



Original Article

# Relationship between Teachers' Tpack and Effectiveness in Teaching Life Skills

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## Abstract

The fast integration of technology in education has stressed the necessity for instructors to possess strong Technological Pedagogical Content Knowledge (TPACK) to support effective teaching methods. The present study analyzes the association between teachers' TPACK and their efficiency in teaching life skills at the elementary level. A descriptive and correlational survey design was adopted for the investigation. The sample includes 140 elementary school teachers chosen from government and private schools in Patna District, Bihar, selected using accidental sampling. Descriptive statistics were employed to analyze the general levels of TPACK and life skills teaching effectiveness, while inferential statistics, including the *t*-test, were applied to examine differences based on institutional type. The findings demonstrated that teachers had a moderately high level of TPACK and demonstrate good methods in teaching life skills. A statistically significant difference in TPACK was detected between government and private school teachers, with government school teachers having greater TPACK levels. The study finds that TPACK plays a vital role in boosting teachers' efficacy in teaching life skills, since the integration of technology with proper pedagogy and content fosters interactive, student-centered learning settings. The findings underscore the necessity for continual professional development programs targeted at increasing teachers' TPACK, particularly in private institutions, to enable holistic development of students and enhanced life skills education.

**Keywords:** Life Skills, Teaching Effectiveness, Elementary School Teachers, Technology Integration

## Introduction

Future teachers may have a better understanding of how to use technology to enhance pedagogical practices and augment subject-matter instruction with the help of TPACK. By watching and working with seasoned teachers, education interns learn how to select and utilise digital resources in the classroom. For example, teachers may use interactive simulations or multimedia presentations to assist students understand complex scientific concepts or to spark their interest in historical events. Second, TPACK assists aspiring teachers in developing technology-rich lesson plans that cater to a diverse range of student backgrounds, interests, and learning preferences. Future teachers gain experience using technology in the classroom to pique students' interest, provoke conversation, and encourage analysis as part of their internships. They learn how to utilise technology to create scaffolding for their learning experiences and how to vary their lessons to accommodate students with a range of interests and skill levels. Thirdly, by exploring ways to improve material delivery and students' comprehension through the use of technology, TPACK assists aspiring teachers in broadening their topic expertise. Future teachers collaborate to plan and report on lessons during their internships, where they come up with innovative methods to integrate technology while adhering to the course topic. Pre-service teachers can employ digital tools, simulations, and multimedia presentations to give students many access points to challenging content and strengthen their conceptual understanding. When determining when and how to use technology into classes, TPACK also highlights the importance of critical reflection on teaching methods and the application of evidence-based decision-making.

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Through regular coaching and feedback, aspiring teachers build their TPACK skills, which increases their confidence and enables them to better address the needs of their students by creating technology-enhanced classrooms. As they learn to assess how integrating technology impacts student learning outcomes and modify their teaching strategies as needed, their commitment to professional development and growth is clear.

The TPACK framework offers a guiding framework to assist pre-service teachers in effectively integrating technology, pedagogy, and subject knowledge into their instruction. Pre-service teachers should embrace TPACK concepts in order to develop into innovative and effective educators who can use technology to enhance classroom instruction and student learning.

Both academics and educators have recently focused on how information and communication technologies (ICT) could improve learning in the classroom. If teachers are proficient with information and communication technology and know how to use it, students may benefit from its utilisation in the classroom. Students are better prepared for the challenges of the twenty-first century when ICT is introduced and integrated into the classroom. According to Valtonen et al. (2017), these abilities include teamwork, effective communication, IT literacy, social and cultural competency, creativity, analysis, and problem-solving. The TPACK framework (2006) is one method that teachers can use to integrate technology into their lessons. It was made by Koehler and Mishra. The main goal of the TPACK paradigm is to support educators in mastering the use of technology in the classroom. According to this approach, educators' pedagogical knowledge, technical proficiency, and subject matter expertise are all dependant on one another and their ability to use this knowledge in the classroom.

