

Applying TPACK Model in English Language Teaching at Primary Level

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ABSTRACT

ICT infrastructure investments in educational institutions have been one of the key priorities of education policy during the last decade. Despite the attention, research on the effectiveness and efficiency of ICT is questionable. The present study concludes that Language Learning includes experiential and practical exposure to students and such inclusions in the educational programs will surely enhance the students' learning. Taken together, findings indicate that appropriate technology tools along with TPACK surely help the students' language learning and motivate them to apply in real-life situations. When used properly, education technology applications may serve as important tools for improving students' aptitude in learning English and the overall learning environment of the school.

Keywords: ICT, TPACK, Pedagogy, TPK, TCK

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INTRODUCTION

Today, Information and communication technology has become an important part of most of enterprises (Zhang et al., 2007, Bamrara, A., 2012). Computers began to be placed in schools in the early 1980s, and several researchers suggest that ICT will also be an important part of education for the following generations (Bransford et al., 2000; Grimus, 2000). Modern technology offers many means to improve teaching and learning in the classroom (Lefebvre et al., 2006). Dawes (2001) believes that new technologies have the potential to support education across the curriculum and provide opportunities for effective communication between teachers and students which was not possible in past. Uttarakhand is a developing State and most of its population relies on Government Schools for educating their kids. ICT tools play a critical role in teaching-learning process as it has been observed very effective in the Classrooms to dispense the knowledge. In terms of teaching with technology, it suggests that it impacts not only what we teach but how we teach. ICT in education has the potential to be influential in improving teaching processes. However, this potential can not be easily achieved. Given the importance of ICT in society and possibly in the future of education, the discovery of possible obstacles to the inclusion of these technologies in schools would represent an important step to improve the quality of teaching and learning. Balanskat et al. (2006) pointed out that problems will be continued to be encountered, although teachers adopt the power of digital technology and apply it too. Considering the usability and applicability of digital tools, the School Education department of Uttarakhand has also implemented various projects to encourage the digital awareness among teaching fraternity.

TPACK (Technological Pedagogical Content Knowledge)

The technological pedagogical content knowledge (TPACK) framework describes the kinds of knowledge required by teachers for the successful integration of technology in teaching. It suggests that teachers need to know about the intersections of technology, pedagogy, and content. Specifically, how these areas of knowledge

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interact and influence one another in unique and specific contexts (Mishra et al., 2006).

At the heart of the TPACK framework, is the complex interplay of three primary forms of knowledge: Content (CK), Pedagogy (PK), and Technology (TK). Effective technology integration for pedagogy around specific subject matter requires developing sensitivity to the dynamic, transactional relationship between all three components. (Figure 1) A teacher capable of negotiating these relationships represents a form of expertise different from the knowledge of a disciplinary expert (say a physicist), a technology expert (a software programmer) and a pedagogical expert (an academician). The lack of awareness of TPACK keeps technology separated and leads to following problems with using technology in the classroom (Koehler and Mishra, 2009)

- There are such rapid changes in technology that it is extremely difficult to keep up with all the latest advancements and apps.
 - The software is designed for business, not for education. This often means that students are learning how to use the program and not learning the content of the class.
 - Keeping technology separate is the situational nature of the classroom. A teacher can adjust a lesson to make sure it meets the needs of the specific group of students, but the instructional video cannot.
 - Keeping technology separate places an emphasis on "what" not "how." From the teacher's perspective, the lesson becomes about what technology we will use today, what it says, what skills it requires, instead of how can I teach my students.
- The simplest idea in TPACK is that a person who is a world-

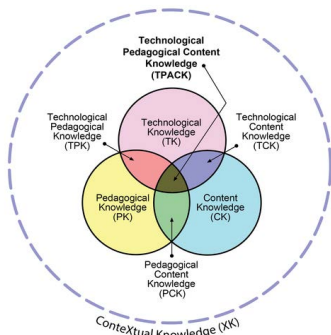


Figure 1: TPACK framework

renowned expert in a subject might not be a great teacher because they lack the pedagogical knowledge to make the subject accessible and understandable. To be a great teacher, we have to combine our knowledge of the subject with our knowledge of how to teach. With the increasing focus on technology, we need to also learn how to combine technology with our content and pedagogy to create an effective learning environment (Niess, 2011).

