ESL TEACHERS' TPACK DOMAINS IN AN ONLINE DIGITAL TOOLS AND FLIPPED CLASSROOM COURSE

MOHD FAISAL FARISH BIN ISHAK

SULTAN IDRIS EDUCATION UNIVERSITY

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All the praises and thanks be to ALLAH the Cherisher and Sustainer of the Worlds, for HIS words below have given me ideas and knowledge that I needed for conducting a study about HIS wonderful creation; the nature of knowledge of humankind – that affirmed my beliefs on HIM.

In The Name of Allah The Most Compasionate and The Most Merciful

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا ۖ إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

"They (Angels) said, Glory be to You; we have no knowledge except what You have taught us. Verily, it is You, the All-Knower, the All-Wise" (2:32)

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WITH THE MOST PRECIOUS AND PRICELESS WORD FOR ALL OF YOU,

"THANK YOU"

ABSTRACT

This study explored the TPACK domains of English language teachers in an online course about digital tools and flipped classroom. The study aimed to analyse the TPACK domains that appeared in teachers' interaction with the online learning artefacts. Seeking to address gaps in the research, this qualitative study utilised phenomenology methodology to explore in-depth the teachers' TPACK development phenomenon. The instruments used for the purpose were online discussion post, online quiz, activity plan, digital learning products, reflective journals, lesson plans, video recorded lesson and semi-structured interview. This study selected 2 in-service English language teachers through purposive sampling. The results showed that the emergence of TPACK domains among teachers could be classified in the form of 4 main categories such as Resided Knowledge, Added Knowledge, Modified Knowledge and Aggrandised Knowledge. In addition, the emergence of the TPACK domains resulting from the interaction of teachers with the research instruments showed a phenomenon that could be described through a framework labeled as 'Augmented TPACK'. In conclusion, this study showed teachers' TPACK could be futher developed through professional development courses by utilising TPACK as the basic framework for the courses offered. This study also suggested a matrix of TPACK Professional Development Course Package. The matrix implicated online module design and development for in-service English language teachers.

DOMAIN TPACK GURU-GURU BAHASA INGGERIS DALAM SATU KURSUS DALAM TALIAN BERKENAAN ALATAN DIGITAL DAN KELAS BERBALIK

ABSTRAK

Kajian ini bertujuan meneroka domain TPACK guru-guru bahasa Inggeris dalam satu persekitaran kursus dalam talian berkenaan alatan digital dan kelas berbalik. Kajian juga menganalisis domain TPACK yang muncul dalam setiap interaksi guru-guru dengan setiap instrumen kajian. Kajian berbentuk kualitatif ini memanfaatkan metodologi fenomenologi untuk meneroka fenomena kemunculan domain TPACK guru-guru tersebut secara mendalam yang berkaitan dengan penggunaan alatan digital, reka bentuk Kelas Berbalik dan penyampaian kandungan. Untuk tujuan tersebut, dua orang guru Bahasa Inggeris dalam perkhidmatan telah dipilih melalui pensampelan tujuan. Instrumen kajian berbentuk perbincangan dalam talian, kuiz dalam talian, pelan aktiviti, produk tugasan digital, jurnal refleksi, pelan pengajaran, rakaman video dan temubual separa berstruktur. Hasil kajian menunjukkan kemunculan domain TPACK dalam kalangan guru dapat dikelaskan dalam bentuk kategori utama iaitu Resided Knowledge, Added Knowledge, Modified Knowledge dan juga Aggrandised Knowledge. Selain itu, kemunculan domain TPACK yang terhasil daripada interaksi guru-guru dengan instrumen kajian telah menunjukkan satu fenomena yang boleh digambarkan melalui satu kerangka yang dilabelkan sebagai '*Augmented TPACK'*. Secara kesimpulannya, kajian ini menunjukkan TPACK para guru yang terlibat dalam kursus tersebut dapat dikembangkan melalui kursus perkembangan profesional dengan menjadikan TPACK sebagai kerangka asas untuk kursus-kursus yang ditawarkan. Berdasarkan penemuan, kajian ini juga mencadangkan satu matriks Pakej Kursus Pembangunan Profesional TPACK. Matriks tersebut memberi implikasi kepada usaha mereka bentuk dan penghasilan modul bagi latihan guru-guru Bahasa Inggeris dalam perkhidmatan.

