

Language Learning Through Contemporary Technologies: A Case Of TPACK Teaching Model

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Article Info	Abstract
<p>Article History</p> <p>Received: July 02, 2021</p> <p>Accepted: February 04, 2022</p> <hr/> <p>Keywords : TPACK, Digital Native, Technology integration, Communication, Language Acquisition</p> <p>DOI: 10.5281/zenodo.5972848</p>	<p><i>This study was conducted to explore the effects of TPACK teaching model on elementary grade students' Language learning. Population of the study included the Elementary grade students from schools of Karachi and the sample size comprised of ninety. Adopted English reading rubrics from Murgueittio (2019) and an writing test was used for the study. An experimental approach was selected and applied with intervention through TPACK teaching model was used for experimental group students while the control group students were taught through traditional lecture method of teaching. The post-test scores revealed experimental group students performed better than the control group students and the test was statistically significant in both reading and writing skills. Future researches on TPACK teaching model for listening and speaking skills, and teachers' perception on TPACK model are suggested.</i></p>

Introduction

Language is a uniquely human trait and it has always been the focal point of cultural identity. English language skills consisted of four aspects such as reading, writing, listening, and speaking which are necessary and play a key role in communicating in daily life. One should master in all four basic skills in order to use the language meritoriously and academically (Aronoff & Rees-Miller, 2007). English language is an international language for communication as it benefits the individuals to read and write for better global communication (Farooq, 2020). Languages are very useful for all the students as the role of language is immense and also the need of the time. It is very important for the learners of Pakistan as it helps them in their academic and professional needs. English is also the official language of Pakistan and other countries like India, Srilanka, Malaysia etc.

English language teaching learning process should be an enjoyable and meaningful activity for students. Traditional method of teaching is a teacher centered teaching approach which makes students to listen passively which leads to rote memorization and recitation techniques. The focus of the traditional teaching method is to prepare the students for the examination, get good marks and complete the syllabus (McGehee, 2017). Traditional teaching methods lack collaboration, interaction and group experience among the students. Traditional teaching methods for English language teaching is also practiced in different countries of the world (Wang, 2001; Hinkel & Fotos, 2002). Conventional or the traditional teaching methods had created a hindrance in language learning among the students. Besides this, it leads to lack of motivation among the students who are not interested as the teaching method focuses on the rote memorization of the grammar rules for completing the given tasks and acquiring marks in the examinations (Wang, 2001; Usher, 2012; Panezai & Channa, 2016). Grammar teaching has also been an issue among the teachers as it was taught with lecture method of teaching but not with technology integration (Hinkel & Fotos, 2002).

The application of modern technology in classrooms represents a significant advance in contemporary English language teaching methods (Winthrop et al., 2016; Irum et al., 2019). Technological Pedagogical and Content Knowledge (TPACK) is an emerging solution for teaching English language to students as it is one of the student centered approach. Usage of TPACK can bring desired learning outcome from the learners (Heick, 2018) as the technology help the teachers to design, shape, impart, stimulate, motivate, encourage, and initiate the students to participate throughout the teaching-learning process. Teaching through TPACK model has become a part of today's educational styles and systems of different countries.

Technology plays a vital role in promoting appropriate teaching learning activities for students and has an important effect on teachers' instructional methods in their language classroom (Grabe, 2007; Lam & Lawrence, 2020). Therefore, it is important for the teachers to be cognizant of all technologies available to teach (Solanki & Shyamleel, 2012). Teachers play a vital role for students' language learning process as they are aware of the language teaching methods, rules and make the learners to be aware of the same rules for language

learning. English grammar is undoubtedly the most important element in the English Language teaching as the English Grammar proficiency and accuracy is greatly needed.

Even in the 21st century, teaching learning process still takes place in a traditional method in which the learners are forced to become passive listeners (Khan et al., 2017). Ali (2018) stresses on training teachers on TPACK model to enhance technology skills that would assist the teachers to integrate technology in the teaching learning process which will bring favorable improvement in English language skills among the learners and also enhance students' motivation and participation.

