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TEACHER TRAINING ON ICT (WEB TOOLS) FOR ENGLISH LANGUAGE TEACHING IN PRIMARY SCHOOLS: TPACK FRAMEWORK AND USAGE

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Abstract

Teacher knowledge has an impact on the quality of language teaching. Several models have been created on teacher knowledge. According to TPACK framework (Koehler and Mishra, 2008) for example; content knowledge represents all concepts (grammar, discourse, etc.) and skills in English language, pedagogical knowledge includes all methods and strategies used to teach English, and technological knowledge captures all technologies like web tools, digital platforms, applications, software and others. In this study, a professional training based on TPACK model was conducted and digital technologies (web tools, platforms, applications, software) which can be utilized in EFL face -to-face or online classes (aged 7-12) are practiced in the workshops. After the training, while the participant teachers are actively teaching in the 2021-22 academic year, a post- test on TPACK and an open-ended three (3) questioned form was sent to collect data on TPACK and their classroom applications of the digital tools. The results showed improvement on their TPACK and classroom applications of the digital tools. However they also displayed the problems faced during classroom applications.

Keywords: Technology, Pedagogy and Content Knowkedge (TPACK); Ministry of National Education (MoNE); English as a Foreign Language (EFL); English Language Teaching (ELT)

1. Introduction

As part of 21st skills, Information, media and technology literacies have become indispensable part of our lives especially in an environment full of rich information and technology. 21.century teachers play a crucial role in training global individuals of the future.

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In a world where distant/online learning and teaching activities are being performed intensively in digital/electronic platforms, teachers are expected to possess Technological Pedagogical Content Knowledge- TPACK**,** (Koehler, 2013) which is based on the principle suggesting that teachers have the required knowledge in these three basic knowledge domains and the ability to harmonize and use them effectively in teaching activities. However, although web tools are frequently used in teaching English, there is not a certain approach based on a model for teaching on digital platforms. That is why the TPACK model is chosen for teacher training, as it serves an understanding of what to teach (content knowledge), how to teach (pedagogic knowledge), and which technologies and how to use these technologies (technological knowledge) for a better result and quality in ELT. According to TPACK model content knowledge represents all concepts (grammar, discourse, etc.) and skills in English language, pedagogical knowledge includes all methods and strategies used to teach English and technological knowledge captures all technologies like web tools, digital platforms, applications and software.

The TPACK framework extends the idea of pedagogical content knowledge (Schulman, 1987). It was introduced to understand the teacher knowledge required for effective technology integration. Seven components are defined (Kohler & Mishra,2013) as Technology Knowledge, Content Knowledge, Pedagogical Knowledge, Pedagogical Content Knowledge, Technological Content Knowledge, Technological Pedagogical Knowledge, Technological Pedagogical Content Knowledge (see in the figure 1). The idea is to help students learn with the knowledge of how technologies can be used to build on the existing knowledge and to develop “new epistemologies or strengthen old ones (p.10)” (Kohler, 2008)

