



TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE (TPACK) OF ENGLISH LANGUAGE INSTRUCTORS

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Abstract

The aim of the study is to investigate the perceptions of English language instructors' Technological Pedagogical Content Knowledge (TPACK) within the context of teaching EFL. The participants of the study consist of 127 language instructors teaching English at different levels at different state universities in Turkey. Data were collected by means of TPACK-EFL Survey (Baser, Kopcha & Ozden, 2015) with some demographic questions and other questions included by the researcher to gather in-depth information about technology use in teaching. According to the results of the study, English language instructors feel themselves the most competent in their subject matter, English language. However, they do not think that they are highly competent in integrating technology into their content teaching with sound pedagogy.

Keywords: language teaching, self-assessment, technology integration, TPACK.

INTRODUCTION

As an international phenomenon, technology is an important part of our everyday lives and efforts to improve teaching and learning (Roblyer, 2006). Recently, technology has been increasingly used for educational settings and technology integration is using computers effectively and efficiently in the general content areas to allow students to learn how to apply computer skills in meaningful ways. Rather than seeing it like a foreign invader, we should use it to overcome the obstacles that stand in the way of a better and more productive way of life (Roblyer, 2006). As we look at what is happening with technology in classrooms, we see that some of the most innovative and promising practices in education involve technology which provide great benefits for teachers. However, integrating technology into classroom instruction means more than teaching basic computer skills and software programs in a separate computer class. Effective technology integration must happen across the curriculum in ways that research shows deepen and enhance the learning process. As O'Bannon (2011) indicated that it must support four key components of learning: active engagement, participation in groups, frequent interaction and feedback, and connection to real-world experts. Effective technology integration is achieved when the use of technology is routine and transparent and when technology supports curricular goals.

With the help of multimedia and Internet, integrating computer in teaching and learning languages has also become more effective and useful. Along with its various tools and being an effective instructional aid, technology has been a crucial element in the process of teaching and learning languages. Using technology in teaching foreign languages learners can serve several functions. It can increase interaction among students and with "real-life audiences" outside the classroom; meet the different learning styles of students; make learning authentic through providing students with materials and activities relevant to the real world; and create a positive learning environment that are supportive and open (Young, 2003). Using it in the teaching and learning process can facilitate communication among students and build language skills that students need not only in but also outside the classroom and it makes classes more interesting. Using technology in EFL teaching can



encourage students to be more responsible for their EFL learning, increase their confidence, and motivate them by providing them with interesting materials (Lee, 2000).

As for potential benefits of technology integration in teaching English as a foreign language, the researches conducted on the benefits of Computer Assisted Language Learning (CALL) on ELT has acknowledged that using technology was beneficial in many aspects. It was found out that successful implementation of technology brought about innovative changes such as the opportunity for authentic communication, fostered student motivation and autonomy, and increased attendance of the unwilling and shy students; as a result, the students felt more confident to communicate through a medium and had more time to think during communication (Lee, 2000; Yang, 2001; Young, 2003).

Technology is becoming an inseparable part of language education day after day and has the power to improve teaching and learning, but it can also make a teacher's life more complicated. Therefore, teachers' knowledge has become very important for successful integration of technology in education (Jeong So & Kim, 2009). Acquiring proficiency with instructional technology is crucial and necessary to integrate technology into education effectively. As van Olphen put forward (2008), without the experience and expertise needed to effectively engage with technology, pre-service and practicing teachers, if they use technology at all, tend to use it in superficial, low-level ways. The resultant absence of meaningful technology integration in classrooms has led to a disconnection between the current generation of students who have spent their formative years immersed in technology (digital natives), and their teachers (digital immigrants) whose experience with and knowledge of the digitized world may be underdeveloped (Prensky, 2001). What is expected from today's schools is to raise individuals who are equipped with the skills of access to information and use it effectively. Teachers and teacher education programs play a very important role in teaching technology in the most productive way and making both teachers and learners to keep up with the rapid developments in technology and education to satisfy the constantly changing expectations of learners (Akkoyunlu, 2002). In the teaching process, teachers are the key for applying new technologies efficiently and successful integration of technology depends mostly on the teachers and their understanding of how it can help the students to enhance their learning. Therefore, it is essential not only how you teach (pedagogy) and what you teach (content), but also which materials (technology) you use while teaching (Koehler and Mishra, 2008).

