently missing when TPACK is described. Also, the meaning of context and how it is understood within teachers' and institutional epistemological beliefs has differed widely.

This dissertation advances current literature by opening a discussion on a more complex notion of context that includes teachers' subjective contextual variables in the form of dispositions as embodiment of social structures to understand teachers' technology integration knowledge development (Bourdieu, 1977). The work of Bourdieu (1977) offers a theory that explains the complex network of contextual (field) and circumstantial influences on social practices. Bourdieu (1977) suggests that practice results from relations between an individual's dispositions and their material and symbolic assets, and position in a field. Bourdieu's theory highlights connections between three elements: (a) habitus (dispositions), (b) field (context) and (c) capital (resources).

The concept of habitus, alongside capital and field, offers an explanatory framework and theoretical vocabulary for understanding teachers' knowledge in context (Costa, Burke & Murphy, 2019). It functions as an internal archive of personal experiences rooted in an individuals' history and trajectories, which are linked to social categories such

as race, ethnicity, economic status, income, level of education. Bourdieu's (1984) structure-disposition-practice framework that includes the constructs of habitus, capital and field provides a lens through which to contextualize TESOL teachers' TPACK. The following questions guided this study.

- What is the relationship between dispositions of the TESOL teachers and their technological pedagogical content knowledge (TPACK)?
- Do dispositions of Teachers of English to Speakers of Other Languages (TESOL) predict their knowledge of technology integration (TPACK)?

Given the intention of this dissertation to develop an understanding of specific contextual factors and dispositions that predict teachers' technology integration, a nonexperimental quantitative design was used and a hierarchical multiple linear regression analysis was conducted. The EFL-TPACK survey developed by Bostancıoğlu and Handley (2018) was used to collect data that pertain to technology integration knowledge from the TESOL teachers in English language programs at the university level. The survey consisted of two additional sections developed by the researcher to measure dispositions as embodiment of social structures.

The operationalization of dispositions (habitus) included family background, individuals' level of education, location (field) and years of experience, employment status, context levels, technology use, and demographic data. Family background is operationalized by an index of family socioeconomic status (SES) and income. The last section of the survey elicits demographic information from participants, including age, gender, ethnicity, native and nonnative status, foreign languages fluency and race.

The strength of this research design lies in explaining how teachers' dispositional factors interact with the TPACK domains in the wider social context and how they collectively predict teachers' technology integration knowledge. It presents an attempt to overcome the dichotomy between social structures, the micro, meso and macro contextual levels and teachers' agency in developing technology integration knowledge while acknowledging the external and social factors that constrain and/or promote the development of technology integration knowledge aimed at encouraging students' active participation and knowledge building.

Summary of the Findings

The theoretical frameworks of Mishra & Koehler (2009) and Bourdieu (1977) guided the research inquiry. A nonexperimental quantitative design with hierarchical multiple linear regression was used to determine if and to what extent dispositions (habitus) may predict TESOL teachers' technology integration knowledge (TPACK). The survey completion rate was 77.95%. The final sample size was 139 participants. The data were systematically screened for incomplete records and missing values across all survey response items. The data were also analyzed for evidence of bias in two stages: a) casewise diagnostics, and b) assumption testing. Casewise diagnostics was used to identify cases that have a large influence on the model whereas assumption testing was used to assess model fit. Assumption testing included assessments of independence of errors, multicollinearity, normality, homoscedasticity, linearity and non-zero variance. Data assessments showed that all assumptions were satisfied and no outliers were found.

Statistical analysis of the data included a descriptive overview of the sample and a hierarchical multiple regression analysis of the study variables. Participant demographics demonstrated that the majority of the participants were Caucasian (79.9%, n=111) middle class (80.6%, n=112) females (74.8%, n = 104) with more than 90% of them (92.8, n= 129) holding a Master's or a PhD degree. More than 65% were employed full time mostly in urban areas where 62% (n=86) of the English language programs were located. Approximately 40% percent (42.5%, n= 59) were classified as having a family income between $40,000 and $79,000. In terms of age, 60% of the participants reported to be over 35 years of age with 62.5% reporting more than 6 years of teaching experience. More than 35% (35.2%, n=49) taught in their current programs for more than eleven years. Spanish was the most common foreign language spoken by the participants (25.17%, n=35).

The dependent variable of teachers' technology integration knowledge (TPACK) was calculated from the sums of seven TPACK domains data gathered from a 5-point Likert scale. Its mean and standard deviation were (M= 159.17; SD= 15.066). The components of the predictor variable with the smallest means and standard deviations are employment status (M= 1.07; SD= 333) and family income (M= 7.96 ; SD= 2.791) consecutively. The standard deviation of the components of the predictor variable illustrates a limited variability of score distribution.

The five hierarchical regression analyses conducted in stages or blocks regressing fifteen independent variables selected for the study allowed for individual beta (β) weights to be considered while holding all other independent variables constant. Statistical significance of each model represented by a block was measured at the $p < .05$ level. The

findings of the study suggest that disposition factors significantly predict technology integration knowledge (TPACK).

RQ1: What is the relationship between dispositions (habitus) of the TESOL teachers and their technological pedagogical content knowledge (TPACK)?

Disposition variables were significant predictors of the outcome variable (model 4, $F= 4.536$, $p < .001$; model 5, $F=4.150$, $p < .001$). The correlation direction and the significance of regression analysis suggested rejection of the null hypothesis.

RQ2: Do dispositions (habitus) of the TESOL teachers predict their technology integration knowledge (TPACK)?

Study variables produced an R square of .336, which was statistically significant [$F(15,123) = 4.150$, $p < .001$]. The R square explained 33.6% of the variance in TPACK. The F-value of 4.150 ($p < .001$) suggested that the model was a significant predictor of TPACK. However, most of the predictive power of this model came from the technology use ($t=5.787$, $p < .001$), years teaching in current program ($t=-2.273$, $p < .05$), foreign languages proficiency ($t= 2.597$, $p < .01$) and native/ non-native status speaker ($t=-2.892$, $p < .005$) variables. The regression analysis results suggested rejection of the null hypothesis with 95% confidence.

A summary of regression analysis statistics indicated that the TESOL teachers' technology integration knowledge was negatively impacted by their length in their current program and their native/non-native status. The results also showed that teachers' technology integration knowledge was positively impacted by their frequency of technological use and their foreign languages fluency status. Squared multiple correlation

coefficient (R2 = .336) of regression analysis resulted in an effect size of 0.506 and a sample size of 139 achieved power of 0.99. According to Cohen's f2 method of effect size, this is a large effect size. The higher the effect size is, the stronger the relationship is and the greater the expected magnitude of the effect is on teachers' technological content knowledge (TPACK).

Discussion

There are several conclusions that can be drawn from the results of this study. The study results suggest that dispositions are a significant predictor of English language teachers' technology integration knowledge. Dispositions exist at the intersection of numerous influences from both proximal and distal forces. They range from family income (capital), program location (field) to use of technology (habitus). Most of the predictive power comes from variables related to technology use, foreign languages proficiency, native/ non-native status and years teaching in a program.

The findings related to technology use and foreign languages proficiency are consistent with previous research. Several studies indicate that frequent use of technology tends to result in effective technology integration (Meredith & Olofson, 2017; Niess, 2013). In other works, teachers with a history of technology use tend to bring technology into their classroom to a larger degree engaging students in the learning process. Meredith and Olofson (2017) explain that teachers' pursuit of technology indicates both a willingness to explore technologies as they emerge and positive attitudes toward the relevance of technology. Moreover, it was found that proficiency in languages other than English, gained either within the family or through formal instruction, facilitates the

development of language awareness and skills necessary to operate confidently and efficiently in the classroom (Ellis, 2004; Kosharna, Sytnyk & Labunets, 2019). Multilingual teachers' knowledge of other languages can be interpreted as a powerful contributor to their conception of language learning and technology integration.

The findings illuminate the nature of interactions of specific variables with TPACK. There is a significant negative relationship between native/non-native status, years of teaching in current program and technology integration knowledge. Teachers for whom English is not a first language have different educational experiences. They have to establish communication in a English, learn a new set of professional skills and develop pedagogy in teaching and learning English in a foreign language (Kosharna, Sytnyk & Labunets, 2019). The interaction between and among contextual levels and TPACK tend to influence teachers' dispositions as it relates to their experiences and their length or history with a program.