Statement of the Problem

21st century learners today are more knowledgeable, challenging and competitive or technologically advanced, curious and also due to globalization the students are adaptable and diverse, therefore teachers must have great technological skills and have global awareness for teaching English language skills (Sharma, 2017). Learners lose motivation and could not produce good results due to outdated lecture methods (Usher, 2012 ;Panezai&Channa, 2016). Technology (ICT) integration is one of the main features in National Professional Standards of teachers in Pakistan (NPSTP, 2009). The use of TPACK teaching model for English language teaching has therefore indispensable and suggested to use (Ali, 2018). In order to improve the English language teaching, current study was aimed to measure the effects of TPACK teaching model on Elementary grade students' English language skills.

Aim of the Study

The study aimed to measure the effectiveness of TPACK teaching model on Elementary grade students' English Language skills.

Objectives of the Study

1. To measure the effects of TPACK teaching model on elementary students' English reading skills.
2. To measure the effects of TPACK teaching model on elementary students' English writing skills.

Research Questions

1. What is the effect of TPACK teaching model on elementary students' English reading skills?
2. What is the effect of TPACK teaching model on elementary students' English writing skills?

De-limitations of the study.

1. Research is being conducted in only one school
2. The study was conducted among the elementary students but not in all level of students.

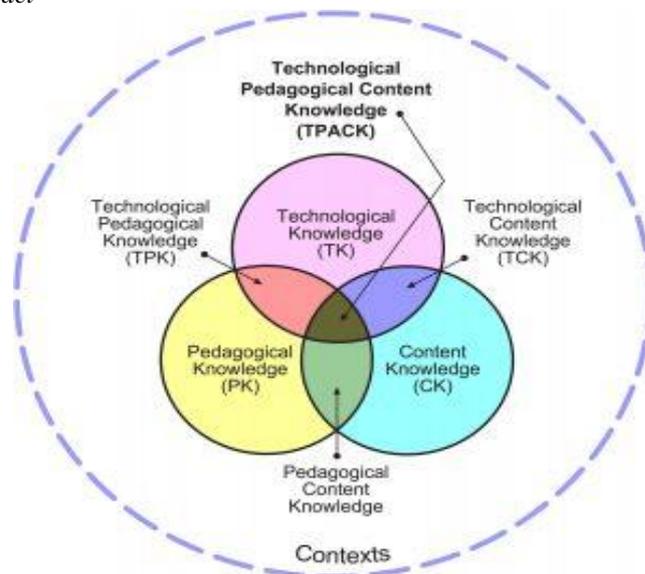
LITERATURE REVIEW

Technological Pedagogical and Content Knowledge (TPACK) Model

Technological Pedagogical and Content Knowledge (TPACK) model is one of the digital instruction method for the teachers which is created to bring awareness of how the teachers can teach their learners' efficiently by using the information technology. It assists them to enhance the knowledge by comprehending the main concepts which are very challenging for them. Mishra and Koehler (2006) TPACK framework, emphasizes on Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK), suggests a creative method to many of the difficulties which educators go through while actually instructing the technology in a classroom set up. TPACK is a technology integration framework that identifies three types of knowledge instructors need to combine for successful ed-tech integration technological, pedagogical, and content knowledge (Rodgers, 2018).

Figure 1

TPACK Teaching Model



Mishra and framework

Pedagogical (TPACK) is one of model that was

Koehler's 2006 TPACK

Technological Content Knowledge the technological teaching created to describe the set

of knowledge that teachers' require to impart their students a subject, teach effectively and to use technology.

Usage of TPACK in the Classroom

With the help of TPACK model, the teachers be able to integrate technology in the teaching learning process for every content to be taught as the combination of technology and content support the learners to grasp the ideas/concepts clear and learn more powerfully. Mishra and Koehler (2008) recommend TPACK as it guides teachers to develop curriculum by teaching and conducting educational activities and assessments through technology. TPACK teaching model alters the way the educators plan and design daily lesson planning procedures to select the learning outcomes, content, activities, videos and the technology based teaching methods to help children learn meaningfully (Ali, 2018). TPACK framework allow teachers to generate or develop the corresponding knowledge to create the best learning atmosphere for the students. To be a great teacher, one has to combine knowledge of the subject with the knowledge of how to teach through technology. With the increasing focus on technology, the prerequisite of a teacher is to learn how to associate technology with the content and pedagogics to create an effective learning environment (Bibi & Khan, 2017).