Technological Pedagogical Content Knowledge (TPACK)

Building upon the work of Schulman (1986), which introduced the construct of Pedagogical Content Knowledge (PCK) applicable to the teaching of specific content, Koehler and Mishra (2006) proposed a framework to add technology competency as one of the foundational components that 21st century teachers should have to effectively integrate technology into teaching and learning. The framework of Technological Pedagogical Content Knowledge (TPCK, later changed to TPACK) (figure 1) consists of three main components of knowledge: content, pedagogy and technology and emphasizes the importance of the interactions and the complexities among all three basic knowledge domains including pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK) and technological pedagogical content knowledge (TPACK). It refers to the complex interrelationship between a teacher's technology use, instructional methods, and understanding of the subject matter. TPACK knowledge types and their descriptions are listed in Table 1 (Mishra & Koehler, 2006).

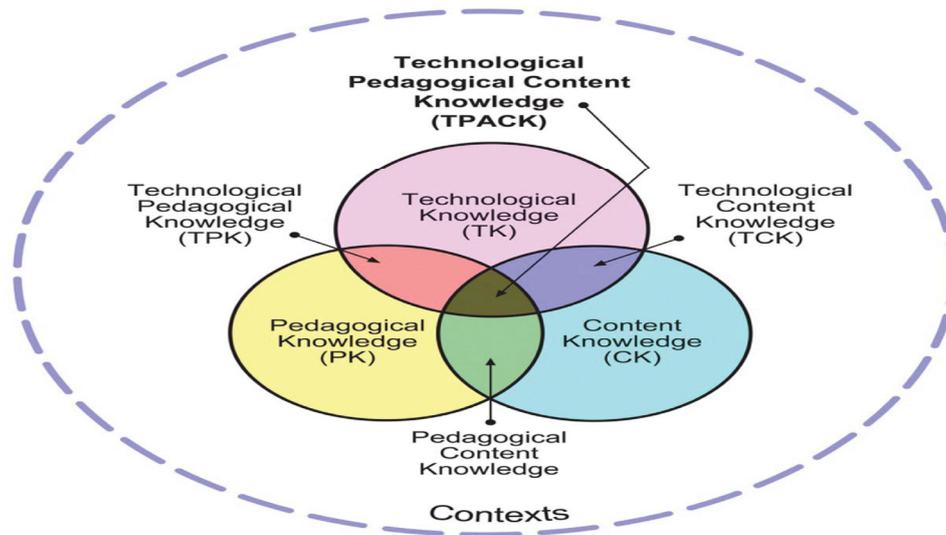


Figure 1: The TPACK framework (reproduced by permission of the publisher, ©2012 by <http://tpack.org>)

Table 1: TPACK Knowledge Types and Their Descriptions

| Knowledge Type | Description |
|--|---|
| Technological Knowledge (TK) | Knowledge and skills of traditional, current and emerging technologies |
| Content Knowledge (CK) | Knowledge about the subject matter for teaching and learning. |
| Pedagogical Knowledge (PK) | Knowledge about methods and process of teaching, such as classroom management, assessment and student teaching |
| Pedagogical Content Knowledge (PCK) | The tacit of blending content and pedagogy for developing better teaching practices |
| Technological Content Knowledge (TCK) | The tacit of blending content and technology for developing better teaching practices. |
| Technological Pedagogical Knowledge (TPK) | Knowledge of the affordances of technologies and what teaching strategies can be combined with those affordances to leverage learning outcomes |
| Technological Pedagogical Content Knowledge (TPACK) | Teachers' understanding of the interplay among content, pedagogy and technology as well as the procedural knowledge of integrating technologies into their teaching routines. |

Integrating technology into teaching is a complex issue requiring a broader and deeper understanding of complicated interactions among multiple types of knowledge such as content, pedagogy, technology and context (Koehler et al., 2007). For an effective and successful language learning and teaching, it is important to reveal the perceptions of the language teachers' self-efficacy on technology integration into language teaching and how they use technology in relation with content and pedagogy. In addition, the underlying factors that can foster and hinder technology integration are needed to be understood and studied to help the teachers effectively integrate innovative technology into their teaching. In this way, TPACK framework is helpful to fulfill these goals and by using this framework, this study hopes to shed some new light on this topic by trying to find out the perceptions of English language instructors' about their TPACK in a Turkish context.