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LIST OF ABBREVIATIONS

AC	Abstract Conceptualisation (of Kolb's Experiential Learning Theory)
AE	Active Experimentation (of Kolb's Experiential Learning Theory)
AF	Affective Knowledge
CALL	Computer-Assisted Language Learning
CAQDAS	Computer-Assisted Qualitative Data Analysis Software
CDD	Curriculum Development Division
CE	Concrete Experience (of Kolb's Experiential Learning Theory)
CEFR	Common European Framework of References for Languages
CK	Content Knowledge
DTB	Digital Tools-based (task)
EFL	English as a Foreign Language
ELA	English Language Arts
ESL	English as a Second Language
ICT	Information and Communication Technology
LMS	Learning Management System
LO	Learning Outcomes
MoE	Ministry of Education (Malaysia)
M-TPACK	Metacognitive Technological Content Knowledge Framework
PD	Professional Development
PK	Pedagogical Knowledge
RO	Reflective Observation (of Kolb's Experiential Learning Theory)

SBELC	Standard-Based English Language Curriculum
TK	Technological Knowledge
TPACK	Technological Pedagogical and Content Knowledge
TPACK-SAS	TPACK Self-Assessment Scale
VLE	Virtual Learning Environment

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter illustrated the background of the study which includes vignettes from the researcher's career and professional development experiences and historical background of technological integration the teaching of English in general context. The issues discussed are related to the statement of the problems which is expanded to the objectives of the study as well as explaining the significance of the study. Research questions are provided to show the matter that this study hope to discover as well as limitations that this study carry. Several widely used terminologies also are provided for better understanding.

1.2 Background of The Study

1.2.1 Transformation of A Teacher: A Vignette

The researcher of this study started his career as an English language educator in 1997. Along the teaching and learning journey he had gained a lot of experiences that shaped and modify his knowledge about his teaching practice and his content knowledge in the field of the Teaching of English as a Second Language. The following is a vignette that influenced the background of this study.

I started my teaching profession in 1997 after completed teacher training programme at certificate level in the Teaching of English as a Second Language. Posted to rural area in the state of Johor, I had real-life classroom experiences in deploying the pedagogical and content knowledge I retrieved from the teacher training period. Being enthusiastic and energetic in applying methodologies, approaches and teaching techniques made my classroom a language classroom as it had to be. I thought everything I learned about teaching methodologies, approaches and techniques were the best equipment that I required to be a super teacher whom pupils would be grateful to because they could master English language. After a few months I started to realise that some activities did not show any significant change in pupils' language skills. I started to question my professional knowledge. Questions such as 'What had I done wrong?", "Why it (lesson) was not successful?" and "What should I do?". Having those questions made me tried to connect my pedagogical knowledge and content knowledge in order to find solutions for my problems and answer for my questions. Struggling for few years in trial-and-error looping teaching practice, I had the feeling that I had inadequate pedagogical knowledge. I did not question my content knowledge because

I believed the curriculum content that I learned during teacher training programme had provided me adequate information and guidelines for me to supply the children's language learning needs. Consequently, I had the urge to find a magic wand which I believed could easily disentangle those complicated problems in my classroom. I did attend some professional development courses in which I gained new pedagogical knowledge such as Gardner's' multiple intelligences. Thus, in 2004 I enrolled myself in a degree programme - The Bachelor of Education in the Teaching of English as a Second Language.