REVIEW OF LITERATURE

English is an important language in a society where it acts as a bridge to connect different races in a society. However, in the circumstance of 21st-century education, specifically for English Language Teaching (ELT) which has been affected by Industrial Revolution 4.0, technology plays an important part as it offers the potential to enhance teaching processes and facilitate the learning of English (Elas et al., 2019). For this purpose, Technology Pedagogy Content Knowledge (TPACK) paves a way to determine the correlation between technology, pedagogy and content knowledge among English teachers on how they incorporate these technology tools in their English teaching. Several studies studied the applications of novel technologies in the classroom and explored it as indispensable to provide opportunities for students to learn to work in an information age (Osborne et al., 2003; Tondeur et al., 2012). In the field of language teaching and learning (LTL), ICT is believed to have contexts that facilitate the development of second language abilities. It offers rich, multidimensional learning environments for language learners, giving opportunities to engage with native speakers to interact with other learners at a distance and access authentic materials (Chapelle, 2003; Felix, 2001; Mullama, 2010). Furthermore, various features of the new communication technology like emails, chats and discussion boards, besides providing opportunities for interaction across distance, are tools for the promotion of the language learners' communicative competence. As study of CMC (Computer-Mediated Communication) by Savignon and Roithmeier, (2004) revealed that learners involved in CMC were found to be more engaged in interpreting, expressing, and negotiating meaning, which are essential elements of communicative language development.

Traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society. She claimed that organizations that do not incorporate the use of new technologies in schools cannot seriously claim to prepare their students for next generations. This fact is supported by Grimus (2000), who pointed out that "by teaching ICT skills in primary schools the pupils are prepared to face future developments based on proper understanding". Similarly,

Table 1: Students' responses on the questionnaire before implementation of TPACK model

Learning Outcomes (LOs)	Before the Program (No. of students)			Total
	Correct	Partially Correct	Wrong	
Associates words with pictures	5 14.3%	7 20%	23 65.7%	35 100.0%
Recognizes letters and their sounds A-Z	4 11.4%	9 25.7%	22 62.9%	35 100.0%
Differentiates between small and capital letters	8 22.9%	10 28.6%	17 48.5%	35 100.0%
Recites poems/rhymes with actions	5 14.3%	13 37.1%	17 48.5%	35 100.0%
Names familiar objects seen in the pictures	5 14.3%	10 28.6%	20 57.1%	35 100.0%
Listens to English words, greetings, polite forms of expression, and responds in English/home language	8 22.9%	6 17.1%	21 60%	35 100.0%

Bransford et al. (2000) reported the use of technologies at "what is now known about learning provides important guidelines for uses of technology by teachers for 21st Century. A primary barrier to teachers' readiness and confidence in using ICT, despite general enthusiasm and belief in benefits for learners, is their lack of relevant preparation, either initially or in-service. Training opportunities have remained limited in accessibility and contradictory in quality (Hennessy et al., 2010).

ICT can play various roles in learning and teaching processes. Bransford et al. (2000) concluded that it has great potential to enhance student achievement and teacher learning. Wong et al. (2006) pointed out that technology can play a part in supporting face-to-face teaching and learning in the classroom. A pool of researchers identified that such technologies are helpful in inclusive education, reducing teachers' work load, teaching students with special needs and developing a conducive environment for teaching-learning (Romeo, 2006). While new technologies can help teachers enhance their pedagogical practice, they can also assist students in their learning. According to Grabe et al. (2007), technologies can play a role in developing learner skills, enthusiasm, and understanding.

Osborne et al. (2003) emphasized that along with the modifications in perception on the nature of science and the role of science education, the integration of ICT tools will pose a new challenge in Science Teaching. Researchers and practitioners have done numerous classifications to categorize the barriers to using ICT tools during teaching-learning. Few classified it in two categories, i.e., extrinsic and intrinsic barriers. In one study, Ertmer (1999) referred to extrinsic barriers as first-order and claimed it as access, time, support, resources and training, whereas extrinsic barriers as second order and cited it as attitudes, resistance, beliefs; whereas Bingimlas, K. A. (2009) claimed extrinsic barriers as pertaining to organizations rather than individuals and intrinsic barriers as pertaining to teachers, administrators and individuals.