METHOD

Purpose of the Study

The purpose of this study is to investigate the perceptions of English language instructors' Technological Pedagogical Content Knowledge (TPACK) within the context of teaching EFL.

Research Design

This study is descriptive and employs a quantitative survey approach on the perceptions of English language instructors' within the context of teaching EFL. However, it also employs a qualitative approach by having some open-ended questions added by the researcher about technological tools the instructors used in language teaching and about the contribution of using technology in language teaching.

Population and Sample

Population of the study is all the English language instructors teaching at university level; however, the sample of the study consists of only 127 English language instructors working in different universities and teaching English at different levels chosen by purposeful and convenience sampling. Demographics of the participants are given below in Table 2.

Table 2: Demographics

| Demographics | N | | Demographics | N | |
|--------------------------|----|-------|-----------------------|-----|-------|
| | f | 127 % | | f | 127 % |
| Gender | | | Education | | |
| Male | 39 | 69.3 | B.A. | 60 | 47.2 |
| Female | 88 | 30.7 | M.A. /M.Sc | 53 | 41.7 |
| | | | PhD | 14 | 11 |
| Age (years) | | | Major | | |
| 20-25 | 4 | 3.1 | ELT | 84 | 66.1 |
| 26-30 | 36 | 28.3 | ELIT | 32 | 25.2 |
| 31-35 | 43 | 33.9 | TRANSLATION | 3 | 2.4 |
| 36-40 | 25 | 19.7 | ALIT | 3 | 2.4 |
| 41+ | 19 | 15 | ELING | 5 | 3.9 |
| Experience(years) | | | Technology Use | | |
| 1-5 | 21 | 16.5 | Yes | 125 | 98.4 |
| 6-10 | 47 | 37 | No | 2 | 1.6 |
| 11-15 | 37 | 29.1 | | | |
| 16-20 | 9 | 7.1 | | | |
| 21+ | 13 | 10.2 | | | |

Data Collection and Analysis

Data were collected via TPACK-EFL Survey (Baser, Kopcha & Ozden, 2015) which intends to assess foreign language teachers' knowledge of TPACK addressing subject-specific pedagogies and technologies. The content validity of the TPACK-EFL Survey was established through expert and pre-service teacher reviews, literature and document analysis. The construct validity was provided via exploratory factor analysis (EFA) showing a seven-factor structure explaining 70.42% of the variance in the model. As a result, the survey included a total of 39 items referring to the categories of TPACK framework were, 9 technological knowledge (TK); 5 content knowledge (CK); 6 pedagogy knowledge (PK), 5 pedagogical content knowledge (PCK), 7 technological pedagogical knowledge (TPK), 3 technological content knowledge (TCK) and 4 technological pedagogical content knowledge (TPACK) descriptively. It employs a nine-point rating scale that ranged from 'nothing/ none' (1) to 'very little' (3) to 'some' (5) to 'quite a bit' (7) to 'a great deal' (9). Evidence for internal consistency was maintained through reliability coefficients calculated as TK: .89, CK: .88, PK: .92, PCK: .91, TCK: .81, TPK: .91 and TPACK: .86, which was satisfactory as Fraenkel and Wallen (2008) suggested that values are above .70 are acceptable. Therefore, this survey proved to be valid and reliable for further studies.

Descriptive statistics were used to analyze the quantitative data. Means, standard deviations and percentages were calculated. To analyze the open-ended questions added by the researcher about technological tools the instructors used in language teaching and about the contribution of using technology in language teaching, the answers were coded and categorized qualitatively.