During the period of seeking enlightenment, I learned new things and a lot of theories which I had not been exposed much during my teacher training period. I would describe it as theoretical era. Names such as Chomsky, Bandura, Vygotsky and Krashen became the 'must-know' figures. I also gained new pedagogical knowledge for each language skill Listening, Speaking, Reading and Writing with additional knowledge about the teaching of literature. I perceived that some theories answered my questions. Besides that I gained knowledge in Information and Communication Technology (ICT). I believed I had found the magic wand in my quest of finding the enlightenment. Graduated in 2007, I was posted to a secondary school and became enthusiastic and energetic again. At this time my knowledge on previous curriculum content seemed obsolete. I was introduced to *'Kurikulum Bersepadu Sekolah Menengah (Semakan)'* which was used for Form 1 to Form 5 in Malaysian secondary schools. The syllabus encompassed 3 areas of language used – (1) interpersonal, (2) informational and (3) aesthetic use. The areas incorporated the integration of four language skills of Listening, Speaking, Reading and Writing. The curriculum also specified educational

emphases that included thinking skills, ICT skills and the theory of multiple intelligences (Kementerian Pendidikan Malaysia, 2003).

Since the day I received my training at teacher's college until now, I have experienced different types of English language curriculum. The early stage of my teaching career, I used to teach English by using skill based English language curriculum for Primary School.

Kurikulum Baru Sekolah Rendah untuk Bahasa Inggeris was the official term of reference for the curriculum. The curriculum aimed at teaching pupils to communicate effectively based on language skills and language forms to carry out a number of language functions. The curriculum listed out list of language functions, language skills and sentence patterns. (Kementerian Pendidikan Malaysia, 1992).

In 2016, The Curriculum Development Division (CDD) of the Ministry of Education Malaysia has come out with a new curriculum document for English Language Form 1. It is called the *'Standard-Based English Language Curriculum'* (SBELC) (Kementerian Pendidikan Malaysia, 2016). The new curriculum is modular in nature and outcome based. A teacher's' role in this curriculum was mentioned as a facilitator (Sulaiman et al., 2017). It also provided clearer learning outcomes (LO) and those LOs reflected more integration of various language skills and elements of the use of the English language in everyday life. The curriculum also provided non-exam-oriented approach that fitted teachers' role as facilitator. (Sulaiman et al., 2017). Based on the study, the curriculum is still in use at the time of this study was carried out.

In 2012, I was first introduced to an online system which was capable in assisting teachers to organise teaching and learning materials for an online learning environment. It was in the form of Virtual Learning Environment (VLE) called Frog VLE and was placed under *1Bestarinet* project. Under the *1BestariNet* project, schools were equipped with an integrated solution that allows teaching, learning, collaboration and administration to be conducted through Frog VLE, accessible at school or anywhere, with an Internet connection (Bahagian Teknologi Pendidikan, 2018). El Alami, Casel and Zampunieris (2008) mentioned that teachers can utilise VLEs for classroom documentation and students can use it for discussion forums and other online activities. Parents also can monitor their children's learning progress. Thus, VLEs reduce the social distance of interaction between teacher and student, between the students themselves, and between teacher and parents. In short, a VLE is a tool that permits collaboration in any given classroom venture. Attending the training had enhanced the use of technology in my teaching and learning practice. From using Microsoft PowerPoint to project teaching and learning contents, I placed them onto VLE instead. I regarded that as a major shift since my Microsoft PowerPoint presentations could be assessed anytime and anywhere by my students. They could do revision on the topic learned earlier in school.

The vignette illustrates the researcher's knowledge development. Koehler and Mishra (2009), describe this phenomenon in a framework called Technological Pedagogical and Content Knowledge (TPACK) framework.. His pedagogical subjects that he learned in his academic years at tertiary level had developed his pedagogical knowledge. Revision and the changing of the curriculum had shaped his content knowledge and professional development about ICT initiative had developed his

technological knowledge. The reflection initiated the researcher's effort to conduct this study with hope to gain insights from other English educators in different context that may fill in gaps in the area of the study. As Mouza (2011) mentioned, the educational community has only recently begun to explore ways we can help in-service teachers build and use knowledge with regard to technology using TPACK as a theoretical foundation.