TPACK Model in English Language Teaching

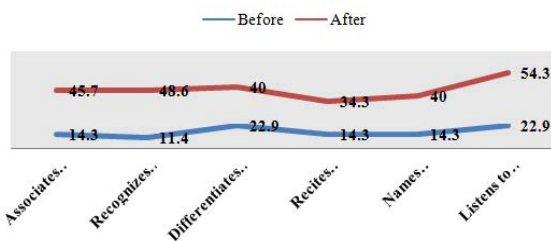


Figure 2: Difference in grades before and after implementation

OBJECTIVE AND RESEARCH METHODOLOGY

ICT applications is continuously altering the teaching and learning landscape throughout the Globe. I applied You Tube Videos as a learning tool during offline/ online teaching. These videos align with the learning outcomes defined by National Council of Educational Research and Training (NCERT) New Delhi. The present study explores the English Language learning of students before and after the implementation of TPACK Model, and ICT Applications (You Tube Videos) in teaching learning processes. For the purpose, a representative sample of 35 Primary School Children of Grade 1st and 2nd has been reviewed/ observed on the following six learning outcomes (LOs)-

- Associates words with pictures.
- Recognizes letters and their sounds A-Z
- Differentiates between small and capital letters
- Recites poems/rhymes with actions
- Names familiar objects seen in the pictures
- Listens to English words, greetings, polite forms of expression, and responds in English/home language

ANALYSIS AND DISCUSSION

Before implementation of the TPACK Model, it was explored that 14.3% of students can associate words with pictures, 20% students have partially solved the problems, whereas 65.7% students wrongly attempted such problems. 11.4% of students can recognize letters and their sounds, 25.7% have partially solved the problems, whereas 62.9% have wrongly attempted such problems. 22.9% students can differentiate between small and capital letters, 28.6% students have partially solved the problems, whereas 48.5% students wrongly attempted these types of problems. 14.3% of students can recite poems/rhymes with actions, 37.1% have partially solved the problems, whereas 48.5% have wrongly attempted such problems. 14.3% students can name familiar objects seen in the pictures, 28.6% students have partially solved the problems, whereas 57.1% students wrongly attempted such problems (Table 1).

Further, 22.9% students can listen to English words, greetings, polite forms of expression, and responds in English/home language, 17.1% students have partially solved the problems, whereas 60% students wrongly attempted such problems.

After implementation of the TPACK Model, it has been explored that 45.7% students can associate words with pictures, 42.9% students have partially solved the problems, whereas 11.4% students wrongly attempted such problems. 48.6% of students can recognize letters and their sounds, 37.1% have partially solved the problems, whereas 14.3% have wrongly attempted such problems. 40% students can differentiate between small and capital letters, 42.9% students have partially solved the problems, whereas 17.1%

Table 2: Students' responses on the questionnaire after implementation of TPACK model

Learning Outcomes (LOs)	After the Program (No. of students)			Total
	Correct	Partially Correct	Wrong	
Associates words with pictures	16	15	4	35
Recognizes letters and their sounds A-Z	17	13	5	35
Differentiates between small and capital letters	14	15	6	35
Recites poems/rhymes with actions	12	15	8	35
Names familiar objects seen in the pictures	14	16	5	35
Listens to English words, greetings, polite forms of expression, and responds in English/home language	19	9	7	35

students wrongly attempted these types of problems. 34.3% of students can recite poems/rhymes with actions, 42.9% have partially solved the problems, whereas 22.9% have wrongly attempted such problems. 54.3% of students can name familiar objects seen in the pictures, 25.7% have partially solved the problems, whereas 20% have wrongly attempted such problems (Table 2).

CONCLUSION

This study explored that there was less accuracy in attempting the English Language problems among 1st and 2nd grade students. It is quite evident from the graph (Figure 2) that the performance of the students has been improved after implementation of TPACK Model in teaching English to Primary students and the results show the improvements in all the six Learning Outcomes (LOs) suggested by NCERT for English Language at Primary Level (1st and 2nd Grade) viz., associates words with pictures, recognizes letters and their sounds A-Z, differentiates between small and capital letters, recites poems/ rhymes with actions, names familiar objects seen in the pictures, and listens to English words, greetings, polite forms of expression, and responds in English/home language.