TPACK is not consistently defined in academic papers. The literature refers to "teachers' technological content knowledge" as a "cohesive collection of knowledge and abilities that instructors require to use ICT in their instruction" (TPACK). Content knowledge (CK), pedagogical knowledge (PK), technical knowledge (TK), technological pedagogical knowledge (TPK), and scientific content knowledge (TPCK) are the seven theoretical areas that make up the TPACK framework. The PCK paradigm developed by Shulman (1986) is extended by this framework. For instance, "content knowledge" in disciplines like chemistry and mathematics refers to a thorough understanding of the fundamental theories, concepts, and ideas of the subject as well as the relationships between them. Teaching methods, instructional strategies, classroom management, and student progress evaluation are just a few of the many topics that fall under the broad category of pedagogy. Our definition of "technological knowledge" encompasses understanding how to effectively use software, digital video, smart gadgets, and the internet, among other things. Understanding how technology and content interact and influence one another is one way to define technical content knowledge. Knowing how to effectively employ technology in the classroom is one type of technical pedagogical knowledge. Being aware of the various

technology tools accessible for instructional practice is one example of this. We refer to our knowledge of the most effective ways to teach a certain subject as "pedagogical topic knowledge" (e.g., which pedagogical approaches work best with a given body of information). It's often accepted that understanding how to use various learning technologies and pedagogical approaches to teach a certain subject constitutes technological pedagogical content knowledge. In other words, TPACK is the ability to combine expertise in suitable technological strategies for use in the classroom with an understanding of successful pedagogical approaches.

### Review of Literature

Bwalya & Rutegwa, et al., (2023) There is a considerable correlation between pre-service teachers' attitudes and ideas about technology and their confidence in implementing it in the classroom. To ascertain the TPACK (technological pedagogical content knowledge) levels of 202 pre-service teachers in Zambia, a survey was conducted. Along with the influence of demographic characteristics, the confidence of prospective STEM instructors in their TPACK was also investigated. A one-way analysis of variance and a t-test for independent samples were used to analyse the data, which was collected using a cross-sectional survey design. The results seem to indicate that the majority of prospective teachers are well-versed in TPACK. Gender, academic year, and field of study all had an impact on students' self-efficacy in different TPACK components; nevertheless, "there was no statistically significant difference between the two institutions' students' levels of self-efficacy ( $t_{200}=2.11, p=.83$ )." The ramifications of the findings were examined.

Diamah et al., (2023) Finding out how well preservice teachers thought they understood their own technical, pedagogical, and content knowledge (TPACK) was the goal of this study. For this study, a deliberate sample of 208 aspiring Indonesian teachers—64 men and 144 women—was selected. The Pre-service Teacher Technological Pedagogical Content Knowledge (PT-TPACK) Survey was conducted using measures of Technology Knowledge (TK), Content Knowledge (CK), Pedagogical Knowledge (PK), Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK), and TPACK. At the 0.05 level of significance, the Mann-Whitney U test and descriptive statistics were used to analyse the data. Most of the prospective teachers who responded to the survey thought well of TPACK. Even in kindergarten, girls enjoyed a statistically significant advantage over boys. Although the results were not definitive, there were differences in the opinions of male and female students on TPACK. Surprisingly, on all TPACK subscales, men did worse than women. It's possible that women are more likely than men to keep up their initial excitement for their jobs. As a result, educators must make every effort to influence male pre-service teachers' attitudes regarding TPACK. It is hoped that by doing this, individuals will develop a more positive outlook and better professional advancement techniques.

Farhadi & Öztürk, (2023). The understanding and usage of technology in the classroom by aspiring teachers was investigated through convergent parallel study. A total of 120 prospective EFL teachers—79 women and 41 men—participated from a Turkish public university. The TPACK-Deep scale was used to collect quantitative data, and an open-ended questionnaire intended to delve into participants' viewpoints and needs yielded qualitative data. The authors used descriptive statistics to analyse the quantitative data. Nonetheless, the qualitative data was subjected to a theme analysis. The results showed that the great majority of aspiring EFL teachers had a solid understanding of TPACK. Additionally, the main reason pre-service educators encountered issues in the setting of TK, TCK, and TPK was identified as the absence of easily accessible technology tools. The article concludes with recommendations and consequences for future scholars and researchers working on these same topics.

Jiahong, (2023). Research on teachers' technologically pedagogical content knowledge (TPACK) has increased recently. This evaluation of the pertinent literature aims to assess the latest developments in the worldwide investigation of TPACK among pre-service teachers. The findings indicate that pre-service teachers were not involved in TPACK research until 2007, and scientists have only sometimes shown interest in the subject. This study gives researchers a worldwide viewpoint to examine TPACK in pre-service teachers.