1.2.2 Technology Integration in Malaysian Education Curriculum

Malaysia's first attempt to incorporate Information and Communication Technology (ICT) in teaching and learning started with a project called 'Smart School Project' which took its first planning in 1996. It was one of the Flagship Applications of the Multimedia Super Corridor. In a related document produced by The Ministry Education Malaysia, it was mentioned that the concept of school for the project was as a learning institution that has been systematically reinvented in terms of teaching-learning practices and school management in order to prepare children for the information age for 90 pilot schools and would be expanded to other schools after pilot phase ended (Kementerian Pendidikan Malaysia, 2004). Technology used in the project involved the aim to enhance classroom instruction and professional development. The use of technology for the project was planned as below.

Table 1.1

The Use of Technology in The Smart School

The Use of Technology in The Smart School		
Information Processing and Productivity Tool	**Enhance Instruction**	**Enhance Professional Development**
• word processors • databases • spreadsheets • presentation programmes • multimedia authoring tools • e-mail • video production equipment • digital reference materials • electronic indices • network search engines	• drill and practice • integrated learning systems • videotaped books • computer-animated picture books • trivia recall games • problem-solving and simulation software	• administrative software packages • e-mail and word processing • specially designed teacher tools (e.g computerised gradebooks, test/worksheets generators, curriculum templates.

(p.15)
Kementerian Pendidikan Malaysia (2004)

Adding to the details, it was also mentioned that teaching and learning materials in the form or courseware would be used for subjects such as Bahasa Melayu, English Language, Science and Mathematics. However, in 1998 the was a slight change in the plan of the project. The number of pilot schools involved remained unchanged but only secondary schools with existing ICT infrastructure would involve in the project. The broad roll-out was also reviewed. The project document showed detailed roadmap on how ICT should be integrated in teaching and learning for the selected schools.

In 2013 The Ministry of Education Malaysia (MoE) introduced Malaysia Education Blueprint 2013-2025 with 11 shifts to for educational reform. Among the

shifts, ICT reappeared as a shift called *'Leverage ICT to scale up quality learning across Malaysia'*. In the shift, it is mentioned that MoE will,

- provide internet access and virtual learning environment via 1BestariNet for all 10,000 schools.
- augment online content to share best practices starting with a video library of the best teachers delivering lessons in Science, Mathematics, Bahasa Malaysia and English language
- maximise use of ICT for distance and self-paced learning to expand access to high-quality teaching regardless of location or student skill level.

(p.E16)
(Ministry of Education Malaysia, 2013)

The shift in ICT leveraging initiative was seen to support English language subject in augmenting online content. English language subject was also mentioned in the second listed shift which was about language proficiency named as 'Ensure every child is proficient in Bahasa Malaysia and English Language and is encouraged to learn an additional language'. In this shift it is mentioned that MoE will,

- roll out the KSSR Bahasa Malaysia curriculum for National-type schools, with intensive remedial support for students who require it.
- expand the LINUS programme to include English literacy
- upskill English language teachers
- make English language SPM paper a compulsory pass and expand opportunities for greater exposure to the language

- encourage every child to learn an additional language by 2025

(p.E15)
(Ministry of Education Malaysia, 2013)

In order to bring more effective English instructions to students, the blueprint document states that MoE is considering 'blended learning' model to be used for English instructions (Exhibit 4-8). According to Ministry of Education Malaysia (2013), the model refers to the integration of face-to-face and technology-mediated instructional approaches, the latter of which typically provides students with some elements of control over time, place, pace and/or style of learning (p.4-8). In the description, it was also mentioned that flipped classroom as part of the blended learning approach.