Teacher level contextual variables such as ethnicity, gender and native/ nonnative status, and meso/macro contextual variables such family income and socioeconomic status seem to exist in a dialogic relationship as they are mutually influential (Meredith & Olofson, 2017). Dispositions, as operationalized in this study, are largely explained by teacher-level contextual variables. Meso and macro contextual level variables do not significantly predict teachers' TPACK. Rosenberg and Koehler (2015) explain that teacher level contextual variables consider how teachers develop situated knowledge of technology, pedagogy, content, and their intersections in-context. On the other hand, macro contextual factors which are external and separate from teachers are thought of as

conditions that may affect teachers, but they are conceptually and analytically separate from them.

Macro level social structures and conditions are incorporated into dispositions (habitus) and an individual's own inclinations and preferences (Bourdieu, 1984). In this study, dispositions represent a logical conceptualization of the internalization of external structures that are separate from teachers as persons. The implication is that although these variables have less statistical predictor power and are distant from teachers, they are theorized as interacting with other variables in ways that impact teachers' technology integration knowledge. This is supported by the study results which indicate that the regression model that includes all the variables is a significant predictor of TPACK.

Teachers' dispositions can be understood within the cultural and economic capital resources that facilitate familiarity with technology use and enhance teachers' standing in the game or ''feel for the game'' (Bourdieu, 1984). They contextualize TESOL teachers' technology integration knowledge. Dispositions shape the fields within which an individual plays a particular game. In the education field, teachers are one set of actors whose goal is to develop appropriate technology integration knowledge applicable in educational settings. To achieve their goal, teachers employ the capital they have received from several resources and fields.

Bourdieu's (1984) theoretical framework explains that capital resources available to individual teachers vary based on their field experiences and context. The study results indicate that TESOL teachers do not directly act upon context levels in the process of developing their TPACK. While harmonious, the framework of context levels does little to

guide TPACK development. The results are consistent with prior critiques of the TPACK framework (Brantley-Diaz & Ertmer, 2013; Meredith & Olofson, 2017) that found that the wider conceptualization of context, although theoretically and conceptually comprehensible, the broader scope and applicability of the macro level is limited.

The study results indicate that factors particular to a teacher are vital in understanding the TPACK context in terms of subjective variables that explain not only technology integration, but also the knowledge construction that takes place in a given situation (Porras-Hernandez & Salinas-Amescua, 2013). The findings suggest the need to consider the factors that mediate or moderate the effect of disposition variables, mainly teachers' length in their current program, their native/non-native status, their frequency of technology use and their foreign languages fluency status, on TPACK knowledge. Other possible factors that may help understand teachers' TPACK beyond the variables examined in this dissertation include social and contextual factors such as administrative leadership, program culture, access to proper equipment and infrastructure, lack of support, program or team dynamics and individual teacher perception of usefulness or value technologies. They could explain disposition variables such as those related to length in the program.

Practical and Theoretical Implications

The findings of this study have implications that inform both practice and theory of technology integration and knowledge in the TESOL field. They align with Kumaravadivelu's (2001) postmethod pedagogy which provides teachers with opportunities to reflect on their context or particularity while engaging with history or past experiences to explore possibilities. They have the potential to shape learning spaces,

methods and activities undertaken by educators, technology experts and leaders to advance the TESOL teachers' technology integration knowledge. The examination of the various contextual variables that predict technology integration knowledge has the potential to lead to fruitful explorations that enable teachers to envision how their contextual subjective variables limit or expand their TPACK knowledge.

Research indicates that technology training or exposure alone does not create an effective technology-using teacher (Vannatta & Nancy, 2004). There is a need to bring together research about context that includes dispositions, as operationalized, in this study, and research on best practices in educational technology. Conceptualizing technological pedagogical content knowledge (TPACK) as a process of developing technology integration knowledge in context provides insights into how teachers interact with contextual variables and how their experiences shape their technology integration knowledge. As such, it is important to consider how elements of context overlap with the components of TPACK to facilitate or hinder teachers' technology integration knowledge development when designing teachers' professional development and training programs.

Interventions that leverage contextual factors and their impact on teacher knowledge should take into account teachers' demographic information and other relevant contextual variables such as foreign languages fluency and native/nonnative status. They should be aware of what dispositional contextual factors are most influential in implementing a successful technology initiative. Viewing context as central to educational technology has important implications for technology integration knowledge development and practice. It encourages the investigation of contextual factors that influence TPACK

development. It also recognizes that changes in context levels have the potential to contribute to the growth of teachers' technology integration knowledge.

Teachers should be supported to develop their technology integration knowledge by leveraging their capital, field and habits to cultivate best practices in their unique contexts. Disposition factors should be instrumental in shaping the design of technology training programs. Teachers should be given the opportunity to practice, reflect and develop their technology integration knowledge on a continuous basis according to their level of dispositional engagement with technology or habitus. There could be value in having TESOL teachers with different levels of dispositional engagement with technology come together to reflect on their use of technology and their technology integration knowledge development. This could be facilitated in learning communities or support groups. Tseng, Lien, and Chen (2016) found that support groups are instrumental in promoting the TPACK of language instructors. Learning communities may increase exposure to and frequent use of technology, which was found to significantly predict teachers' technology integration knowledge in this study.

Research indicates that there is a lack of attention to context in the studies that used TPACK as a theoretical framework (Rosenberg & Koehler, 2015). Several studies fail to incorporate contextual factors that capture the lived complexities of teachers (Swallow & Olofson, 2017; Voogt et al., 2013). Swallow and Olofson (2017) explain that there is limited understanding of the interactions between particular contexts and teacher knowledge development. The current study presents empirical evidence to support the measurement and inclusion of contextual variables when conceptualizing and theorizing

TPACK. Using Bourdieu's (1977) theoretical framework, it expands the definition of context to encompass a much wider range of dispositions, including those that are mediated through external social structures.

Bourdieu's (1977) concept of habitus enables us to investigate contextual factors at the individual and social structures. It provides a way to include subjective contextual variables systematically and comprehensively in TPACK research. Results of this study contribute to the existing body of TPACK research by developing the concept of context further. As teachers continue to experience challenges with technology, the theoretical framework applied in this study will provide guidance to researchers to describe, measure and understand contextual variables that impact teachers' TPACK. There is a need for a new mindset and a theory that interpret technology integration knowledge not only as facilitated by tools used by teachers to drive engagement and student learning, but also as a means capable of offering solutions to societal issues that affect technology integration knowledge in diverse settings, especially those that present challenges to teachers and those that present unique opportunities.

Recommendations for Future Research

This dissertation examined the extent to which context can lead to a better understanding of the variables that predict technology integration knowledge. Conclusions gleaned from the study should be taken within the limits of the study and the theoretical framework used. Future research direction involves expanding the unit of analysis to include both teachers and their different contexts. This section provides recommendations for future research based on the evaluation of the findings.

Study results indicate that the length in current program variables negatively affects teachers' technology integration knowledge. Previous research demonstrated that the context of employment impacts perception of technology-enabled solution benefits and practice (Wraikat, Bellamy, & Tang, 2017). Future research may examine how and why employment context and length in a program impact teachers' technology integration knowledge. This research will move away from a focus on factors at the teacher level toward variables embedded in collaboration and work team dynamics. Employment context could provide a better understanding of the nature of collaboration within programs and whether collaboration between teachers to create lessons that integrate technology influences their dispositions. Technology integration knowledge from this perspective could be examined using nested data and multilevel analysis.

The results of the study also showed that native status negatively impacts teachers' TPACK. Future research could examine dispositions and TPACK cross-culturally. This will broaden the scope of the TESOL teacher population delimited in this study to further examine if culture predicts or moderates technology integration knowledge. Broadening the sample of the study and including cross cultural context measures of TPACK may contribute to a better understanding of the ways in which technology integration knowledge develops and interacts with cultural variables.

Future research could also examine the impact of dispositions on TESOL teachers' technology integration knowledge over time. Leadership support and other areas related to collaboration in the work environment could be explored as variables that may affect or moderate TPACK knowledge development. For example, future longitudinal research

could examine how COVID-19 has impacted teachers' TPACK development. Such research could investigate what technologies used during COVID-19, how they were implemented, and to what degree remote instruction impacted teachers' TPACK development.