FINDINGS

Results of the Qualitative Data

Before conducting the descriptive analysis, factor analysis of the survey for this study was performed and the results revealed that there were seven factors as in the main study explaining 35.4% of the covariance among items (Baser, Kopcha & Ozden, 2015). Before EFA, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity values were performed. These tests provided evidence of the appropriateness of factor analysis and the presence of correlations among variables. The KMO value was calculated as .89. Tabachnick and Fidell (2001) suggest that when this value is relatively large (greater than .60), there is an underlying structure of the survey and that factor analysis is warranted for the sample size associated with the measure. Bartlett's test of sphericity (BTS value= 3397.59, $p < 0.001$) was found to be significant, showing that correlations among factors were not zero. The internal consistency reliability coefficients (Cronbach's alphas) within each construct were also satisfactory as calculated, TK: .87, CK: .88, PK: .84, PCK: .85, TCK: .83, TPK: .80 and TPACK: .81, which are all above .70 (Fraenkel and Wallen, 2008).

Table 3: The Descriptive Results of the TPACK Knowledge Types

| TPACK Knowledge Types | <i>M</i> | <i>SD</i> |
|---|----------|-----------|
| Technological Knowledge (TK) | 7.14 | 1.30 |
| Content Knowledge (CK) | 8.65 | .53 |
| Pedagogical Knowledge (PK) | 7.45 | 1.18 |
| Pedagogical Content Knowledge (PCK) | 7.89 | 1.07 |
| Technological Content Knowledge (TCK) | 6.41 | 1.94 |
| Technological Pedagogical Knowledge (TPK) | 7.15 | 1.43 |
| Technological Pedagogical Content Knowledge (TPACK) | 6.30 | 1.91 |

The mean scores of the validated TPACK-EFL survey range from 6.30 to 8.65. According to the results, the mean score of CK is the highest one ($M=8.65$, $SD=.53$) perceived by the English language instructors which is between "7-quite a bit" and "9- a great deal", but closer to "9- a great deal". This means that the participants see themselves in their content area, which is English language, competent. The highest mean in CK is the item "I can understand texts written in English" ($M=8.82$, $SD= 0.51$) the lowest is "I can understand the speech of a native English speaker easily" ($M=8.29$, $SD= 1.01$). CK has the lowest SD, which indicates that this knowledge type did not vary greatly with respect to other knowledge types. On the other hand, the lowest mean score was in TPACK ($M=6.30$, $SD=1.91$) which is between "5-some" and "7-quite a bit". In other words, participants do not think that they are highly competent in integrating technology into their content teaching with sound pedagogy. The highest mean in TPACK is for the item "I can support my professional development by using technological tools and resources to continuously improve the language teaching process." ($M=7.33$, $SD= 1.82$). Whereas, the lowest mean perceived by the participants is for the item "I can use Web 2.0 tools (animation tools, digital story tools, etc.) to develop students' language skills." ($M=5.22$, $SD= 2.67$).

All the other knowledge types, TK ($M=7.14$, $SD=1.30$), PK ($M=7.45$, $SD=1.18$), PCK ($M=7.89$, $SD=1.07$), and TPK ($M=7.15$, $SD=1.43$) were slightly above "7-quite a bit" except for TCK ($M=6.41$, $SD=1.94$) which is slightly below "7-quite a bit". The highest mean score for TK is for the item "I can use computer peripherals such as a printer, a headphone, and a scanner" ($M=8.40$, $SD=1.14$), whereas the lowest one is "I can use collaboration tools (Wiki, Edmodo, 3D virtual environments, etc.) in accordance with my objectives" ($M=5.04$, $SD= 2.76$). As for PK, the item which has the highest mean score is "I can design a learning experience that is appropriate for the level of the students" ($M=7.95$, $SD= 1.37$); on the contrary, the lowest one is "I can collaborate with school stakeholders (students, parents, teachers, etc.) to support students' learning." ($M=6.81$, $SD= 1.99$). When we look at the PCK results, the highest mean is in the item "I can evaluate students' learning processes" ($M=8.14$, $SD= 1.09$) and the lowest one is "I can prepare curricular activities that develop students' language skills" ($M=7.54$, $SD= 1.57$).