Based on the blueprint document the researcher understands that the integration of technology in teaching and learning is inevitable. This understanding is strengthened by a statement in the document that MoE is taking concrete steps to embed 21st century skills in the curriculum, and to ensure the curriculum is delivered as intended. This includes increasing the proportion of questions focused on higher-order thinking skills in the national examinations, paring down the curriculum to create more time in the classroom for group and project-based work, and improving pedagogical skills (Ministry of Education Malaysia, 2013). In 21st century skills framework, Information Media and technology skills are included along with Life and Career Skills and Learning and Innovation skills (Fadel, 2008). By having the emphasis to embed 21st century leaning skills in national curriculum, it has become the signal that MoE has projected for the educators to know that technology integration is unavoidable.

1.2.3 Integration of Technology in Language Learning

Generally, in describing the use of technology in second language teaching the term Computer-Assisted Language Learning (CALL) has been widely used. Stockwell (2012) mentioned that CALL has been used for over two decades and has been incorporated in the titles of leading academic journals in the field.

Further explaining the academic phenomena, he mentioned,

> According to Levy and Hubbard, in a Google search conducted on May 29, 2005, "computer-assisted language learning" yielded 99,100 hits in contrast to "technology-enhanced language learning," which produced only 6,550 hits. Five years later, the same search conducted on December 11, 2010, gave 165,000 hits for "computer-assisted language learning" and 23,900 hits for "technology-enhanced language learning." (p.11) (Stockwell, 2012)

Studies produced in CALL field have discussed the experience and beliefs of teachers about integrating technology in second language learning. However, the researcher understood that there is a need for in-depth investigation about teachers existing knowledge that consists of pedagogical, technical and content knowledge domains. This is due to a belief in CALL field that mentioned even though teachers integrate technologies in language teaching, they may not use them in same manners. Stockwell (2012) mentioned that, the same technology used by two people will not necessarily be used in the same way and depending on experience, skills and knowledge of what technology can do may lead to very different result. Thus, the researcher believe

that the way teachers modify their existing knowledge in integrating technology into language teaching need to be further explored. Based on the nature of CALL, the researcher also understood that in-depth study about technology integration in language learning should have a framework in order to investigate or to explore teachers' knowledge about technology, pedagogy and content.

1.3 Statement of The Problem

Based on the reviewed literature, utilising technology in teachers' pedagogical practices have been studied in various ways. In some studies, teachers are found having attitude change in adjusting technological competency towards manipulating technology to meet learning goals and students' learning experiences. Teachers also always have the intention to have focus on the digital tools instead of the pedagogy that describes how in some cases technology overwhelmed pedagogy (Hutchison & Woodward, 2014; Turgut, 2017). However, the studies are lack in providing in-depth data of the behaviour mentioned. The explored phenomena did not illustrate how TPACK domains shape teachers' behaviour. The reseacher believes that in-depth data can provide better understanding about the behaviour and emerging TPACK domains could be mapped to illustrate the phenomena.

In order to study teachers' technology integration, TPACK framework is suggested in many studies because TPACK is able to show connection between teachers knowledge domains (Turgut, 2017; Wu & Wang, 2015; Xiaobin et al., 2014). However, TPACK studies in some countries are scant, found as gap and considered as a problem to be addressed (J. Koh et al., 2013; Turgut, 2017; Wu & Wang, 2015).

Especially in Malaysia the study about teachers TPACK is still scarce. In a review of Technological Pedagogical Content Knowledge, Chai, Koh, and Tsai (2013) mentioned that they reviewed 74 journal papers that investigated ICT integration from the TPACK framework. Based on the review there was only 1 paper from Malaysia. Issues about scarcity of TPACK framework in the teaching of English language context will be further discussed in Chapter 2 as discussion about the gaps.