Irwanto et al., (2022). To better prepare future educators for careers in STEM domains, it is essential to understand how they view their own technical pedagogical content knowledge (TPACK). Thus, the goal of this study is to compare the perspectives of aspiring teachers who differ in terms of age, gender, and degree of training. A cross-sectional survey design was employed in this quantitative, non-experimental investigation. 345 female and 136 male prospective instructors from four different Indonesian colleges made up the group. For this study, the 27-question PTTPACK Survey was employed. Person's correlation, one-way ANOVAs, and t-tests were used to analyse the data. Pre-service teachers were most confident in their understanding of pedagogy, while they were least confident in their proficiency with technology. They gave themselves an overall rating over a 4. Age and gender did not significantly affect the TPACK evaluation results. Graduate-level pre-service instructors were also found to differ considerably from their undergraduate counterparts. All six of the TPACK sub-domains showed positive correlations with each other.

Makawawa et al., (2021) Instructors in primary schools that provide online instruction need to be well-versed in both educational theory and the newest technologies. For teachers to use technology in the classroom effectively and efficiently, they need to possess both pedagogical content knowledge and content knowledge, or TPACK. This article examines elementary school teachers' TPACK competencies in the context of implementing online learning in light of the recent COVID-19 epidemic. For this study, 117 primary school teachers in North Sulawesi were hired. Descriptive statistics are used in

the methodology. A Google Form survey with a Likert scale was created in order to gather data. Before the COVID-19 pandemic struck, the great majority of primary school teachers in North Sulawesi, Indonesia, had already acquired TPACK competencies in online learning. TK and PK skills, however, can be enhanced by strengthened TPACK competencies. Primary school teachers' opinions on online learning were strongly correlated with the PK and TPK components of TPACK. There was no appreciable gender difference in the TPACK knowledge of instructors in a primary school context.

### Research Methodology

The current study uses a survey research design in accordance with the descriptive and correlational research methodology. This methodology is deemed suitable since it allows for the methodical gathering of information to investigate teachers' proficiency in teaching life skills and their degree of Technological Pedagogical Content Knowledge (TPACK), as well as the correlation between the two.

The research seeks to:

1. Evaluate instructors' TPACK;
2. Assess how well they teach life skills; and
3. See whether there are any notable variations depending on the type of institution and a few chosen background variables.

In order to comprehend current trends and correlations, statistical analysis and relevant comparisons are made possible by the survey method, which makes it easier to gather quantitative data from a sizable sample.

### Sample and Sampling Technique

The study's participants are elementary school teachers employed by Patna District's public and private schools in Bihar. For the study, 140 teachers in total were chosen as the sample.

Because of the study's accessibility and the teachers' desire to participate, an incidental (convenience) sample technique was used. Teachers were selected from both public and private institutions to guarantee sufficient representation, offering diversity in terms of instructional settings, technology accessibility, and pedagogical approaches.

### Procedure of Data Collection

The researcher visited the chosen schools in person after receiving the required authorisation from the school administration. With their previous approval, the teachers were given the questionnaires during designated times or free periods.

Respondents were provided assurances about the confidentiality and anonymity of their answers, as well as information about the study's goal, prior to the administration of the instruments. The participants were told to answer truthfully and on their own. The questionnaire was given enough time to be completed, guaranteeing the precision and dependability of the information gathered.

**Analysis of Data**

Using the proper statistical methods, the gathered data were meticulously tallied, coded, and examined. The effectiveness of teaching life skills and the degree of TPACK were described using descriptive statistics like mean, percentage, and standard deviation.

**Results and Discussion**

**Table 1 Demographic Profile of Pre-Service Primary Teachers (N = 140)**

Variable	Category	Frequency (n)	Percentage (%)
Age Group	22-25 years	62	44.3
	25-30 years	54	38.6
	30-35 years	24	17.1
Gender	Male	58	41.4
	Female	82	58.6
Educational Qualification	Graduate	89	63.6
	Postgraduate	51	36.4

Table 1 lists the gender, age range, educational background, and kind of institution attended by the 140 pre-service primary teachers involved in the study. Since the majority of respondents (44.3%) were between the ages of 22 and 25, the majority of participants are in the early phases of their professional preparation. With 38.6% of responses, the 25-30 age group follows next, followed by the 30-35 age group, which has a lower percentage at 17.1%. The distribution of the sample indicates that young individuals make up the majority, which is consistent with other pre-service teacher education programs.