In TCK, the highest mean score is for the item "I can take advantage of multimedia (e.g. video, slideshow, etc.) to express my ideas about various topics in English" ($M=7.88$, $SD= 1.58$) and the lowest one is "I can use

collaboration tools to work collaboratively with foreign persons (e.g. Second Life, wiki, etc.)" (M=5.37, SD=2.67). Finally, for TPK the highest mean score is for the item "I can manage the classroom learning environment while using technology in the class" (M=7.83, SD= 1.40) and the lowest one is "I can support students as they use technology such as virtual discussion platforms to develop their higher order thinking abilities" (M=6.43SD=2.44).

Results of the Qualitative Data

Besides assessing the self-perceptions of the English language instructors' TPACK in EFL context, they were also asked what kind of technologies they used in language teaching. Based on the results, the answers were categorized as Learning Management Tools, i.e. Schoology, Moodle; Social Networking and Bookmarking Sites like Facebook, Twitter, Instagram; Blogs and Wikis as Edmodo, Edublogs, online journals on ELT; Presentation preparing tools like Animoto, Prezi, Powerpoint; Resource Sharing tools as Google Sites, Google Docs, Dropbox, Voice Thread, Flickr, Slideshare, TeacherTube, SchoolTube and mostly YouTube and other video channels; Web Exercise/ Activity Creation tools like ESL Video, Kahoot, Hot Potatoes, Quizlet, Online Quiz Creator, Wordle, Digital Story Telling, Spelling City. There are also basic technological tools widely used by the language instructors which are projector, computers, tablets, mobile phones, tape recorders, course book softwares (I-tools). Moreover, the participants were asked in what ways integrating technology promotes language learning and teaching. Based on the results, the following ideas emerged.

Integrating technology into language learning and teaching...

- makes learning process more vivid and attracts students' attention
- increases motivation, interest and recalling
- sparks learners enthusiasm to learn a language
- increases participation in class activities
- can appeal to the students with different learner styles and intelligences
- saves time and energy
- helps access authentic and intercultural materials and real-life experiences directly
- gives faster feedback to the students
- promotes self-study and autonomous learning skills
- provides freedom for the teacher and the student
- gives chance to new ideas and suggestions

DISCUSSION AND CONCLUSIONS

The purpose of this study is to investigate the perceptions of English language instructors' Technological Pedagogical Content Knowledge (TPACK) within the context of teaching EFL. Based on the data obtained from the TPACK-EFL Survey, English language instructors feel themselves the most competent in their subject matter, English language. This result is not very surprising because they should have the necessary knowledge in all four skills in their content area so that they can teach well. Their pedagogical knowledge also supports the results of the content knowledge that the English language instructors feel themselves sufficient in planning the courses, designing learning activities, using the necessary teaching methods and techniques that are appropriate for a learning environment, supporting students' learning inside and outside the classroom and managing the classroom for an effective teaching and learning process. When we look at the technological knowledge, the participants can use the basic hardware of the computer and tools, like projectors, OHPs, CD recorders, printer, scanner, smart boards, office programs, etc. However, they felt less competent in troubleshooting the computer or Internet problems independently; or creating multimedia and using collaboration tools in accordance with their objectives.

As stated in the findings, the lowest mean scores are in TPACK because the English language instructors do not think that they are highly competent in integrating technology into their content teaching with sound pedagogy. Although they believe that they can improve themselves in using technological tools and resources to improve the language teaching process via professional development, they do not feel themselves secure in



using Web 2.0 tools, collaboration tools or virtual worlds. It may be due to the lack of training they had during their pre-service education or lack of professional development and motivation to use technology.

In conclusion, in order to provide a better and effective language teaching, firstly we should equip the teachers with the required skills and knowledge. This can be achieved by devoting more time and effort for professional development for technology integration. In addition, teacher education programs should offer pre-service teachers with courses teaching technology in contexts that focus on the relationship among technology, content and pedagogy, mainly TPACK. Rather than giving superficial theoretical knowledge for technology integration, they should be provided more practice both in class and in practicum at schools. By having the sufficient knowledge and skills for technology integration, the teachers will have high self-confidence and motivation which will enable them to integrate technology more into their lessons. Finally, the technological infrastructure and facilities at schools and faculties should be improved so that teachers can apply their knowledge and skills for a better and effective learning environment.

WJEIS's Note: This study is presented as an oral presentation at 2nd International Congress on Education, Distance Education and Educational Technology- ICDET- 2016, Antalya-Turkey.

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