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Original Article

Examining The Relationship Between Technological Pedagogical Content Knowledge and Life Skills in Pre-Service Primary Teacher Education

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Abstract

This research is based on a technique that is quantitative, descriptive, and correlational and is carried out on pre-service primary teachers in the state of Patna, Bihar. Patna is a city of historical importance and an educational centre in Eastern India with a large population of both government and privately run schools. Such institutions offer Bachelor of Education and doctor of education. The population of study was all the pre-service primary teachers that were enrolled in the Bachelor of Education of Patna district. To make sure that every participant was equally represented and to decrease the chances of selection bias, simple random sampling technique was employed in order to select 150 individuals. This was an appropriate sample size given the correlational research conducted and the objective of the study that was to examine this relationship between TPACK and life skills in a potential teacher.

Keywords: *Technological Pedagogical Content Knowledge, Life Skills, Education, Teacher, Student.*

Introduction

The twenty-first century has seen a shift in teaching methods moving away the traditional and teacher-centered methods of teaching into student-centered approaches which are focused on the use of technology. Teachers are not merely people who disseminate information in the digital era. They now assist people to learn, lead them and devise means of them learning. Educational technology has revolutionized the modes of teaching and learning, as well as skills required by the teacher. Technological Pedagogical Content Knowledge (TPACK) has become an idea that has become prominent in this regard. The TPACK framework was constructed by Mishra and Koehler (2006) and is based on the assumption that convergence of technology, pedagogy, and content is the key knowledge base of successful introduction of technology into education. This framework emphasized that teaching effectively in the contemporary classrooms is not merely about knowing the subject matter or how to utilize technology, but an in depth knowledge on how to utilize technology to impart certain content effectively. Simultaneously, education of life skills among people is equally crucial in the 21 st century. Life skills refer to the psychosocial as well as interpersonal skills, which assist the individuals in addressing the issues and challenges of daily living. According to the World Health Organization (1999) life skills include the ability to think critically, solve problems, communicate with people, make decisions, feel empathy, manage your feelings and get along with others. These skills are valuable in your health and your success in the workplace that is increasingly becoming more complex and intertwined with the world. Good life skills are required of the teachers since they help the kids develop in every aspect, make classrooms enjoyable learning places and ensure the kids know how to behave and relate with other people in a good manner. Because of this, pre-service teacher education is a significant process of preparing future teachers with professional and personal competence and skills required. In India, pre-service teacher education or the Bachelor of Education (B.Ed.)

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course attempts to bring onboard the student-teachers the necessary pedagogical, psychological and technological skills of pre-service teacher education to the classroom.

Nonetheless, the scope of the technology based pedagogical training as compared to life skills training being incorporated by the teacher education programs is an important enquiry. TPACK concerns the professional component of the teaching process, such as the way through which teachers incorporate technology into the process of assisting students to learn more about the subject. On the other hand, life skills are concerned with the human aspect of teaching such as how teachers communicate, adjust, empathize and manage themselves when something alters in the classroom. The connection between the two spheres can hold the secret to the training of well-rounded and effective teachers in the 21st century. Over the last couple of years, much of the research has revealed the usefulness of TPACK in determining the effectiveness with which teachers perform their duties. It has been demonstrated by scholars like Koehler and Mishra (2009) and Chai, Koh and Tsai (2013) that teachers who possess strong TPACK have a higher chance of engaging their students in constructive learning activities that utilize technology. Researchers, such as the World Health (1999) and the UNICEF (2012), argue that well-endowed life skills enable educators to promote emotionally nurturing, communicative and resilient learning conditions. Although the relevance of both the constructs was understood, no empirical studies have investigated the association between TPACK and life skills, especially in pre-service primary teacher education in developing economies such as India. The comprehension of the interrelationship between these areas can offer a significant wealth of knowledge in the development of cohesive teacher preparation programs that can foster technological and personal development. The capital of Bihar, Patna, is a good place to conduct such a research. Patna is among the oldest and fastest growing locations in India to acquire an education. It does possess numerous schools which train teachers and educate both urban and rural students. The education system in Bihar is expanding rapidly, yet still most teacher education institutions face problems with digital infrastructure, teaching via ICT and incorporating life skills in their curriculum. In this respect, an investigation of the relationship between pre-service teacher TPACK and their life-skill would demonstrate effectiveness of teacher education programs in Bihar in equipping the future teachers in the 21st century to combat challenges that may arise in the future.

Technological Pedagogical Content Knowledge (TPACK) is a kind of extension of Pedagogical Content Knowledge (PCK) concept by Shulman (1986) that incorporates the technological aspect. It enumerates seven components all related to one another, including, but not limited to, technological knowledge (TK), pedagogical knowledge (PK), content knowledge (CK), technological pedagogical knowledge (TPK), technological content knowledge (TCK), pedagogical content knowledge (PCK) and the combination of the three, technology-pedagogical-content knowledge (TPACK). Such knowledge can only be applied flexibly and usefully by the best teachers to plan and implement learning activities that are technologically advanced and sound pedagogy. To do so, you must be good technologically and also capable of thinking on your feet, be creative, flexible and involve others to help solve the problems. All these come in handy in life. In Life skills education on the other hand, attempts to show people how to deal with issues in both their own lives and in the society by providing people with the mental, emotional, and social skills necessary. Such competencies become professional characteristics of teacher trainees, including the ability to understand yourself, know how to empathize, communicate, make choices, and manage emotions. These are the competencies which can be useful not only to maintain the classroom functioning and engage students. They are also significant in satisfying the requirements of being a teacher which in most cases involves dealing with others, flexibility and a leader. TPack and life skills are like two sides to the same coin. One is the professional and technological aspect of teaching, and another one is the social, emotional, and personal one. TPack evolution may be perceived as the process of reflective practice that presupposes problem solving, flexibility, and creativeness- skills that were regarded as significant in the life skills framework.