The TPACK survey provided quantitative data for this study. Qualitative data could provide insight into how teachers develop their technology integration knowledge. Qualitative data would capture the reasons why and how certain dispositional contextual variables have more impact than others on teachers' technology integration knowledge. Future research could incorporate qualitative data to enhance the predictive power of Bourdieu's model. Qualitative data could be gathered from the participants through interviews or focus groups to gain a deeper understanding of the relationship between dispositions and technology integration knowledge.

Context could also be examined using other theoretical models in an attempt to predict the complexity of technology integration knowledge. Measures of capital and agency, for example, could be integrated into a study to expand our understanding of the relationship between teachers' technology integration knowledge and agency. This research would allow a better understanding of teachers' agency in classrooms, schools, and communities. Future research could also investigate technology-related behavioral intentions and technology integration knowledge. Different populations, technologies and content areas could be compared.

Summary

This chapter presented a comprehensive overview of the study. The results from multiple regression analyses provided the background for a discussion of the practical and theoretical implications. Recommendations are made for future research in light of the conclusions drawn from the findings. The main goal was to bring together research about context and educational technology to examine the role of dispositions in predicting teachers' technology integration knowledge. The application of Bourdieu's concept of habitus and technological pedagogical content knowledge framework indicate that depositions, as defined by Bourdieu's theoretical framework, predict TESOL teachers' technological pedagogical content knowledge.

These results are important for evaluation of teachers' technology integration knowledge. Instead of attributing the lack of technology integration to resources and teacher beliefs about the role of technology in education, this dissertation suggests that teachers' technology integration can be explained by their dispositional contextual factors. This dissertation makes contributions toward addressing the conceptual challenges facing the understanding and application of context. It advances the TPACK framework by examining a more nuanced notion of context by including teachers' subjective contextual variables and dispositions to understand TPACK knowledge. Results from this study can be used to provide guidance to promote effective technology integration in English language programs. A discussion of the conclusions and implications provided connections between research and practice in the broader context of previous and current literature in the area of instructional technology. Recommendations for future research were provided in consideration of the conclusions, implications, and current literature.

References

Abbitt, J. T. (2011). Measuring technological pedagogical content knowledge in preservice teacher education: A review of current methods and instruments. *Journal of Research on Technology in Education, 43 (*4), 281-300

Adam, A., S. (2017). A framework for seeking the connections between technology, pedagogy, and culture: A study in the Maldives. *Journal of Open, Flexible and Distance Learning, 21*(1), 35–51.

Agyei, D. D., & Voogt, J. (2012). Developing technological pedagogical content knowledge in pre-service mathematics teachers through collaborative design. *Australasian Journal of Educational Technology, 28 (*4), 547-564.

Ahmadi, D. M. R. (2018). The use of technology in English language learning: A literature review. *International Journal of Research in English Education, 3 (*2), 115-125.

Al-Amri, M. (2010). Humanizing TESOL curriculum for diverse adult ESL learners in the age of globalization. *International Journal of the Humanities*, *8* (8), 103-112.

Alayyar, G., Fisser, P., & Voogt, J. (2012). Developing Technological Pedagogical Content Knowledge in pre-service science teachers: Support from blended learning. *Australasian Journal of Educational Technology, 28 (*8), 1298-1316.

Alghasab, M., Hardman, J., & Handley, Z. (2019). Teacher-student interaction on wikis: Fostering collaborative learning and writing. *Learning, Culture and Social Interaction, 21(2),* 10-20.

Alsuhaibani, Z. (2019). Using computer-assisted language learning in classrooms: What does research say about teachers' beliefs and practices?. *Theory and Practice in Language Studies, 9 (*6), 723.

Anderson, A., Barham, N., & Northcote, M. (2013). Using the TPACK framework to unite disciplines in online learning. *Australasian Journal of Educational Technology, 29 (*4), 549-565.

Andrei, E. (2017). Technology in teaching English language learners: The case of three middle school teachers. *TESOL Journal, 8 (*2), 409-431.

Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). *Computers & Education, 52 (*1), 154-168.

Ansyari, M. F. (2015). Designing and evaluating a professional development programme for basic technology integration in English as a foreign language (EFL) Classrooms. *Australasian Journal of Educational Technology, 31 (*6), 699-712.

Archambault, L. M., & Barnett, J. H. (2010). Revisiting technological pedagogical content knowledge: Exploring the TPACK framework. *Computers & Education, 55 (*4), 1656-1662.

Archambault, L., & Crippen, K. (2009). Examining TPACK among K-12 online distance educators in the United States. *Contemporary Issues in Technology and Teacher Education (cite Journal), 9 (*1), 71-88.

Arslan, Y. (2015). Determination of technopedagogical content knowledge competencies of preservice physical education teachers: A Turkish sample. *Journal of Teaching in Physical Education, 34* (2), 225-241

Aşık, A., İnce, B. H. E., & Vural, A. S. (2018). Investigating learning technology by design approach in pre-service language teacher education: Collaborative and reflective experiences. *Journal of Qualitative Research in Education, 6 (*1), 1-17.

Baser, D., Kopcha, T. J., & Ozden, M. Y. (2016). Developing a technological pedagogical content knowledge (TPACK) Assessment for preservice teachers learning to teach English as a foreign language. *Computer Assisted Language Learning, 29 (*4), 749-764.

Baser, D., Kopcha, T. J., & Ozden, M. Y. (2016). Developing a technological pedagogical content knowledge (TPACK) assessment for preservice teachers learning to teach English as a foreign language. *Computer Assisted Language Learning, 29 (*4), 749-764.

Beckman, K., Apps, T., Bennett, S., & Lockyer, L. (2018). Conceptualising technology practice in education using Bourdieu's sociology. *Learning, Media and Technology, 43 (*2), 197-210.

Belland, B. R. (2009). Using the theory of habitus to move beyond the study of barriers to technology integration. *Computers & Education*, *52* (2), 353-364.

Bernacki, M. L., Crompton, H., & Greene, J. A. (2020). Towards convergence of mobile and psychological theories of learning. *Contemporary Educational Psychology, 60,* 1-7

Bilici, S. C., Yamak, H., Kavak, N., & Guzey, S. S. (2013). Technological pedagogical content knowledge self-efficacy scale (TPACK-SeS) for pre-service science teachers: Construction, validation, and reliability. *Eurasian Journal of Educational Research, 52 (*52), 37-60.

Booth, A. (2006). "Brimful of STARLITE": toward standards for reporting literature searches. *Journal- Medical Library Association, 94 (*4), 421-429.

Boschman, F. B., McKenney, S., Pieters, J. M., & Voogt, J. (2016). Exploring the role of content knowledge in teacher design conversations. *Journal of Computer Assisted Learning, 32 (*2), 157-169.

Bostancıoğlu, A., & Handley, Z. (2018). Developing and validating a questionnaire for evaluating the EFL 'Total PACKage': Technological Pedagogical Content Knowledge (TPACK) for English as a Foreign Language (EFL). *Computer Assisted Language Learning, 31,* 572-598.

Bourdieu, P. (1977).*Outline of a theory of practice*. Cambridge, England: Cambridge University Press.

Bourdieu, P. (1984). *Distinction: a social critique of the judgment of taste*. Massachusetts: Harvard University Press.

Bourdieu, P. (1986). The forms of capital. In J.G. Richardson (Ed.) *Handbook oftheory and research for the sociology of education.* New York, NY: Greenwood Press.

Bourdieu, P. (1990) *The logic of practice*. Cambridge: Polity Press

Bourdieu, P. (1993). *Bourdieu: Critical perspectives*. Chicago: University of Chicago Press.

Brantley-Dias, L., & Ertmer, P. A. (2013). Goldilocks and TPACK: Is the construct "just right?". *Journal of Research on Technology in Education, 46 (*2), 103-128.

Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development Using Information and Communication Technology*, 8 (1), 136–155.

Bureau of Labor Statistics, U.S. Department of Labor. (2019). *Occupational outlook handbook*, Adult Literacy and High School Equivalency Diploma Teachers. Retrieved from https://www.bls.gov/ooh/education-training-and library/adult-literacy-and-ged-teachers.htm

Canagarajah, S. (2016). TESOL as a Professional community: A half‐century of pedagogy, research, and theory. *TESOL Quarterly*, *50* (1), 7-41.

Chai, C. S., Chin, C. K., Koh, J. H. L., & Tan, C. L. (2013). Exploring Singaporean Chinese language teachers' technological Pedagogical content knowledge and its

relationship to the teachers' pedagogical beliefs. *Asia-pacific Education Researcher, 22(*4), 657-666.