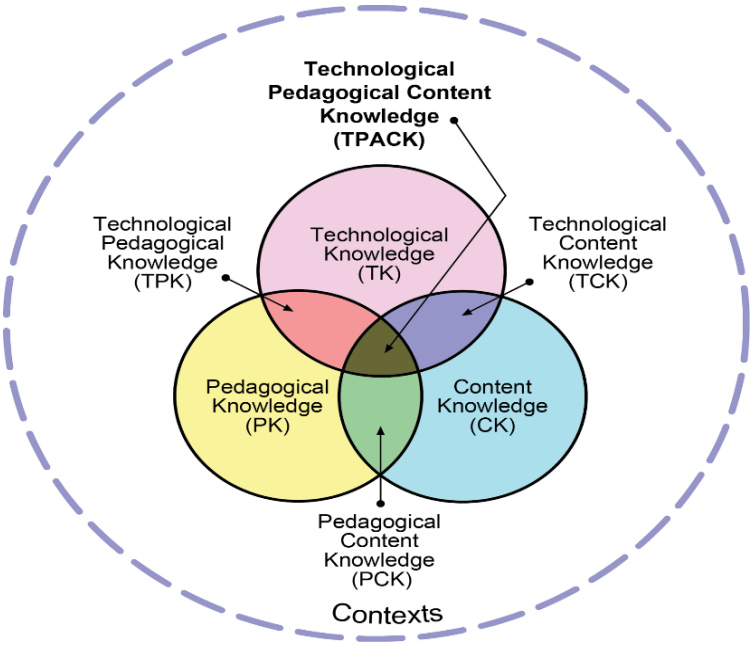

Figure 1. TPACK-framework-graphic-adapted-from-http-tpackorg

Classroom applications of TPACK can be seen in literature. Seftyawan (Seftyawan, 2014) for example, has created a TPACK lesson plan and has displayed how technological pedagogical content knowledge can be blended in an English class. Technology courses in education enable trainees for digital literacy. It needs to be a compulsory component of teacher education since it is one of the 21st century skills to be possessed by all subject teachers. Teacher education programmes provide courses on technology but the efficient use of digital tools is not practiced enough so that student teachers can blend the pedagogical and content knowledge with technology in their classes (Figg, 2013).

Puentedura (Puentedura, 2013) has created another model (SAMR) which provides a framework to show the impact of technology on teaching and learning- mobile learning (mlearning). The model moves through various stages (Substitution, Augmentation, Modification and Redefinition) beginning at a basic level of learning in the substitution phase through to a level where learning is transformational at the redefinition level. Use of mobile devices, mobile learning is getting popular in the new age. Learners have the opportunities to construct their knowledge if the learning activity is supported by mobile learning (Liu, 2013)

English language is accepted as lingua franca in global terms and web tools are frequently used in both teaching and learning English. Learners, especially the digital natives find it very easy and helpful to learn English by using technology. Teachers, on the other hand, face problems in integrating appropriate technology into their teaching since there is not a certain teaching approach based on a model. TPACK model is a useful approach in teaching English as it serves an understanding on what to teach (content knowledge), how to teach (pedagogic knowledge), which technologies and how to use these technologies (technological knowledge).

This study displays a professional teacher training project based on TÜBİTAK 4005 Project on TPACK model. The training was conducted for English teachers (24) teaching pupils aged 8-12 at state schools in Istanbul. The training was conducted for 5 days at a state school in Istanbul at the same area where the teachers worked. The school was equipped with the technology lab which had the required equipment for this project. The content of training was about digital technologies (web tools, platforms, applications, software) which trainee teachers can utilize in their in-class or online English lessons. It was hypothized that after the training, teachers will develop their digital literacies with the 21. Century digital technologies and will be able to harmonize these skills with their content and pedagogical knowledge (TPACK) which in return, will contribute to the students' language learning processes.

2. Method

2.1. Research Design

This study is conducted within the scope of the TUBITAK 4005 project. Single Group Pre-test Post-Test Design was applied to collect data about the participant teachers' (n24) TPACK self-confidence. The single-group pretest-posttest design is a research design that behavioral researchers frequently use to determine the effect of an intervention on a particular sample

(Allen, 2017). In addition, the descriptive method was used to reveal the teachers' problems in applying the applications they prepared after the training they received in the classroom environment.

The research study group consists of 24 English language teachers of 5th, 6th, and 7th grade English classes in the central district of Istanbul, Büyükçekmece. English language teachers voluntarily participated in the study. 17% (n=4) of the teachers participating in the study were male, and 83% (n=20) were female.

2.2. Research questions

1-Is there a change in the Technological Pedagogical Content Knowledge Self-Confidence levels of the teachers of English participating in the teacher training course?
2-Are there any problems in applying the technology-supported course contents prepared by the English teachers who participated in the course?

2.3. Data Collection

"Technological pedagogical content knowledge self-confidence scale" and "teacher activity evaluation form" were used as data collection tools.

2.3.1. Technological Pedagogical Content Knowledge Self-Confidence Scale

(TPACK-SC): (Graham, 2009))'s TPACK-SC was adapted into Turkish by Timur and Taşar (Timur, 2011) applied the scale to 393 science and technology teachers to determine the scale's validity and reliability, and they found the Cronbach Alpha reliability coefficient of the scale, consisting of 31 items and four dimensions as 0.920. In this study, the Cronbach Alpha reliability coefficient of the scale was found to be 0.890. The scale is 5-point Likert type; 1= "I do not trust at all," 2=" I trust a little," 3= "I trust moderately," 4=" I trust a lot," 5=" I trust completely," 0=" I do not know about such technologies" (only in items 16, 17, 18, 19 and 20). The lowest score obtained from this scale is 26, and the highest score is 155.