Even though TPACK framework is for the integration of technology, the reviewed literature showed most of the TPACK research did not happen in flipped classroom context. The researcher belief that in order to explore and gain in-depth understanding of TPACK phenomenon, TPACK research should be conducted in flipped classroom context. This is because flipped classroom can be useful to teachers as they integrate technology for the benefit of all students. Speficically, technology can be used strategically to advance literacy learning (Piotrowski & Witte, 2016). Research on flipped classroom also showed the essential integration of technology happened in the context of the approach (Mazur et al., 2015; Mok, 2014; Moran & Young, 2014; Ng, 2015). Scant research of TPACK in flipped classroom settings need to be addressed for academia to gain more in-depth insights of TPACK in teachers' integration of technology.

1.4 Aim of The Study

This study aimed to explore the emerging TPACK domains among selected English as a second language (ESL) teachers in an online course environment for digital tools and flipped classroom. There were 2 objectives of the study.

1.5 Objectives of The Study

The main objective of the study was to explore ESL teachers' emerging TPACK domains while they are interacting with online course tasks. This was followed by another objectives:

1. to analyse the emerging TPACK domains of the teacher participants of the study
2. to describe the phenomenon of the emergence of TPACK domains of the teacher participants of the study
3. to describe the meaning of the emerging TPACK domains of the teacher participants of the study.

1.6 Research Questions

In order to achieve the objectives, this study is guided by the following questions.

- Research Question 1: What are the emerging TPACK domains in teacher's interactions with the learning artefacts?
- Research Question 2: What do the emerging TPACK domains indicate?
- Research Question 3: How do the emerging TPACK domains function in teachers' teaching and learning session?

1.7 Significance of Study

First and foremost, the findings of the study seek to fill in the gaps in the literature about TPACK framework which is lack of in-depth explanation. As mentioned by Brantley-Dias and Ertmer (2013), TPACK research is still missing a thorough description of what TPACK or its component, look like in action. This study may provide a contextual in-depth of such phenomenon in the form of insights and descriptive analysis.

Secondly, this study will add to Malaysian ESL context in TPACK research. As integration of technology is needed in fulfilling the Malaysian Education Blueprint 2013-2025 (MEB) initiative to empower teachers' role and capacity, this study will provide information about teacher's knowledge that any professional development needs to have in order to design suitable courses and trainings.

Lastly, affiliated stakeholders such as teacher education division and teacher training institute can utilise the findings of the study as an indicator for knowing

teacher's competency by understanding their TPACK domains. The indicator should tell them the actions that they may consider for future improvement and preventions.

1.8 Limitations

This study has several limitations. The study was bound in a timeframe of 14 weeks of online training. It was dependent on the institution training timeframe setting. Thus, teachers' TPACK development was only confined within the period of the study and the development of teachers' TPACK could not be observed beyond the time frame. Online training also may produce different contextual result based on face-to-face or blended mode of teacher training.

Secondly, the English teachers selected from purposeful sampling basis. They were chosen from their outstanding performance in the online course. They have completed their study successfully with lots of insights retrieved. 2 out of 24 participants only made up 8 % of the whole online course population. The remaining teacher participants did not complete the course for unknown reasons. Future studies may want to have more samplings and could provide additional insights about the studied phenomenon.

Thirdly, participants of this study did not represent population of all trained ESL teachers in Malaysia. Even though their pedagogical and content knowledge are not questionable since they have been retrained and exposed to ESL pedagogy and content, their fluency in English language may still reflect their proficiency. Nonetheless,

through the limitations discussed, certain measures had been taken into consideration and are discussed further in Chapter 3.

1.9 Definition of Terms

There are several terms need to be defined for this study. The terms are widely used in this study to refer to group of people, approaches, methods and context of the study.

1.9.1 Technological Pedagogical and Content Knowledge (TPACK)

It is a framework build on Shulman's (1987, 1986) description of pedagogical and content knowledge to describe how teachers' understanding of educational technology. The knowledge domains include content (CK), pedagogy (PK), and technology (TK). The interactions between and among these knowledge domains are represented in a Venn diagram as PCK, TCK (technological content knowledge), TPK (technological pedagogical knowledge) and TPACK.