Chai, C. S., Koh, J. H. L., & Tsai, C.C. (2010). Facilitating Preservice Teachers' Development of Technological, Pedagogical, and Content Knowledge (TPACK). *Educational Technology & Society, 13 (*4), 63-73.

Chai, C. S., Koh, J. H. L., & Tsai, C. C. (2013). A review of technological pedagogical content knowledge. *Educational Technology & Society*, 16 (2), 31–51.

Chai, C. S., Ng, E. M. W., Lee, W. H., Hong, H.-Y., & Koh, J. H. L. (2013). Validating and modeling technological pedagogical content knowledge (TPCK) framework among Asian pre- service teachers. Australasia Journal of Educational Technology, 29(1), 41–53.

Chapelle, C. A. and Sauro, S. (2017). Introduction to the *handbook of technology and second language teaching and learning* . In The *Handbook of Technology and Second Language Teaching and Learning* (eds C. A. Chapelle and S. Sauro). doi:10.1002/9781118914069.ch1

Christ, T., & Wang, X. C. (2008). Negotiation of 'how to' at the cross-section of cultural capital and habitus: Young children's procedural practices in a student-led literacy group. *Journal of Early Childhood Literacy, 8 (*2), 177-211.

Clair, N. (1995). Mainstream classroom teachers and ESL students. *TESOL Quarterly, 29, (*1), 189-196.

Cockerham W.C., Hinote B.P. (2009). Quantifying habitus: future directions. In: Robson K., Sanders C. (eds) *Quantifying Theory: Pierre Bourdieu.* Springer, Dordrecht

Cohen, B. H. (2001). *Explaining psychological statistics* (2nd ed.). New York: Wiley

Collin, R. (2011). Dress rehearsal: A Bourdieusian analysis of body work in career portfolio programs. *British Journal of Sociology of Education, 32* (5), 785-804.

Costa, C., Burke, C., & Murphy, M. (2019). Capturing habitus: theory, method and reflexivity. *International Journal of Research & Method in Education, 42 (*1), 19-32.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.

Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research*. Los Angeles: SAGE Publications.

Czerniewicz, L. (2008). Distinguishing the field of educational technology. *Electronic Journal of E-Learning, 6 (*3), 171-178.

Dani, S. (2017). Immigrant/learner, affiliate, author, expert: The intersections of L2 writing, identity, and computer-mediated communication. *Working Papers in Applied Linguistics and TESOL, 17 (*2), 71-85.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user Acceptance of information technology. *Mis Quarterly, 13 (* 3), 319-340.

DeBoer, J., Ho, A. D., Stump, G. S., & Breslow, L. (2014). *Changing 'course': Reconceptualizing educational variables for massive open online courses.* Educational Researcher, 43 (2), 74-84. doi:10.3102/0013189X14523038

Dong, Y., Dong, Y., Sang, G.Y., Chai, C. S., Koh, J. H. L., & Tsai, C.C. (2015). Exploring the profiles and interplays of pre-service and in-service teachers' technological pedagogical content knowledge (TPACK) in China. *Educational Technology and Society, 18 (*1), 158-169.

Dumais, S. A. (2002). Cultural capital, gender, and school success: The role of habitus. *Sociology of Education, 75* (1), 44-68

Dunn, S. C. (2019). Learning to communicate across language and culture: Demographic change, schools, and parents in adult ESL classes. *School Community Journal, 29 (*1), 9-38.

Edgerton, J. D., & Roberts, L. W. (2014). Cultural Capital or Habitus? Bourdieu and beyond in the Explanation of Enduring Educational Inequality. *Theory and Research in Education, 12 (*2), 193-220.

Edgerton, J. D., Roberts, L. W., & Peter, T. (2013). Disparities in academic achievement: Assessing the role of habitus and practice. *Social Indicators Research, 114 (*2), 303-322.

Edgerton, J. D., Peter, T., & Roberts, L. W. (2014). Gendered habitus and gender differences in academic achievement. *Alberta Journal of Educational Research, 60 (*1), 182-212.

Ellis, E. M. (2004). The invisible multilingual teacher: The contribution of language background to Australian ESL teachers' professional knowledge and beliefs. *International Journal of Multilingualism, 1 (*2), 90-108.

Evans, M. A., Nino, M., Deater-Deckard, K., & Chang, M. (2015). School-wide adoption of a mathematics learning game in a middle school setting: Using the TPACK Framework to analyze effects on practice. *The Asia-Pacific Education Researcher, 24 (*3), 495-504.

Field, A. (2013). *Discovering statistics using SPSS* (4th ed.). Los Angeles, CA: SAGE.

Field, A. (2017) *Discovering statistics using IBM SPSS statistics, 5th edition.* SAGE Publications, London. ISBN 9781526419521

Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Gebhardt, E. (2014). *Preparing for life in a digital age: The IEA International Computer and Information Literacy Study International Report* (ICILS 2013). Amsterdam: IEA.

Gall, M. D., Gall, J. P., & Borg, W. D. (2007). *Educational research: An introduction* (8th ed.). Boston, MA: Pearson.

Graham, C. R., Borup, J., & Smith, N. B. (2012). Using TPACK as a framework to understand teacher candidates' technology integration decisions. *Journal of Computer Assisted Learning, 28 (*6), 530-546.

Grenfell, M. (1996). Bourdieu and initial teacher education--a post structuralist approach. *British Educational Research Journal*, *22*(3), 287-303

Grenfell, M. (2008). *Pierre Bourdieu: Key concepts*. Durham, UK: Accumen Publishing.

Grosse, C. U. (2004). The competitive advantage of foreign languages and cultural knowledge. *The Modern Language Journal, 88 (*3), 351-3

Hamilton, E. R., Rosenberg, J. M., & Akcaoglu, M. (2016). The substitution augmentation modification Redefinition (SAMR) Model: A critical review and suggestions for Its Use. *Techtrends: Linking Research and Practice to Improve Learning, 60 (* 5), 433-441.

Hansen, C. (2018). Institutional accreditation. In The TESOL Encyclopedia of English Language Teaching (eds J.I. Liontas, T. International Association and M. DelliCarpini). doi:10.1002/9781118784235.eelt0118

Harris, J., & Hofer, M. J. (2014). "TPACK stories": Schools and school districts repurposing a theoretical construct for technology-related professional development. Paper presented at the American Education Research Association Annual Meeting, Philadelphia, PA.

Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' technological pedagogical content knowledge and learning activity types: Curriculum-based technology integration reframed. *Journal of Research on Technology in Education,* 41 (4), 393-416.

Harris, J., Phillips, M., Koehler, M. J., & Rosenberg, J. M. (2017). TPCK/TPACK research and development: Past, present, and future directions. *Australasian Journal of Educational Technology*, 33 (3). i-viii

Hartshorn, K. J., Evans, N. W., Egbert, J., & Johnson, A. (2017). Discipline-specific reading expectation and challenges for ESL learners in US universities. *Reading in a Foreign Language, 29 (*1), 36-60.

Hubbard, P. (2013). Making a case for learner training in technology enhanced language learning environments. *Calico Journal, 30 (*2), 163-178.

Institute of International Education, Inc. (2018). Open Doors Report. Retrieved from https://www.iie.org/en/Research-and-Insights/Open-Doors/Data/Fall-International-Enrollments-Snapshot-Reports

Jeong, Y., & Jung, M. J. (2016). Application and interpretation of hierarchical multiple regression. *Orthopaedic Nursing, 35 (*5), 338-341

Johnson, K. E. (2016). Language teacher education. In G. Hall (Ed.) *The Routledge Handbook of English Language Teaching*. (pp. 121-134). London: Routledge.

Johnson, N. F. (2019). Dysfunctional devices in the classroom meet the habitus of the New. *E-learning* and Digital Media, 16 (3), 208-220.

Kale, U. (2014). Can they plan to teach with Web 2.0? Future teachers' potential use of the emerging web. *Technology, Pedagogy and Education*, 23 (4), 471-489

Karaferye, F. (2017). An introduction to program accreditation in foreign language schools in Turkey. *European Journal of Multidisciplinary Studies, 4 (*2), 62.

Kavanoz, S., Yuksel, H. G., & Ozcan, E. (2015). Pre-service teachers' self-efficacy perceptions on web pedagogical content knowledge. *Computers and Education, 85,* 94-101.