2.3.2. ***Teacher Activity Evaluation Form:*** *The form developed by the researchers consists of three open-ended questions. These three questions highlight the problems encountered during the application of the activity, how they dealt with these problems, and whether the students had difficulties in the application process after the teachers applied their activities in the classroom environment.*

3. Data analysis

3.1. Technological Pedagogical Content Knowledge Self-Confidence scale

Before the training course started the TPACK-SC was applied to the participants as a pre-test. One month after the application, the same scale as a Google Form was sent back to the participants, and they were asked to fill in the scale. Statistical analysis of the obtained data was made. Since the study group consisted of 24<30 people, the Wilcoxon signed-rank test, one of the non-parametric tests, was run

3.2. Teacher activity evaluation form

The teachers who participated in the training were asked to evaluate the application of the technology-supported course contents they prepared in the classroom. While making the evaluation, they were asked to fill in the "teacher activity evaluation form" consisting of three open-ended questions. Nineteen teachers filled out the "teacher activity evaluation form," and the obtained data were evaluated by content analysis. The reliability of the study was evaluated with the reliability calculation formula proposed by Miles and Huberman (1994). In this formula, it is "Percent of Agreement=Agreement/Agreement+DisagreementX100". In order to ensure reliability, both researchers examined the programs in separate places. According to this formula, the percentage of agreement between researchers was calculated as "99.9", which shows a consensus among researchers.

4. Findings

4.1. Technological Pedagogical Content Knowledge Self-Confidence level

It was examined whether the ICT training given to English teachers changes their self-confidence levels to prepare digital activities suitable for students and the classroom environment by combining their TPACK. The Wilcoxon signed-rank test results regarding whether the English teachers' TPACK-SC levels show a significant difference before and after the training are given in Table 1.

Tablo 1: The Wilcoxon signed-rank test results of the TPACK-SC scale

Posttest – Pretest	N	Mean Rank	Sum of Ranks	Z	p
Negative Ranks	7	11,21	78,50	-2,044*	,041
Positive Ranks	17	13,03	221,50		
Ties	0				
Total	24				

* Based on negative ranks.

The analysis results show a significant difference between the scores of the English language teachers participating in the application from the TPACK-SC test before and after the application (Z=-2.044; p<.05). Furthermore, when the mean rank and totals of the difference scores are considered, it is seen that this observed difference is in favor of the positive ranks, that is, the post-test score. According to these results, it can be said that the training has a significant effect on the increase of TPACK self-confidence levels of English language teachers.

4.2. Teacher Activity Evaluation Form

a- Problems Encountered in the Process of Implementing Technology Supported Course Contents in the Classroom

The first question of the teacher activity evaluation form aims to determine what kind of problems teachers encounter in implementing technology-supported course content. When the data was examined (Figure 2), while 10,81% of the teachers stated that they experienced no problems, 40.54% of them underlined that they faced with infrastructure problems; 21.62% of them, student-based problems, 5.41% of them, implementation-based problems; 5,41% of them underlined that they encountered problems originating from teachers.