TPACK model Classroom

According to HiTech Gurukul (2014), the role of teacher in a TPACK model classroom plays vital. In this classroom, teacher is a mere facilitator and mentor to the students unlike the traditional teacher who sits or stands in front of a table, The environment is technology oriented and permits new modes of teaching and offers access to digital tools which are available. This classroom becomes the basic for e-learning. During technological integration in a classroom, the teacher is a media/tech communicator with ample volume of technological skills to communicate teaching skills through videos, multimedia, online digital libraries, interactive boards and knowledge of using and teaching through computers, laptops, tablets and smartphones (James & Connolly, 2019). A role of teacher in a digital classroom is a motivator (Sharma, 2017). The 21st century teachers are learners' themselves. The teachers learn new modern teaching methods, attend or take training in digital learning methods. The teachers who use technology are also creative, innovative, research oriented, responsible, all-rounders and role models to the students.

Technology plays a vital role in building skills among the learners. Information Communication Technology (ICT) advances students' vocabulary to improve advanced literacy levels. Computers, laptops, smart phones and other digital resources harness to improve vocabulary skills learning as the digital tools scaffold students for motivation and create interest in learning (Trelease, 2006). Multimedia glossary using a powerpoint template boost the reading vocabulary and comprehension skills of students. Technology permits the learners to continuously connect, interchange ideas and data using various digital tools for reading purposes. Teaching through powerpoint motivates students to enhance reading fluency and reading comprehensions (Pritchard & O'Hara, 2009).

Computer Assisted Language Learning (CALL) is an interactive teaching method which assists learners to achieve their goals of learning at their own speed and capability. Computer technology is used in this method for teaching learning processes at all stages such as teaching presentation, practice and feedback. Benefits of CALL involve to enrich English language skills, to connect and interact with outside world, to motivate in collaborative and cooperative learning techniques, used for repeated drills, activities for listening, assessment, and language learning and teaching (Thajakan & Sucaromana, 2014). Multimedia and Computer Assisted Language program (CALL) initiated to enhance phonetic awareness among the learners and phonic awareness is indispensable for acquiring reading expression of language skills. Integration of CALL for phonic awareness can be done with multimedia presentation using text, videos, sound and animation and therefore stress on multi-dimensional CALL (Thajakan & Sucaromana, 2014). Students can learn English Language through computer games, animated graphics, and problem-solving techniques which can make learning more interesting (Ravichandran, 2000). A computer can also analyze the specific mistakes that students made and can react in different way from the usual teacher, which allows students to make self-correction and understand the principle behind the correct solution (Ravichandran, 2007). Students have freedom of expression within certain bounds that programmers create, such as grammar, vocabulary, etc. They can repeat the course they want to master as many as they wish. Digital text on computers or tablets enhances reading fluency and reading expressions among the learners (Erten, 2018). Audiobooks enable to absorb the text, to know the plot and to listen to the fluency model (Carbo, 2005). Listening to Audiobooks encourages blended reading approaches through digital audio books on the MP3 player out righted (Esteves et al., 2007). Integrating technology while teaching writing to student enable them to technologies such as smartphones, tablets and computers have attracted students to learn writing through them (Choo & Li, 2017).

Grammar is very important in the process of English writing. Teaching grammar through video which has both audio and visual effect for the learners bring beneficial results. Videos are very useful in offering real life scenes or situations which are connected to daily life than mere classroom environment. By watching videos, the students learn the sentence pattern, grammar and so on. Videos can be played often to hear and practice dialogues. (Saedi & Biri, 2016). Students who have watched video had shown tremendous development

in the sentence construction and educators' assume teaching through videos as a powerful communications medium (Moreira &Nejmeddine, 2015). Videos contain interesting and contextual uses of language which can be relevant to specific text types and textbooks.