1.9.2 Pedagogical Knowledge (PK)

Pedagogical knowledge is deep knowledge about the processes and practices or methods of teaching and learning and carries educational aims, values and purposes. (Koehler & Mishra, 2009).

1.9.3 Content Knowledge (CK)

Content Knowledge (CK) is knowledge about subject matter either learned or taught. Shulman (1986) noted, this knowledge would include knowledge of concepts, theories, ideas, organizational frameworks, knowledge of evidence and proof, as well as established practices and approaches toward developing such knowledge. Knowledge and the nature of inquiry differ greatly between fields, and teachers should understand the deeper knowledge fundamentals of the disciplines in which they teach. (Koehler & Mishra, 2009).

1.9.4 Technological Knowledge (TK)

Technological Knowledge (TK) refers to the broadly adequate understanding of information technology in order to apply it productively at work and in their everyday lives, to recognize when information technology can assist or impede the achievement of a goal, and to continually adapt to changes in information technology (Koehler & Mishra, 2009).

1.9.5 Technological Content Knowledge (TCK)

Technological Content Knowledge (TCK) is an understanding of the manner in which technology and content influence and constrain one another. Teachers need to master more than the subject matter they teach; they must also have a deep understanding of

the manner in which the subject matter (or the kinds of representations that can be constructed) can be changed by the application of particular technologies. to continually adapt to changes in information technology (Koehler & Mishra, 2009).

1.9.6 Technological Pedagogical Knowledge (TPK)

Technological Pedagogical Knowledge (TPK) is an understanding of how teaching and learning can change when particular technologies are used in particular ways. This includes knowing the pedagogical affordances and constraints of a range of technological tools as they relate to disciplinarily and developmentally appropriate pedagogical designs and strategies (Koehler & Mishra, 2009).

1.9.7 Flipped Classroom

Flipped Classroom in the context of the study, provided a platform where integration of technology can be seen emerged in teaching and learning session. It was carried out as an assignment for the teachers as requirement of the online course completion. This session was important for the study because by applying Flipped Classroom session, teachers would integrate all TPACK domains to fulfill the lesson objectives and learning outcomes. Thus, teachers' TPACK domain can be studied. In a basic definition, it is an approach where learning contents are accessed out of class time as 'homework' by using video recorded lectures and class time is used to help students with the concepts they do not understand (Bergmann & Sams, 2012). The terminology

is used interchangeably with flipped learning, inverted learning or flipped teaching (Kvashnina & Martynko, 2016; Mehring, 2016; G. Newman et al., 2016; Sickle, 2016). Bergmann and Sams (2012); the proponents of this approach mentioned that no one owns the flipped classroom term, but it has been popularised by various media outlets.

1.9.8 Learning Management System (LMS)

Software applications that use integrated databases to keep track of progress, learning efficiency, instructional content, and information on how to use it. The main purpose of an LMS is to ensure the process of increasing knowledge, developing new skills and abilities, and in some cases increasing labour productivity (Mocanu & Deaconu, 2017). The LMS used in this study was CANVAS LMS.

1.9.9 Digital Tools

Digital technology that can be used for teaching and learning purpose to meet teaching and learning goals (Bolden et al., 2017) including computer, tablets and smart phones (Hutchison & Woodward, 2014). In this study, the term digital tools is used to refer to digital applications that assist teaching and learning.

1.10 Summary

There is a need to explore teachers' TPACK in English language learning environment. The integration of TPACK domains during interaction with learning artefacts may provide meaningful data that describe the phenomenon. Through the three research questions, this study intended to understand teachers TPACK by investigating their emerging TPACK domains resulted from the online learning tasks. The significance of the study showed how this study may fill the gaps in literature and provide better understanding for any decision-making effort in the future. The chapter provides definition of terms to guide readers' understanding of this study.