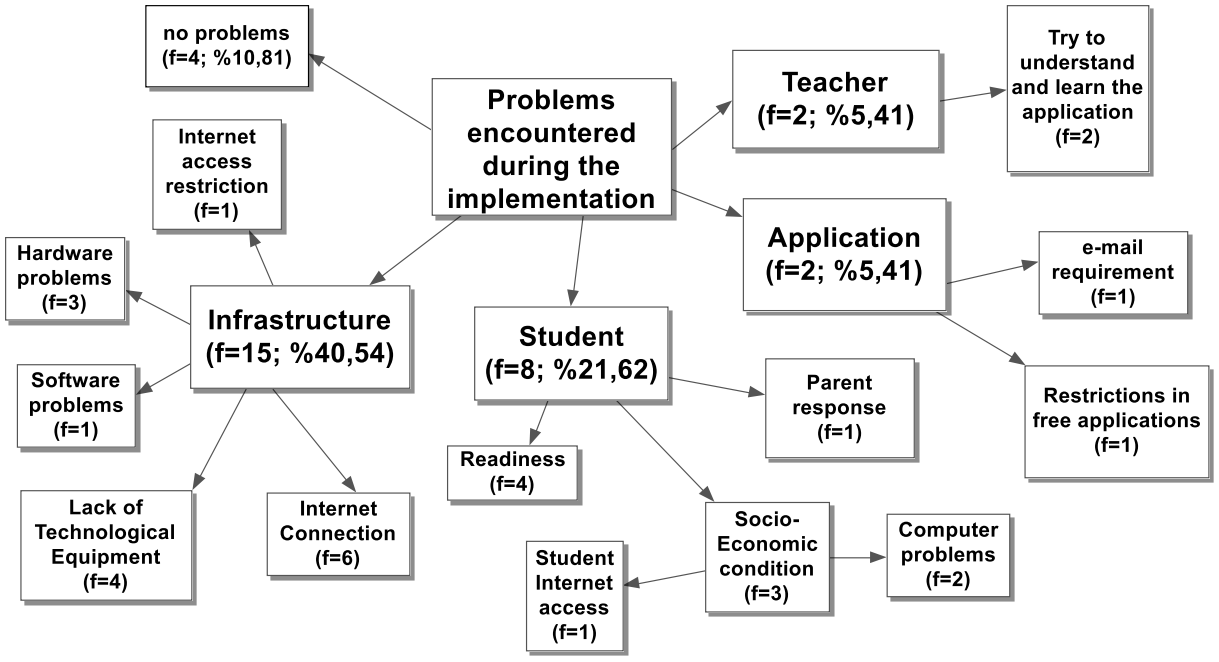

Figure 2: Problems faced by teachers in the process of implementing technology-supported course content

Teachers stated that they encountered problems with infrastructure in implementing the technology-supported course content. These infrastructure problems are internet connection (f=6), lack of technological equipment in the classroom (f=4), hardware-related problems in the technological equipment in the classroom (f=3), software incompatibility (f=1), and restrictions applied to internet access (f=1). The statements of some teachers are as follows: *"Internet connection is a big problem. The lack of MoNE's permission for some sites is another problem." (T2). "I encountered more Internet connection problems." (S8). "The technological infrastructure of the class was not sufficient. The computer was not working." (T18). "Sometimes internet outage and computers in schools are not working efficiently." (T19)*

Considering the student-related problems encountered by the teachers during the implementation of the technology-supported course content, problems such as; insufficient readiness of the students (f=4), lack of internet access (f=1), and computers (f=2) due to the socio-economic status of the students were mentioned. In addition, it was also emphasized parents' reactions to the application (f=1). The statements of some teachers are as follows: *"There are generally communication problems caused by students. From time to time, there are difficulties in the student's access to internet-based technological programs outside of school." (S9). "Students did not have difficulties because parents had problems because they were dealing with them on their behalf..." (S7). "With students' technological impossibilities" (T10). "Of course, as an educator, the primary problem, without exception, is socio-economic situations when trying to put the methods we have acquired in theory into practice." (T13).*

They stated that the teachers also encountered problems arising from the applications they used to implement the technology-supported course content. Teachers emphasized that they see the necessity of e-mail in some applications (f=1) and being charged for specific usage in some applications (f=1) as problems they encounter during the process. Some of the teachers' statements are as follows: *"Due to the young age of my students (between 7 and 9 years old), the main problems I encountered were that they did not have their e-mail accounts in applications that require an e-mail account and they did not have enough experience in how to use such content." (T15). "And some free apps require payment as they gain popularity." (T17).*

They wrote that the teachers also encountered problems arising from themselves in applying the technology-supported course content. They especially emphasized that their inability to learn how to use applications (f=2) thoroughly creates problems in applications. Some of the teachers' statements are as follows*: "I [had a problem] at the point of recognizing the system" (T16). "Preparing applications that they can use computer-aided education and (web 2.0) tools in reading, writing and listening activities" (T18).*

b-With the second question of the teacher activity evaluation form, teachers were asked to explain how they coped with the problems they encountered (Table 2).