Kelly, M. (2010). Technological pedagogical content knowledge (TPACK): A content analysis of 2006-2009 print journal articles. In D. Gibson & B. Dodge (Eds.), *Society for Information Technology & Teacher Education International Conference* (Vol. 2010, pp. 3880–3888). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE). Retrieved from http://www.editlib.org/p/33985/

Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals*, *51*(1), 205–218.

Kessler, G., & Hubbard, P. (2017). Language teacher education and technology. In C. Chapelle & S. Sauro (Eds.), *The Handbook of Technology and Second Language Teaching and Learning* (pp. 278-291). Wiley-Blackwell: Oxford.

Koehler, M. J., & Mishra, P. (2005). What happens when teachers design educational technology? The development of technological pedagogical content knowledge. *Journal of Educational Computing Research, 32 (*2), 131-152.

Koehler, M. J., & Mishra, P. (2008). Introducing TPCK. In AACTE Committee on Technology and Innovation (Eds.), *Hand- book of technological pedagogical content knowledge (TPCK) for educators* (pp. 3–29). New York, NY: Routledge.

Koehler, M.J., Mishra, P., Akcaoglu, M., & Rosenberg, J.M. (2016). The technological pedagogical content knowledge framework for teachers and teacher educators. In M.R. Pani- grahi (Ed.), Resource book on ICT integrated teacher education (pp. 20–30). New Delhi: Commonwealth Educational Media Centre for Asia.

Koehler, M., Mishra, P., Kereluik, K., Shin, T. S., & Graham, C. R. (2014). The technological pedagogical content knowledge framework. In M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (Eds.), Handbook of research on educational communications and technology (4th ed., pp. 101–111). New York, NY: Springer-Verlag.

Koehler, M., Shin, T., & Mishra, P. (2011). How do we measure TPACK? Let me count the ways. In R. N. Ronau, C. R. Rakes, & M. L. Niess (Eds.), Educational technology, teacher knowledge, and classroom impact: A research handbook on frameworks and approaches (pp. 16–31). Hershey, PA: Information Science Reference.

Koh, J. H. L., Chai, C. S., & Tay, L. Y. (2014). TPACK-in-action: Unpacking the contextual influences of teachers' construction of technological pedagogical content knowledge (TPACK). Computers & Education, 78, 20–29.

Korucu-Kis, S., & Ozmen, K. S. (2018). Toward an integrated technology integration framework for teacher preparation: Instructional technological competence. *I-manager's Journal on School Educational Technology, 14 (*2), 31.

Kosharna, N., Sytnyk, O. & Labunets, Yu. (2019). Formation of future teachers' leadership qualities through learning a foreign language. Advances in Social Science, Education and Humanities Research, Proceedings of the *3rd International Conference on Social, Economic, and Academic Leadership* (ICSEAL 2019). Atlantis Press, 318, 238–239. 10.2991/icseal-19.2019.46.

Kumaravadivelu, B. (2001). Toward a postmethod pedagogy. *TESOL Quarterly, 35* (4), 537– 560.

Kumaravadivelu, B. (2006). TESOL methods: Changing tracks, challenging trends. *Tesol Quarterly*, *40* (1), 59-81.

Kumaravadivelu, B. (2009). *Understanding language teaching: From method to postmethod*. New York: Routledge.

Li, G., Jee, Y., & Sun, Z. (2018). Technology as an educational equalizer for EFL Learning in Rural China? Evidence from the impact of technology-assisted practices on teacher-student interaction in primary classrooms. *Language and Literacy*, *20* (3), 159–184.

Li, M. (2012). Use of wikis in second/foreign language classes: A literature review. *CALL-EJ*, 13 (1), 17-35.

Li, M. (2013). Individual novices and collective experts: Collective scaffolding in wiki-based small group writing. *System Oxford-, 41 (*3), 752-769.

Lim, C. P. & Chai, C. S. (2008). Teachers' pedagogical beliefs and their planning and conduct of computer-mediated classroom lessons. *British Journal of Educational Technology, 39* (5), 807-828

Liu, H., & Kleinsasser, R. (2015). Exploring EFL teachers' call knowledge and competencies: In-service program perspectives. *Language Learning and Technology*, *19* (1), 119-138.

Liu, H., Wang, L., & Koehler, M. J. (2019). Exploring the intention-behavior gap in the technology acceptance model: A mixed-methods study in the context of foreign-language teaching in China. *British Journal of Educational Technology, 50 (*5), 2536-2556.

Liu, M., Moore, Z., Graham, L., & Lee, S. (2003). A Look at the research on computer-based technology use in second language learning: A Review of the literature from 1990-2000. *Journal of Research on Technology in Education,* 34 (3), 250-273.

Liu, S.H., Tsai, H.C., & Huang, Y.T. (2015). Collaborative professional development of mentor teachers and pre-service teachers in relation to technology integration. *Educational Technology & Society, 18 (*3), 161-172.

Lu, L., & Lei, J. (2012). Using live dual modeling to help preservice teachers develop TPACK. *Journal of Digital Learning in Teacher Education, 29 (*1), 14-22.

Lu, X .(2018) .Natural language processing and intelligent computer-assisted language learning (ICALL). In:

Lux, N. J., Bangert, A. W., & Whittier, D. B. (2011). The Development of an instrument to assess preservice teacher's technological pedagogical content knowledge. *Journal of Educational Computing Research, 45 (*4), 415-431.

Marquardt, M., & Waddill, D. (2004). The power of learning in action learning: a conceptual analysis of how the five schools of adult learning theories are incorporated within the practice of action learning. *Action Learning: Research and Practice, 1 (*2), 185-202.

McMillan, J.H. (2016). *Fundamentals of education research* (7th ed.). Boston, MA: Pearson.

Meredith J. C. Swallow & Mark W. Olofson. (2017). Contextual understandings in the TPACK framework, *Journal of Research on Technology in Education*, 49 (3) 4, 228-244, DOI: 10.1080/15391523.2017.1347537

Meyers, L. S., Gamst, G., & Guarino, A. J. (2017). *Applied multivariate research* (3rd ed.). Los Angeles, CA: Sage Publications.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108 (6), 1017–1054

Nash, R. (2002). A realist framework for the sociology of education: Thinking with Bourdieu. *Educational Philosophy and Theory, 34 (*3), 273-288.

Niess, M. L. (2013). Central component descriptors for levels of technological pedagogical content knowledge. *Journal of Educational Computing Research, 48 (*2), 173-198.

Oliver, K & Townsend, L. (2013). Preparing teachers for technology integration: Programs, competencies, and factors from the literature. *National Teacher Education Journal,* 6 (3), 41-60.

Olofson, M. W., Swallow, M. J. C., & Neumann, M. D. (April 01, 2016). TPACKing: A constructivist framing of TPACK to analyze teachers' construction of knowledge. *Computers and Education, 95,* 188-201.

Papanikolaou, K., Gouli, E., & Makri, K. (2014). Designing pre-service teacher training based on a combination of TPACK and communities of Inquiry. *Procedia - Social and Behavioral Sciences, 116,* 3437-3442.

Perkins, D. (1986). *Knowledge as Design*. Hillsdale, New Jersey: Lawrence Erlbaum.

Phillips, M. (2016). Re-contextualising TPACK: exploring teachers' (non-)use of digital technologies. *Technology, Pedagogy and Education, 25 (*5), 555-571.

Phillips, M., Koehler, M., Rosenberg, J. & Zunica, B. (2017). Unpacking TPACK: reconsidering knowledge and context in teacher practice. In P. Resta & S. Smith (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 2422-2429). Austin, TX, United States:

Association for the Advancement of Computing in Education (AACE). Retrieved November 02, 2019 from https://www.learntechlib.org/primary/p/177538/

Porras-Hernandez, L. H., & Salinas-Amescua, B. (2013). Strengthening TPACK: A broader notion of context and the use of teacher's narratives to reveal knowledge construction. Journal of Educational Computing Research, 48, 223–244

Prawat, R. S. (1992). Teachers' beliefs about teaching and learning: A constructivist perspective. *American Journal of Education, 100 (*3), 354-395

Rahimi, M., & Pourshahbaz, S. (2019). *English as a foreign language teachers' TPACK: Emerging research and opportunities*.