It is clear from the sample's gender breakdown that there are more female respondents (58.6%) than male respondents (41.4%). This is consistent with the widely observed trend that more women are enrolling in primary

Differences by institutional type were examined using inferential statistics, such as the t-test. The association between teachers' TPACK and their efficacy in imparting life skills was investigated using correlational analysis, which allowed for a meaningful interpretation of the findings according with the study's goals.

teacher education programs, challenging the notion that all elementary school teachers are female. This gender distribution may help us understand why people develop their life skills differently since socialisation connected to gender influences emotional and interpersonal competence.

Finally, examining the educational backgrounds of the respondents, we find that 36.4% hold a master's or doctoral degree, and 63.6% hold a bachelor's degree or higher. This demonstrates that most pre-service teachers register in elementary teacher preparation programs after completing their bachelor degrees, despite the fact that a sizable portion hold advanced degrees. A person's cognitive, analytical, and introspective skills—which can differ based on their educational background—are essential for success in life.

**Table 2 Mean Scores of Teachers' TPACK and Effectiveness in Teaching Life Skills**

Dimension	Mean	Standard Deviation
Technological Knowledge (TK)	3.71	0.59
Pedagogical Knowledge (PK)	3.78	0.55
Content Knowledge (CK)	3.74	0.57
Technological Pedagogical Content Knowledge (TPACK)	3.69	0.48
Effectiveness in Teaching Life Skills	3.73	0.50

With a mean score of 3.69 and a comparatively low standard deviation, Table 2 shows that teachers exhibit a reasonably high level of TPACK, indicating consistency in replies. Teachers can generally integrate instructional strategies that help students develop their communication, decision-making, problem-solving, and emotional skills,

according to the mean score for effectiveness in teaching life skills (3.73).

According to the findings, teachers who possess strong pedagogical and material expertise and who use technology appropriately are better at teaching life skills in the classroom.

**Table 3 t-test Showing Difference in TPACK by Institutional Type**

Variable	Mean (Govt.)	Mean (Private)	t-value	df	Significance
TPACK	3.84	3.55	3.21	138	0.002 (Significant at 0.01 level)

To determine whether there is a significant variation in teachers' TPACK according to institutional type, an independent samples t-test was used. The mean TPACK score of government school instructors was higher (M = 3.84) than that of private school teachers (M = 3.55).

At the 0.01 level (p = 0.002), the resulting t-value (3.21) with 138 degrees of freedom is statistically

significant, suggesting that the observed difference is not the result of chance. The null hypothesis is thus disproved.

This finding suggests that instructors' TPACK is significantly shaped by their institutional setting, perhaps as a result of disparities in access to pedagogical support systems, professional development opportunities, and technology resources. Increased TPACK among educators may help them teach life skills more successfully, especially

in government organisations. The results highlight the necessity of focused training programs in private schools to improve teachers' use of technology and efficacy in the classroom.

### Conclusion

The current study looked at how well primary school teachers in Patna District, Bihar, taught life skills in connection to their Technological Pedagogical Content Knowledge (TPACK). The results shed important light on how institutional environment and instructors' professional backgrounds affect life skills instruction at the primary school level. According to the findings, instructors often have a moderately high level of TPACK, which reflects their capacity to incorporate technology into their lesson plans and subject matter. In addition, educators showed a satisfactory degree of efficacy in imparting life skills, including interpersonal skills, communication, decision-making, problem-solving, and emotional control. This implies that educators are rather well-equipped to meet students' academic and socioemotional learning demands.

Teachers' TPACK varied significantly depending on the type of institution, with government school teachers scoring higher than their private school colleagues. This result emphasises the importance of professional development opportunities, organised training programs, institutional support, and access to technology resources in enhancing teachers' TPACK. The statistically significant difference demonstrates that instructors' instructional competence and ability to effectively teach life skills are greatly influenced by their institutional setting. All things considered, the study emphasises how crucial it is to improve instructors' TPACK in order to increase the efficacy of life skills instruction. Learner-centred, interactive techniques that foster holistic student development can be supported by effectively integrating technology with pedagogy and material. The results highlight the necessity of ongoing professional development initiatives that emphasise technology integration and creative teaching methods, particularly in private institutions. Enhancing instructors' TPACK in all institutional contexts will help them teach life skills more successfully and better prepare students for obstacles they may face in the real world.

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### Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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