Table 2: Teachers' solutions to the problems they faced

PROBLEM		SOLUTION
Infrastructure Problems	Hardware problem	Print out activities and get them done in class
		Support request (f=2)
	software problem	Communication with the publisher
	Internet connection	Link renewal
		Support request
		Using own mobile connection (f=3)
		Downloading apps to a USB stick
	Restricted access to the Internet	Using one's mobile connection
	Lack of technological equipment	Printing out the activities and getting them done in the classroom (f=2)
		Demonstrating sample practice and assigning homework
Student	Student readiness	Focusing on a few apps and using the app students can use
		Capture and share usage video
		Developing students' skills
		Demonstrating sample practice and assigning homework
	Student Internet access	Doing activities on the smartboard
	Computer Problem	Solve with individual support
		Sharing technological devices
	Parent response	Capture and share usage video
Teacher	Getting to know the system	Doing research
		Step by step implementation
Application	Application usage restriction	Finding an alternative app
	Application mail requirement	Using the parents' e-mail or opening an e-mail account for the student

As seen in Table 2, the first infrastructure problem faced by teachers is the problem of accessing the internet. In order to overcome this problem, it is seen that they use their mobile internet connection (f=4) and request support. For the lack of technological equipment, the teachers stated that they produced such solutions as printing out the activities and applying them in the classroom (f=3), showing the sample applications on the smartboard, and giving other activities as homework. Some of the teachers' statements are as follows: *"I was*

connected to the blackboard with my mobile internet. Considering that I have to do this in every class I attend, one can imagine how much of an economic burden this has created for me." (T2). "First of all, doing homework with students at school and trying to create an environment in this direction." (S4). "I took the hand out and tried to apply the technological applications in the classroom environment." (T16).

When the solutions produced by the teachers for the problems arising from the readiness of the students were examined, they emphasized that they produced solutions such as preferring the applications that the students can do, shooting and sharing usage videos about the applications with the students, showing sample applications in the classroom and giving homework, and doing studies that would improve the skills of the students. The teachers also stated that they do the activities on the smartboard for students who do not have internet access, provide individual support for students who do not have a computer, and provide the everyday use of technological devices in the classroom environment. Some of the teachers' statements are as follows: *"By making students use technological devices jointly." (S10). "In many cases, we have tried to overcome it with individual effort and individual contribution." (S11). "I took videos in which I explained how to use the application and shared it with the groups." (T5). "By concentrating on a few practices and using the practices, they have grasped." (S6). "To carry out fun and educational activities with students on the smartboard in the classroom environment to improve their foreign language skills in and out of the classroom. To ensure and encourage each student to be included in the program individually in such activities." (S9).*

The teachers stated that they did the necessary studies for the problems arising from them and learned how to use the applications by researching. When the teachers' solutions to the application-based problems were considered, it was seen that they sought alternative applications when there was a restriction in the applications and that they either used the parents' e-mail addresses or created e-mail accounts on behalf of the students for the e-mail problem. The statements of some teachers are as follows: *"We asked an elder to use his mail account, or I encouraged him to open a new mail account. I tried to help myself." (T13). "Researching [practices] and gradually recognizing and practicing the process itself." (S14).*

c- The third question of the teacher activity evaluation form aimed to determine whether the students experienced any difficulties while they were using the technology-supported course content and, if they did, what these problems were.

When the answers given by the teachers are examined, the teachers stated that many students do not have problems with technology-assisted lesson applications (f=10), and the reasons why they do not have any problems are that the students like the work (f=3), that the students are technology natives (f=3) and that they show much interest in the applications (f=10). f = 4). The statements of some teachers are as follows: *"Our students are generally more skilled in using technology than us. They learn and apply quickly. Their biggest problem is that they either do not have a device of their own or they have insufficient internet packages.*

Applications that do not require Internet are used more effectively." (S10). "Since our students are technology natives, they did not have any difficulties in practice." (T15). "Students highly seek after participation in the classroom environment. It is much more preferred and effective than the classical teaching method made through books and notebooks." (T17).

Although the teachers emphasized that many students do not have problems with technology-supported lesson applications, they also stated that some students have problems in accessing technology (f=12), application-based (f=6), and learning environments (f=5) (Figure 3).