Razfar, A., & Simon, J. (2011). Course-taking patterns of latino ESL students: Mobility and mainstreaming in urban community colleges in the United States. *TESOL Quarterly, 45 (*4), 595-627.

Reay, D. (2004). 'It's all becoming a habitus': beyond the habitual use of habitus in educational research. *British Journal of Sociology of Education, 25 (*4), 431-444.

Reay, D., David, M. & Bowe, R. (2001). Making a difference? Institutional habitus and higher education choice. *Sociological Research Online*, 5 (4).

Redmond, P., & Peled, Y. (2019). Exploring TPACK among pre-service teachers in Australia and Israel. *British Journal of Educational Technology, 50 (*4), 2040-2054.

Reeves, M. (2019). The case of the commission on English language program accreditation: US specialized accreditation as a response to the increasing demand for quality qssurance in foreign language education. In: Staub D. (eds) *Quality Assurance and Accreditation in Foreign Language Education (pp.* 37-54*)*. Springer: Cham.

Reio, T. G. (2016). Nonexperimental research: strengths, weaknesses and issues of precision. *European Journal of Training and Development, 40 (8/9),* 676-690.

Reynaldo, J.A.S. (1999). Cronbach's Alpha: A tool for assessing the reliability of scales. *Journal of Extension*, 37 (2), 1-4.

Rosenberg, J. M., & Koehler, M. J. (2015). Context and technological pedagogical content Knowledge (TPACK): A systematic review. *Journal of Research on Technology in Education, 47(*3), 186-210.

Sahin, I. (2011). Development of survey of technological pedagogical and content knowledge (TPACK). *Turkish Online Journal of Educational Technology, 10 (*1), 97-105.

Salaberry, M. R. (2001). The use of technology for second language learning and teaching: A retrospective. *The Modern Language Journal,* 85 (1), 39-56.

Saudelli, M. G., & Ciampa, K. (2016). Exploring the role of TPACK and teacher self-efficacy: an ethnographic case study of three iPad language arts classes. *Technology, Pedagogy and Education, 25 (*2), 227-247.

Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological pedagogical content knowledge (Track): The development and validation of an assessment instrument for preservice teachers. *Journal of Research on Technology in Education*, *42* (2), 123-149

Setiawan, I., Hamra, A., Jabu, B., & Susilo, S. (2018). Exploring a teacher educator's experiences in modeling TPACK to create English language multimedia in technology courses. *Journal of Language Teaching and Research, 9 (*5), 1041

Shulman, L. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15* (2), 4-14.

Shusterman, R. (Ed.) (1999) *Bourdieu: A Critical Reader.* Oxford, Blackwell.

Smith, B. (2017). Technology‐enhanced SLA research In C. Chapelle & S. Sauro (Eds.), *The Handbook of Technology and Second Language Teaching and Learning (pp.* 444- 458*)*. Wiley-Blackwell: Oxford.

Sterne, J. (2003). Bourdieu, technique and technology. *Cultural Studies*, *17* (3-4), 367-389.

Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). Mahwah, NJ: Routledge Academic.

Şule, B. T., Zühal, C., & Tuğba, I. (2019). A holistic view to barriers to technology integration in education. *Turkish Online Journal of Qualitative Inquiry, 4 (*10), 439-461.

Swallow, M. J. C., & Olofson, M. W. (2017). Contextual understandings in the TPACK framework. *Journal of Research on Technology in Education*, 49 (3-4) 228-244.

Swartz, D. (1997). *Culture and power: The sociology of Pierre Bourdieu*. London: University of Chica

Szasz, P. (2009). State of the profession: Intensive english programs. *Catesol Journal, 21, (*1), 194-201.

Tai, S.J. D. (2015). From TPACK-in-action workshops to classrooms: CALL competency developed and integrated. *Language Learning & Technology, 19 (* 1), 139-164.

The commission on English Language Program Accreditation (CEA). (2019). CEA Standards for English language programs and institutions. https://cea-accredit.org/about-cea/standards

Tseng, J. J., Lien, Y. J., & Chen, H. J. (2016). Using a teacher support group to develop teacher knowledge of Mandarin teaching via web conferencing technology. *Computer Assisted Language Learning, 29* (1), 127–147.

Tseng, J.J. (2018). Exploring TPACK-SLA interface: Insights from the computer-enhanced classroom. *Computer Assisted Language Learning, 31(*4), 390-412.

Tseng, J.J., Cheng, Y.S., & Yeh, H.N. (2019). How pre-service English teachers enact TPACK in the context of web-conferencing teaching: A design thinking approach. *Computers and Education, 128,* 171-182.

Turgut, Y. (2017). An analysis of TPACK integration into English language teacher education programs: A comparative study of Turkey and Denmark. *I-manager's Journal on English Language Teaching, 7 (*4), 1-15

US. Immigration and Customs Enforcement. (2019, October). Updates from SEVP (Student and Exchange Visitor Program). 2019 IEP Stakeholders Conference, Washington DC.

Valtonen, T., Sointu, E., Kukkonen, J., Kontkanen, S., Lambert, M. C., & Mäkitalo-Siegl, K. (2017). TPACK Updated to measure pre-service teachers' twenty-first century skills. *Australasian Journal of Educational Technology, 33 (*3), 15-31.

Van Olphen, M. (2008). TPCK: an integrated framework for educating world language teachers. In American Association of Colleges for Teacher Education. (Eds.), *Handbook of technological pedagogical content knowledge (TPCK) for educators* (pp.107-128). New York: Routledge for the American Association of Colleges for Teacher Education.

Vannatta, R. A., & Nancy, F. (2004). Teacher dispositions as oredictors of classroom technology use. *Journal of Research on Technology in Education, 36 (*3), 253-271.

Voogt, J., Fisser, P., Roblin, N. P., Tondeur, J., & van Braak, J. (2013). Technological pedagogical content knowledge—A review of the literature. *Journal of Computer Assisted Learning*, 29 (2), 109–121

Wacquant, L. (2016). A concise genealogy and anatomy of habitus. *The Sociological Review, 64 (*1), 64-72.

Walther, M. (2014) Bourdieu's theory of practice as theoretical framework. In: *Repatriation to France and Germany*. mir-Edition. Springer Gabler, Wiesbaden

Willermark, S. (2018). Technological pedagogical and content Knowledge: A review of empirical studies published from 2011 to 2016. *Journal of Educational Computing Research, 56 (*3), 315-343.

Winkle-Wagner, R. (2010). *Cultural capital: the promises and pitfalls in educational research*. New Jersey: Wiley Periodicals.

Wraikat, H., Bellamy, A., & Tang, H. (2017). Exploring organizational readiness factors for new technology implementation within non-profit organizations. *Open Journal of Social Sciences, 5* (12), 1-13. doi:10.4236/jss.2017.512001

Xi, L. (2019). Achievement goal orientations as predictors of self-regulated learning strategies of international ESL students. *International Journal of Teaching and Learning in Higher Education*, 31 *(2),*214-223.

Xin, J. F., & Affrunti, R.L. (2019). Using iPads in vocabulary instruction for English language learners. *Computers in the Schools, 36 (*1), 69-82.

Yang, S., & Walker, V. (2015). A pedagogical framework for technology integration in ESL classrooms: The promises and challenges of integration. *Journal of Educational Multimedia and Hypermedia*, *24* (2), 179-203.

Yeh, Y., Hsu, Y., Wu, H., Hwang, F. & Lin, T. (2014). Developing and validating technological pedagogical content knowledge-practical (TPACK-practical) through the Delphi survey technique. British Journal of Educational Technology, 45, 707–722.