English Language Skills:English Reading Skill

Reading is a multifaceted process involving vocabulary recognition, comprehension, fluency, and motivation. Reading is a gateway to learning anything about everything which help the students to discover new ideas and educate in any area of life they are interested in. Reading also has social benefits as children discuss stories with others and form friendships over shared interests. Reading improves concentration and reduces stress. Reading fluency is a critical skill of the learner and it refer to the smoothness or flow when sounds, syllables, words and phrases are combined together intelligible spoken of English. Reading fluency can be achieved through usage of tablet and computer based environment. Text on computers or tablets enhances reading fluency among the learners (Korkmaz, 2021) Reading comprehension is the ability to understand a written passage of text and it is the bridge between the passive reader and active reader. It is the crucial link to effective reading which is essential for a rich academic, professional and personal life. Reading fluency is a very important part of reading comprehension as readers who spend their time decoding words tend to lose the understanding of what is being read. These cognitive skills include attention, auditory analysis, sound blending, memory, processing speed and visual perception (Korkmaz, 2021). A lack of strong reading comprehension skills definitely affects a child's success at school as academic progress depends on understanding, analyzing and applying information gathered through reading. Reading with a purpose, learning vocabulary, retelling what has been read, asking and answering questions and summarizing the important facts. Reading is important because words are the building blocks of life.

Technology have brough a great change in the teaching learning process. Media programs such as videos, music, news, magazing, TV programs and so on can seen or watched through digital platform. Teaching learning process through games on computer which showed an amazing improvement in reading vocabulary and reading comprehension skills (Korkmaz, 2021). When teaching children to be expressive, rely on activities where they speak while they read. Reading texts with good expression is an important marker of a fluent reader (Kamhi&Catts, 2012). Students can learn about their interests also develops imagination and creativity, improves vocabulary and interaction. Both written and spoken communication abilities can be improved through regular reading habits (Keyser,2021).

English Writing Skills

Writing is one of the production skill like speaking and it may be related to mastery, and if anyone can read and write, it would be a greater than others (Hammer, 2007). Writing is a skill which is taught in a formal setting than reading. The learners need to know the alphabets, spellings, and words to do any picee of writing. Writing skills show the writer's thoughts/ideas/opinions/facts/stories etc in a manner which makes their thoughts clear and comprehensible to the reader. Good writing needs to have good vocabulary, correct grammar and spellings along with perfect punctuation. Technology has expanded the type of written activities that students are able to do in an educational setting. The teachers can provide context, and the way to communicate the writing task in a meaningful manner. Rae (2020) informs about the important skills that students must possess and be perfect which the writing skills is undoubtedly. Writing skills provide the learners opportunity to excel in their academic as well as career and real life. Writing skills improve learners communication skills as it opens forum to learn all the rules of the language skills.

Writing skills allows the students to organize their ideas and express it meaningfully and coherently. The major parts of communications such as grammar, spellings, punctuation, gestures, paralinguistic and many more to make the message clear for the readers. Writingskills sharpens creativity and imagination levels of learner' as writing becomes more often and frequent. Another important benefits of writing is, it widen the knowledge base of the learners, improve academic performance and increases the confidence level of learners. Aplu(2020) states learning how to write is not about developing the writing skills at the same time it is about training the mind to think. Writing is also important for communication skills. Whether it is composing a story or writing an essay, students should be knowing how to write coherently and efficiently. Written communication is an exceptional features of the human species. Furthermore, writing has helped the individuals to inform, collaborate and alert others through which the communities benefitted with the written cultural knowledge and historical heritage. Writing is not only needed for academic but a life skill through which the ideas, opinions, values, learning are contributed to the community (Brink, 2020).

Writing activities might need students to watch, listen, observe, visualize, read or play to complete any writing tasks. The students may need to compare, contrast, synthesize, summarize, paraphrase the information from more than one sources. It can be a video, audio, only visuals, field trips physical or virtual. By integrating technology, the students can think critically about the information which they are watching, or reading from any source (Zhang, 2013). Tthe effect of virtual and traditional classroom instruction on creative thinking in English Language with EFL Learners with low level proficiency which was found successful (Varzaneh&Baharlooie,