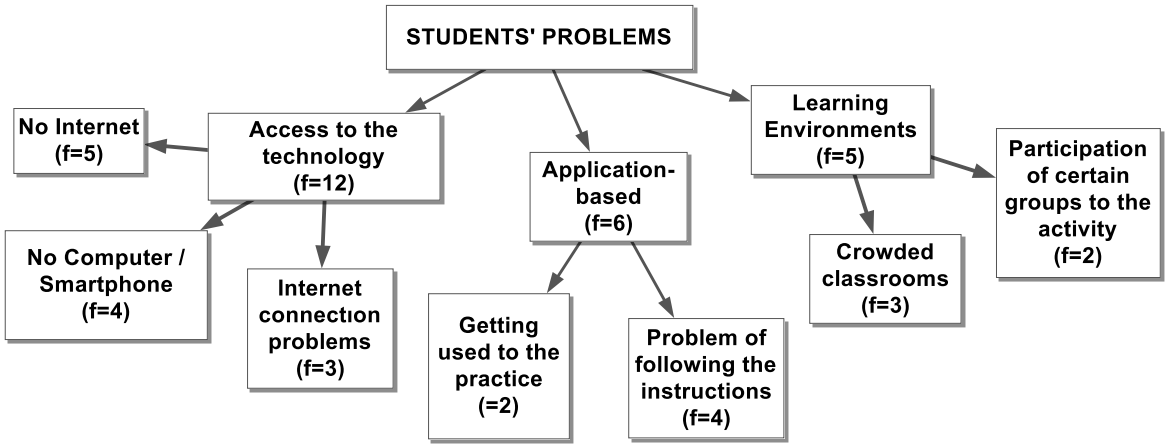

Figure 3: Problems faced by students

The teachers emphasized that the most crucial problem that students experience in technology-assisted course applications is access to technology. It has been underlined that some students have problems with technology-supported course applications due to not having internet packages (f=5), not having computers or phones to do the exercises (f=4), or connection problems occurring in the internet connection (f=3). Some of the teachers' statements are as follows: *"There was no problem except for a few who had internet problems." (T5). "Most of them did not have phones or internet." (T12). "Lack of internet or disconnections." (S3). "...Their biggest problem is either that they do not have a device of their own or that their internet packages are insufficient..." (T10).*

When we look at the problems caused by the applications, the teachers underlined that the students had problems getting used to the applications (f=2) and following the instructions of the applications (f=4). Some of the teachers' statements are as follows: *"There were problems following the instructions and using it at home." (T15). "Because they were faced with something different from the traditional methods, they were constantly hesitant about what to do and how to do it. Some of them got bored and gave up. (S19). "At first, yes, but they quickly got used to it." (T13).*

When the problems arising from the learning environment were examined, the teachers stated that there were problems in the technology-supported lesson applications due to the

crowded classrooms (f=3) and the participation of only certain students in the activities (f=2). Some of the teachers' statements are as follows: *"Students had difficulties using technology and problems arose due to crowded classrooms." (S8). "Of course. Activities are sometimes limited to a certain group as holistic participation is weak due to deficiencies in terms of equipment. Good economic situation, tablet, computer, Internet, etc. Those who had no shortcomings in the subjects participated without any problems." (T12).*

5. Discussion and Conclusions

This study was conducted to find out whether the ICT training had an effect on the English language teachers' TPACK-SC levels. One week of intensive training with workshops effectively develops English language teachers' TPACK-SC level.

After the training, teachers were asked to prepare ICT-based lessons and apply them with their students. During the implementation of the ICT-based lessons, teachers encountered many problems. The most crucial problem they had was the infrastructure problems. It is a well-known fact that every class in schools has a smartboard with an internet connection as a result of the FATIH project of MoNE. However, the smartboards have had hardware and software problems because of the lack of maintenance. Besides, due to the firewall used in MoNE, it is impossible to reach some websites to be used in class. This problem affected the teachers' implementation of ICT-based lessons in class effectively.

As part of 21st skills, Information, media and technology literacies have become indispensable part of our lives especially in an environment full of rich information and technology. 21.century teachers play a crucial role in training global individuals of the future. In a world where distant/online learning and teaching activities are being performed intensively in digital/electronic platforms, besides their content and pedagogical knowledge, teachers are also expected to have knowledge and skills of digital technologies. The teacher training course conducted for 24 teachers within the scope of the TÜBİTAK 4005 project was planned to enable at least 24 English teachers to become efficient users of technology in their classes and encourage them to train learners on how to learn via using technology. The digital natives can become autonomous learners if they know how to make use of technology effectively. It is expected that Ministry of National Education would support the schools with technological aids and arrange TPACK courses to realize better learning both in class and beyond.

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Conflict of interest

The authors declare that there is no conflict of interest

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