APPENDIX A

1. Articles and Codes for the Publications Included in the Systematic Review (Publication Outlet, Research Method, and Population Sample)

Article #	Authors & Year	Publication outlet	Research method	Population sample
TPACK studies that focused on English as a second language subject area only				
1	Bandi-Rao and Sepp (2014)	Journal of Basic Writing	Qualitative	EFL students
2	Baser, Kopcha and Ozden 2016)	Computer Assisted Language Learning	Mixed methods	Pre-service teachers
3	Bostancıoğlu and Handley (2018)	Computer Assisted Language Learning,	Mixed methods	In-service teachers
4	Debbagh and Jones (2018)	Journal of Educational Multimedia and Hypermedia	Qualitative	In-service teachers
5	Habibi, Yusop and Razak (2019)	Education and Information Technologies.	Quantitative	Pre-service teachers
6	Holmberg, Fransson and Fors (2018)	International journal of information and learning technology	Qualitative	In-service teachers
7	Liu, Wang and Koehler (2019)	British Journal of Educational Technology	Mixed methods	In-service teachers
8	Setiawan, Hamra, Jabu and Susilo (2018)	Journal of Language Teaching and Research	Qualitative	In-service teachers
9	şık, İnce and Vural (2018)	Journal of Qualitative Research in Education	Mixed methods	Pre-service teachers
10	Teka (2018)	Journal of Teacher Education and Educators	Qualitative	Pre-service teachers
11	Tseng (2016)	Computer Assisted Language Learning	Quantitative	EFL students
12	Tseng (2018)	Computer Assisted Language Learning	Mixed methods	In-service teachers
13	Tseng, Cheng and Lin (2011)	Journal of Asia TOEFL	Qualitative	In-service teachers
14	Tseng, Cheng and Yeh (2019)	Computers & Education	Qualitative	Pre-service teachers
15	Turgut (2017 a)	Educational Research and Reviews	Mixed methods	Pre-service & In-service teachers
16	Turgut (2017 b)	Manager's Journal on English Language Teaching	Mixed methods	Pre-service teachers
TPACK studies that included other subject discipline areas such as social sciences education, science education etc.				
17	Baran and Uygun (2016)	Australasian Journal of Educational Technology,	Qualitative	Pre-service teachers
18	Baran, Canbazoglu, Albayrak and Tondeur (2019)	British Journal of Educational Technology	Quantitative	Pre-service teachers
19	Chai, Koh and Tsai (2010).	Journal of Educational Technology & Society	Quantitative	Pre-service teachers
20	Dong, Sang, Chai, Koh and Tsai (2015)	Educational Technology & Society	Quantitative	Pre-service & In-service teachers
21	Joo, Park and Lim (2018)	Journal of Educational Technology & Society	Quantitative	Pre-service teachers

22	Khine, Ali and Afari (2017)	Education and Information Technologies	Quantitative	Pre-service teachers
23	Redmond and Peled (2019)	British Journal of Educational Technology	Qualitative	Pre-service teachers
24	Sang, Tondeur, Chai and (2016)	Asia-pacific Journal of Teacher Education	Quantitative	Pre-service teachers

2. Articles and Codes for the Publications Included in the Systematic Review (TPACK Variables and Levels of Contextual)

Article #	Authors & Year	TPACK as knowledge			TPACK as performance	TPACK context levels			Dispositions	Teacher's factors
		General	Specific	Experienced		Micro	Meso	Macro		
TACK studies that focused on English as a second language subject area only										
1	Bandi-Rao and Sepp (2014)			X		X	X	X		X
2	Baser, Kopcha and Ozden 2016)	X				X		X		X
3	Bostancıoğlu and Handley (2018)	X				X		X		X
4	Debbagh and Jones (2018)	X			X	X				X
5	Habibi, Yusop and Razak (2019)	X				X		X		X
6	Holmberg, Fransson and Fors (2018)	X				X	X	X		X
7	Liu, Wang and Koehler (2019)	X				X	X	X		X
8	Setiawan, Hamra, Jabu and Susilo (2018)			X	X	X				X
9	şık, İnce and Vural (2018)	X		X		X				X
10	Teka (2018)			X				X		X
11	Tseng (2016)	X				X				
12	Tseng (2018)	X		X		X	X			X
13	Tseng, Cheng and Lin (2011)				X	X	X	X		X
14	Tseng, Cheng and Yeh (2019)			X	X	X				X
15	Turgut (2017 b)	X			X	X	X	X		X
16	Turgut (a 2017)	X		X		X	X	X		X
TPACK studies that included other subject discipline areas such as social sciences education, science education etc.										
17	Baran and Uygun (2016)	X		X	X	X	X			

18	Baran, Canbazoglu, Albayrak and Tondeur (2019)	X				X	X			X
19	Chai, Koh and Tsai (2010)	X				X				
20	Dong, Sang, Chai, Koh and Tsai (2015)	X				X	X	X	X	X
21	Joo, Park and Lim (2018)	X				X		X		
22	Khine, Ali and Afari (2017)	X				X		X		
23	Redmond and Peled (2019)	X				X	X	X		X
24	Sang, Tondeur, Chai and (2016)	X				X		X		

APPENDIX B

TPACK Survey (adapted from Bostancıoğlu and Handley (2018)

Consent to Participate in Research- IRB #: HM20019715

Introduction and Purpose
My name is Moe Debbagh Greene. I am a PhD student in the School of Education at Virginia Commonwealth University. I would like to invite you to participate in my dissertation study, which examines the extent to which dispositions predict English language teachers' technological, pedagogical and content knowledge.

Procedures
If you agree to participate in my research, I will ask you to complete a survey that includes questions about your technological knowledge, dispositions as embodiment of social structures and demographic data. The survey takes approximately 15-20 minutes to complete.

Benefits
There is no direct benefit to you from taking part in this study. When completing the survey, you will be given the opportunity to reflect on your use of technology, which may lead to improvement of your instructional practices. You also have the option to enter a raffle to win one of the eight $50 visa cards.

Risks
There are no risks associated with the study. Your name will not be associated with your answers. The results will be reported in aggregate in my dissertation and future publications.

Confidentiality
Your study data will be handled confidentially and saved in a secured database. When the results of this study are published or presented, no identifiers will be associated with data.

Compensation

Upon completion of the survey, if you wish, you can enter your name and email address to participate in a raffle to win one of the eight $50 visa cards. Otherwise, there is no direct compensation for participating in this study. Your name and email address will be stored in a separate form which will be destroyed after the winners are notified.

Rights
Participation in research is completely voluntary. You are free to decline to take part in this research project. Although you will be asked to answer all survey questions, you are free to stop taking part in the research at any time. Whether or not you choose to participate, or continue participating in the research, there will be no penalty to you or loss of benefits to which you are otherwise entitled.

Questions
If you have any questions about this research, please feel free to contact me. I can be reached at mdgreene@vcu.edu If you have any questions about your rights or treatment as a research participant in this study, please contact the VCU Office of Research at (804) 827-2157.

This consent form is meant to assist you in thinking about whether or not you want to be in this study. Click on the "Agree" button to consent to participate in the study.

ELECTRONIC CONSENT: If you agree to take part in the research, please print a copy of this page to keep for future reference, then click on the "Agree" button below. Clicking on the "Agree" button indicates that:You have read the above informationYou voluntarily agree to participateChoose one of the following answers:

1. Agree
2. Disagree

Thank you in advance for completing this survey. The questions below are designed to measure your technological pedagogical content knowledge and dispositions in teaching on campus English language courses. If your courses have moved online due to COVID-19, please answer the survey questions based on your experiences teaching face to face English language courses. The survey questions are measured on a 5-point Likert scale. Please specify the level of agreement to each statement by indicating strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), or strongly agree (5). The survey also includes open ended and demographic questions. You will be asked to answer all the questions in the survey. Please answer each question to the best of your

knowledge. If you are uncertain of or neutral about your response you may always select "Neither Agree nor Disagree". Your name will not be associated with your answers, so please feel free to answer honestly. Your thoughtfulness and candid responses are greatly appreciated. Please answer all survey questions as they pertain to your face to face English language courses prior to moving your class online as a result of COVID-19 impact.