2015). Integration of online games into foreign language teaching by the teachers kept the learners engaged, improved attention which ensued in an active learning environment in reading fluency and expressions (Zou, 2020). A case study by Hatmanto and Purwanti (2019) on an English Education Department in Indonesia on the challenges in implementing E-Learning in English Language. Technology plays a vital role in building vocabulary skills among the learners. Dalton and Crisham (2010) research on Information communication technology advanced students vocabulary skills proved to improve advanced literacy levels. Another rStudy from Pritchandand O'Hara (2009) claim multimedia glossary using a PowerPoint template boosted the vocabulary and comprehension skills of students. Hermafustianaand Rusinawaty (2010) study confirmed teachers used visual teaching aids such as laptops, computers, LCDs to incorporate videos in the lesson. XiuzhenXie(2018) educational technology to encourage the college English teaching was successful through TPACK framework. Another study on analysi on TPACK Literacy by Ammade et al.(2020) was a purposeful study for developing a model for English writing was effective. Amelia et al.(2021) study on teaching through TPACK for teaching story telling was useful and successful. A study about exploring TPACK teaching model to improve the Jordanians students' performance in reading skills by Harden et al.(2019) was effective.

Figure 2

Conceptual Framework ofTPACK & Language Skills

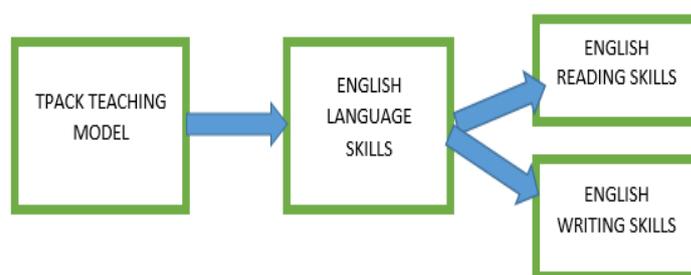


Figure 2.expresses the conceptual framework. It discusses the usage of TPACK teaching model for acquiring language Skills. Teachers use modern technology to create a stimulating or motivating or conducive classroomfor learning. An environment with fun using the TPACK teaching model lessons to teach can assist the students being engaged and participative to acquire language skills specially in reading and writing skills.

RESEARCH METHOD

The study employed quantitative approach using an experimental design to find the effects of TPACK teaching model on elementary grade students' English language skills.Population of the study involvedelementary students from public schools of Karachi and the sample size was 90 elementary school students who were learning English language as a subject.The students were equally divided into both control and the experimental group. The experimental group of students' received the treatment which involved teaching through TPACK teaching model using technology while the control group students did not receive any treatment.Dependent variable for the studywas English language skill and the independent variable used in the research was TPACK teaching model. English language skills further divide in English reading skills and writing skills. English Reading Rubrics by (Murgueittio (2019) to assess students English reading skills and a teacher made English writing test to assess English writing skills was used for the study.

Experiment

A base line pre test was administered to all ninety stdentsbefore starting the intervention. TPACK teaching modelapplied to the experimental group and incorporation of technology using PPT, videos, computer games, language apps for teaching English language skills for a period of eight weeks while the students' used tablets,textbooks and copies for the interactive teaching learning process while the control group students were taught through traditional lecture method of teaching. At the completion of the eighth week, a post test in English reading and writing skills was administered to both the experimental and the control group students.

DATA ANALYSIS

English Reading Skills

H₀₁

There is no significant differences in Post-test English reading skills performance mean scores between the experimental and the control group students

Table 1

Independent t-test Postest scores in Reading skills

		<i>t</i> (88)	<i>P</i>	Cohen's <i>D</i>	<i>S D</i>	<i>M</i>	<i>N</i>	Reading Skills
Experimental Group	45	18.512.351	16.076	.000	3.390			
Control Group	45	10.242.524	16.076	.000				

Above table 1 signifies that there is variation in the post test mean scores of English reading skills between the experimental and the control group students. The experimental group students had displayed superior performance in reading skills ($M=18.51$, $SD= 2.351$) in comparison to their counterpart the control group students ($M=10.24$, $SD=2.524$). Subsequently the value of p as shown in the table is less than 0.01,so the result is statistically significant, $t(88) = 16.076$, $p < 0.01$ with a large effect size (Cohen's $D=3.390$). Henceforth, this null hypothesis is rejected.

Thus, it can be stated that the experimental group students had demonstrated better performance in reading skills than the control group students.