The study concludes that English Language Education Programs include audio as well as visual exposure to students and such inclusions in the educational programs will surely enhance English Language learning.

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ANNEXURE I

Learning Outcomes – English Language

Class I (English)

Suggested Pedagogical Processes	Learning Outcomes
<p>The learner may be provided opportunities in pairs/groups/individually and encouraged to:</p> <ul style="list-style-type: none"> ➤ name common objects like man, dog etc. when pictures are shown ➤ use familiar and simple words ('bat', 'pen', 'cat') as examples to reproduce the starting sound and letter (/b/, /p/, /k/ etc) ➤ develop phonemic awareness through activities focusing on different sounds, emerging from the words in stories and texts. ➤ sing/recite collectively songs/poems/rhymes with action. ➤ listen to stories, and humorous incidents and interact in English/home language. ➤ ask simple questions like names of characters from the story, incidents that he/she likes in the story, etc. (Ensure clear lip movement for children with hearing impairment to lip read.) ➤ draw/scribble pictures/ images from the story as preliminary to writing ➤ respond in home language/English/sign language/non-verbal expressions what he/she has understood in the story/poem 	<p>The learner:</p> <ul style="list-style-type: none"> • associates words with pictures. • names familiar objects seen in the pictures. • recognizes letters and their sounds A-Z • differentiates between small and capital letters in print/Braille • recites poems/rhymes with actions. • draws/ scribbles in response to poems and stories. • responds orally (in any language including sign language) to comprehension questions related to stories/poems • identifies characters and sequence of a story and asks questions about the story. • carries out simple instructions such as 'Shut the door', 'Bring me the book', and such others. • listens to English words, greetings, polite forms of expression, simple sentences, and responds in English /home language /signs.

Class II (English)

Suggested Pedagogical Processes	Learning Outcomes
<p>The learner may be provided opportunities in pairs/groups/individually and encouraged to:</p> <ul style="list-style-type: none"> ➤ sing/recite collectively songs/poems/rhymes with action. ➤ listen to stories, and humorous incidents and interact in English/home language. ➤ ask simple questions, for example, on characters, places, the sequence of events in the story, etc. (Ensure clear lip movement for children with hearing impairment to lip read.) ➤ respond orally in home language/English/sign language/non-verbal expressions. ➤ write 2-3 simple sentences about stories/poems. ➤ look at scripts in a print rich environment like newspapers, tickets, posters etc. ➤ develop phonemic awareness through activities focusing on different sounds, emerging from the words in stories and texts. 	<p>The learner:</p> <ul style="list-style-type: none"> • sings songs/rhymes with action. • responds to comprehension questions related to stories and poems, in home language/English/ sign language, orally and in writing (phrases/ short sentences) • identifies characters, and sequence of events in a story. • expresses verbally her/his opinion and asks questions about the characters, storyline, etc., in English/ home language. • draws/ writes a few words/short sentence in response to poems and stories. • listens to English words, greetings, polite forms of expression, and responds in English/home language like 'How are you?', 'I'm fine, thank you.' etc.

<i>Learning Outcomes (LOs)</i>	<i>You Tube Video/s</i>
Associates words with pictures	https://www.youtube.com/watch?v=3dztlSaWrjw
Recognizes letters and their sounds A-Z	https://www.youtube.com/watch?v=hq3yfQnlfQ
Differentiates between small and capital letters	https://www.youtube.com/watch?v=rDvKonDZR2w
Recites poems/rhymes with actions	https://www.youtube.com/watch?v=dUXk8Nc5qQ8 https://www.youtube.com/watch?v=TV_x6YUdnvg
Names familiar objects seen in the pictures	https://www.youtube.com/watch?v=0mgrqfWdf80 https://www.youtube.com/watch?v=RWir7ueMV1o
Listens to English words, greetings, polite forms of expression, and responds in English/home language	https://www.youtube.com/watch?v=WKu56CbZoQo