Technology knowledge (TK)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I know how to use computer mediated communication (CMC) technologies (e.g. email, chat)	❑	❑	❑	❑	❑
I know about basic computer hardware (i.e. CD-ROM, mother-board, RAM) and their functions	❑	❑	❑	❑	❑
I know how to save data into/from a digital device (i.e. flash disk, USB stick, CD)	❑	❑	❑	❑	❑
I know how to use generic office applications (i.e. Word, PowerPoint, and Excel)	❑	❑	❑	❑	❑
I know how to play audio and video files on my computer	❑	❑	❑	❑	❑
I know how to record video files (i.e. using a video camera)	❑	❑	❑	❑	❑

Pedagogy knowledge (CK)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I can react supportively to learners' interaction	❑	❑	❑	❑	❑
I can assess student learning in multiple ways	❑	❑	❑	❑	❑
I can keep students on task	❑	❑	❑	❑	❑
I can facilitate learning through creating opportunities for individual, partner, group and whole class work	❑	❑	❑	❑	❑

Content knowledge (PK)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I can comprehend English texts accurately	❑	❑	❑	❑	❑
I can comprehend English speech accurately	❑	❑	❑	❑	❑

I can monitor my own writing for accuracy	❑	❑	❑	❑	❑
I can monitor my own speech for accuracy	❑	❑	❑	❑	❑
I am familiar with the culture(s) of target language communities	❑	❑	❑	❑	❑

Technological content knowledge (TCK)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I know about technologies that I can use to teach listening in English	❑	❑	❑	❑	❑
I know about technologies that I can use to teach reading in English	❑	❑	❑	❑	❑
I know about technologies that I can use to teach writing in English	❑	❑	❑	❑	❑
I know about technologies that I can use to teach English language grammar	❑	❑	❑	❑	❑
I know about technologies that I can use to teach English vocabulary	❑	❑	❑	❑	❑
I know about technologies that I can use to teach pronunciation of English words	❑	❑	❑	❑	❑

Pedagogical content knowledge (PCK)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I can choose an appropriate approach to teach learners (i.e. communicative approach, direct method)	❑	❑	❑	❑	❑
I can plan when and how to use the target language, including meta-language I may need in the classroom.	❑	❑	❑	❑	❑
I can identify linguistic problems experienced by learners (i.e. phonological, lexical or grammatical problems)	❑	❑	❑	❑	❑

Technological pedagogical knowledge (TPK)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I can choose technologies that enhance the teaching approaches for a lesson	❑	❑	❑	❑	❑
I can choose technologies that enhance students' learning for a lesson	❑	❑	❑	❑	❑

I can adapt the use of the technologies that I am learning about to different teaching activities	❑	❑	❑	❑	❑
I can design relevant learning experiences to promote student learning, using technology	❑	❑	❑	❑	❑
I can choose technologies to be used in assessment	❑	❑	❑	❑	❑
I can engage students in solving authentic problems using digital technologies and resources	❑	❑	❑	❑	❑

Technological pedagogical and content knowledge (TPACK)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn	❑	❑	❑	❑	❑
I can use technology effectively to communicate relevant information to students and peers	❑	❑	❑	❑	❑
I can use a range of technologies to help students pursue their individual curiosities	❑	❑	❑	❑	❑
I can use a range of technologies that enable students to become active participants	❑	❑	❑	❑	❑
I can provide equitable access to digital language learning tools and resources	❑	❑	❑	❑	❑
I can facilitate intercultural understanding by using technology to engage students with different cultures	❑	❑	❑	❑	❑

Please continue answering all survey questions as they pertain to your face to face English language courses prior to moving your class online as a result of COVID-19 impact.

How frequently do you use technology in your English language courses?

1. never
2. in some lessons
3. in most lessons
4. every lesson

In thinking about your face to face English language courses, do you think technology is an important part of how students learn? Why? Why not?

If applicable, what do you use technology most for and why?

If applicable, what kind of technologies do you use most in teaching in your English language courses? Why?

How comfortable are you with using technology for teaching your English language courses ?

Where do you feel you learn most about how to use technological tools in teaching? (Please rank these items according to their importance in representing your feeling with 1 being the most important)

- In the classroom with students and colleagues _____
- In the online and/ or face to face professional development opportunities provided by the program, department or institution _____
- In the online and/or face to face professional development opportunities provided by educational, programs, agencies or associations at the state and national level _____

Please rank the following items according to their importance in representing your feeling (with 1 being the most important) in shaping and facilitating your use of technological tools in teaching your English language courses?

- Students and colleagues _____
- Program, department or institution _____
- State and local educational programs, associations or agencies _____

How do you learn to use technological tools that can help support your teaching and support student learning in your English language courses?

Do you feel that your use of and/or comfort with technology has changed due having to move your English language courses online as a result of the impact of COVID-19?

Demographic Questions

Select the type of language program (s) where you teach:

1. University, college or community college-governed (public)
2. University, college or community college-governed (private)
3. Proprietary independent program situated on a university/college campus
4. Proprietary independent program not on a university/college campus
5. Multi-site program situated on a university/college campus
6. Multi-site program not on a university/college campus
7. Other (please specify) _____

Which of the following best describes the location of the program/ institution where you teach?

1. Urban
2. Suburban
3. Rural

In which state is your program located?

What statement best describes your employment status? (Check all that apply)

1. Employed Full-Time
2. Employed Part-Time
3. Student
4. Retired
5. Other (please specify) _____

What is your primary role in your program?

How many years have you taught English language at your current program or institution?

1. Less than 1 year
2. 1-2 years
3. 3-5 years
4. 6-10 years
5. 11-15 years
6. More than 15 years

How many years have you taught English language throughout your career including your current position?

1. Less than 1 year
2. 1-2 years
3. 3-5 years
4. 6-10 years
5. 11-15 years
6. More than 15 years

What is the highest level of education you have completed? (Please click one)

1. College degree (BA, BS)
2. Some graduate school
3. Master Degree (MA, MSc, MEd)
4. Doctorate (PhD, M.Phil.)
5. Others (please specify) _____

How would you describe yourself?

1. Native English speaker
2. Non-native English speaker

Which languages are you capable of speaking fluently? (Check all that apply)

1. English
2. Spanish
3. Portuguese
4. French
5. Mandarin
6. Arabic
7. Other (please specify) _____

What is your age?

1. 18-24
2. 25-34
3. 35-44
4. 45-54
5. 55-64
6. 65-74
7. 75 years or older

What gender do you identify as?

1. Male
2. Female
3. Nonbinary

4. Other (please specify)

Please indicate your ethnicity (i.e. peoples' ethnicity describes their feeling of belonging and attachment to a distinct group of a larger population that shares their ancestry, language, religion etc, which is different from race)

1. Caucasian
2. Latino/Hispanic
3. Middle Eastern
4. African
5. Caribbean
6. Asian
7. Other (please specify) _____

Please specify your race (race describes shared certain distinctive physical traits. Racial characteristics are physical and can range from skin, eye, and hair color to facial structure)

Which of the following socioeconomic classes do you identify with?

1. Poor
2. Working class
3. Middle class
4. Affluent
5. Other (please specify) _____

What is your current annual income per year? Please click one. If you don't know, please make your best guess

1. Less than $9,000
2. $10- $19,000
3. $20,000 - $29,000
4. $30,000 - $39,000
5. $40,000 - $49,000
6. $50,000 - $59,000
7. $60,000 - $69,000
8. $70,000 - $79,000
9. $80,000 - $89,000
10. $90,000 - $99,000
11. More than $99,000

What is your total family income per year including your spouse? (Please click one. If you don't know, please make your best guess.)

1. Less than $9,000
2. $10- $19,000
3. $20,000 - $29,000
4. $30,000 - $39,000
5. $40,000 - $49,000
6. $50,000 - $59,000
7. $60,000 - $69,000
8. $70,000 - $79,000

9. $80,000 - $89,000
10. $90,000 - $99,000
11. More than $99,000

How many people are supported by your total family income, including yourself? (Please click one)

1. 1 (myself)
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10.

As a thank you for participating, all survey participants who provide a valid email address will automatically be entered in a raffle to win one of the eight $50 visa cards. The winners will be notified by email. Would you like to enter a raffle for the chance to win one of the eight $50 visa cards?

1. Yes
2. No

Name (optional)

Email Address

APPENDIX C

Descriptive Statistics for Variable Z-Scores to Determine Presence of Outliers

Variable	N	Minimum	Maximum
Zscore: TPACK Domains_ Total	139	-4.19249	1.38285
Zscore: Spoken Languages	139	-.81854	3.19710
Zscore: Context	139	-.89752	1.84436

Zscore: Technology Use	139	-2.95774	1.05978
Zscore: Program Location	139	-.71376	2.16198
Zscore: Teaching Years in Current Program	139	-1.99393	1.41932
Zscore: Teaching Years	139	-2.91620	.88992
Zscore: Level of Education	139	-3.46642	1.67770
Zscore: Native/Non-native	139	-.39648	2.50407
Zscore: Age	139	-2.32955	2.81025
Zscore: Gender	139	-1.63385	4.73359
Zscore: Ethnicity	139	-.39976	3.34634
Zscore: Socioeconomic Status	139	-3.54044	3.75025
Zscore: Individual Income	139	-2.10260	2.47830
Zscore: Family Income.	139	-2.49535	1.08785
Valid N (listwise)	139		