English Writing Skills

Ho2

There is no significant differences in Post test English writing skills performance mean scores between the experimental and the control group students

Table 2

Independent t-test Posttest scores in Writing skills

		<i>t</i> (88)	<i>P</i>	Cohen's <i>D</i>	<i>S D</i>	<i>M</i>	<i>N</i>	Writing Skills
Experimental Group	45	45.58	2.880	15.667	.000	5.351		
Control Group	45	29.91	2.976	15.667	.000			

Above table 2 signifies that there is dissimilarity in the mean scores of English writing skills between the experimental and the control group students. The experimental group students had displayed better performance in writing skills ($M=48.58$, $SD= 2.880$) in comparison to their counterpart the control group students ($M=29.91$, $SD=2.976$). Subsequently the value of p as shown in the table is less than 0.01, so, the result is statistically significant, $t(88) = 15.667$, $p < 0.01$ with a large effect size (Cohen's $D=5.351$). Henceforth, this null hypothesis is rejected.

Thus, it can be stated that the experimental group students had performed well in English writing skills than the control group students.

RESULTS, FINDING AND DISCUSSIONS

The study aimed to measure the effects of TPACK teaching tools on elementary grade students English Language learning.

English Reading skills

The experimental group students who were taught through TPACK teaching model with videos, multimedia and recorded audio performed better than the control group students who were taught through lecture method. A latest study by Mah et al.(2020) in Singapore was aligned to the present study where progress in English reading performance was visible when they were taught through technologies such as computers and online resources. Researchers such as Thajakan and Sucaromana (2014) agreed upon language learning with multimedia presentation using animation, text, sounds and videos. This study was found similar to a recent study by Cecen (2020) on the students' perceptions of using Edmodo, Quizlet, and Canva by using the technology acceptance mode in Turkey proved to be successful among the low-level students learning in English vocabulary. Furthermore, Chiangmm (2020) and Zou(2020) too confirmed on integration of online games into foreign language teaching by the teachers kept the learners engaged, improved attention which ensued in an active learning environment in reading fluency and expressions. Gorgen et al. (2020) and Vasalou et al. (2017) approved that assisted English reading delivered supporting and hopeful proof that tablets can be used for assisting children with reading disabilities to teach reading vocabulary and fluency.

English Writing Skills

The study revealed the best performance of the experiment group students' writing skills in relation to the control group students. The mean scores of English writing skill performance proved that the experimental group students who were taught through TPACK teaching model performed sound. Using games as a formative assessment tool to observe a difference in academic achievement proved to be successful (Göksün and Gürsoy, 2019). Technology enhanced writing skills and motivation of students to engage in the learning process (Zhang & Zou, 2021). Teaching through videos, multimedia, computer and laptop enhance writing skills which are not

restricted to schools or colleges, but simply go beyond and it is a life long skill (Cadmin, 2019). A latest study by Zhang and Zou (2021) back the current study as their research on the effectiveness of technologies in collaborative writing for second language learning in Computer Assisted Language. Social media tools for collaborative writing which produced a general positive effect on students' joint writing qualities and individual writing performances. Studies conducted by Balka (2019) and Chang et al.(2019) on usage of smart phones to teach writing skills was found successful as they practiced writing formal emails. Zhang(2013) also agrees and assures that the integration of technological devices the students get information through various sources which enhance the students critical thinking and the students performed well in the essay writing when taught through technology. Moreno et al. (2019) study on the importance of TPACK created by Mishra and Koehler(2006) revealed that teachers trained in TPACK are equally better in content to be taught, teach through technology and using various forms of technology therefore they teach according to the students needs and development. Research conducted by Muniandy and Veloo (2011) confirm the importance of teaching through TPACK model for improving English writing as it form the center of the language skills.

Conclusion

The current study investigated on the effect of TPACK teaching model on elementary students' English language skills. Findings of the quantitative data composed after the intervention revealed that there were significant variances between the mean values of performance in both the post-test English reading and writing skills of both the control and experimental groups. So it is established that teaching the experimental group students with TPACK teaching model, was fruitful. So it is concluded that teaching through TPACK model is more effective than teaching through traditional lecture method to improve the English reading and writing skills of elementary grade students. Good English reading and writing skills improve the communication skills of the learner. Last but not least, every teacher and every school must try the TPACK teaching model in their classroom to achieve the desired learning outcome.

Recommendation for Future Research

Future researches on TPACK teaching model for listening and speaking skills, and teachers' perception on TPACK model are suggested.

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