Review Of Literature

Bashir, Kishabale & Jimmy, Luiyma. (2023). In spite of obvious attempts, there has been little observation of digital pedagogical practice among pre-service teachers. The objectives of the study were to validate the digital pedagogy readiness model, examine how pre-service teachers perceive their own technical, pedagogical, and content abilities, and determine how these factors affect their digital pedagogy readiness. The study's theoretical foundation for deriving the sub-constructs of technological-pedagogical-content competency was Mishra and Koehler's (2006) TPACK Framework. Data was collected from 351

pre-service instructors at Kyambogo University using a 30-item measure. Structural Equation Modeling (SEM) was used to verify the model and test the hypotheses, while descriptive statistics was used to establish the respondents' perspectives on the research variables. The results showed that the future educators had a common understanding of the capabilities, that the predicted model of digital pedagogy readiness fit the data, and that there was a statistically significant relationship between the future educators' technological, pedagogical, and content abilities and their digital pedagogy readiness. This research adds to what is already known about how TPACK may help educators develop the digital pedagogy that is essential in today's classrooms. The results will help the Ministry of Sports and Education and its associated agencies move the Education digital agenda forward even more quickly.

Paidicán Soto, Miguel & Arredondo Herrera, Pamela. (2022) this paper offers the findings of a scientific literature study that pertains to technological-pedagogical content knowledge under the TPACK paradigm. Revisions were made to research projects that used elementary education data-driven information. Findings from Scopus, WoS, ERIC, and Google Scholar were culled from 622 publications covering the time period beginning with the description of this model and ending in May 2019. Additionally, we made note of the following criteria: full text availability, references to the social sciences, and open access sources. In conclusion, our systematic literature analysis found that only 3,05% of the publications addressed the TPACK model in elementary school settings. There has been a noticeable uptick in the utilization of the TPACK model, which encompasses both the expertise of teachers and the improved use of technology in the classroom. It is also encouraged that other members of the school community, including parents, students, and administrators, get involved.

Valtonen, Teemu et al., (2019) Lay Detailed description Existing knowledge on this subject: A number of research have concentrated on the domains of technological pedagogical content knowledge (TPACK) that pre-service teachers consider themselves to possess. The level of confidence that pre-service teachers have with various TPACK sections varies among them. Changes in the TPACK profiles of pre-service teachers as they go through teacher education have not been thoroughly examined in longitudinal research. The value of this article This study examines the development of pre-service teachers' TPACK over the course of three years of teacher education. As educators go through their careers, their levels of confidence in various TPACK domains develop at varied rates. Progress was most marked in pedagogically-related TPACK domains. Throughout teacher preparation, there is a shift in the relative importance of TPACK domains, or the degree to which domains are evaluated in comparison to one another. Policy and practice implications: The technology subject understanding and technological literacy of pre-service teachers should be better supported in teacher education programs. Outlining the elements causing the changes in TPACK profiles is crucial for future investigations. In order to provide the right kind of assistance, it is necessary to do TPACK profiling of pre-service teachers.

Hsu, Liwei & Chen, Yen-Jung. (2019). As more and more instructional technologies are developed, there is a growing need to investigate the kinds of information that educators will need to thrive in the age of cloud pedagogy. In response to this call, we put forward a research model called TLPACK. It is based on TPACK, which stands for technological pedagogical content knowledge, and ICT-TPCK, which stands for education technology, pedagogy and didactics, academic subject-matter discipline, educational psychology, and educational sociology. The goal of this model is to investigate in depth the kinds of knowledge that teachers at different levels, from kindergarten to post-secondary, should have. There are a total of 39 elements that make up the TLPACK scale. The five components that make up TLPACK are technology knowledge, learner knowledge, pedagogy knowledge, academic discipline knowledge, content knowledge, and context knowledge. After six iterations of the Delphi approach, five academic and professional experts concurred on all elements, and the final version was ready for validity and reliability testing. A survey questionnaire was distributed to 301 Taiwanese educators from elementary school through university using a proportional stratified sampling method. In order to determine if this new model was valid and reliable, extensive statistical studies were carried out.

Roig-Vila, Rosabel et al., (2015) it can adapt, from a consistent training model, to the new educational difficulties posed by the growth of information and communication technologies (ICTs). Examining the technical, pedagogical, and content expertise required of primary school teachers in order to effectively incorporate ICTs into their lessons is the primary goal of this research. With that goal in mind, researchers in the Spanish province of Alicante used a quantitative non-experimental technique to study 224 primary and preschool educators. instructors lack the necessary

technical expertise to effectively incorporate ICTs into their lesson plans, according to the crucial findings, which reveal that instructors are more well-versed in pedagogy and subject matter than in technology. The correlation between enjoyable technology usage and understanding its fundamentals, as well as variations according to gender and years of expertise, were also shown to be statistically significant. Based on our research, it is clear that educators require a digital literacy initiative that covers both technical and pedagogical aspects of the field.

Research Methodology

Research Design

The current research design used was a quantitative descriptive-correlational research design to investigate the relationship between Technological Pedagogical Content Knowledge (TPACK) and life skills of pre-service primary teachers in Patna, Bihar.

Area of the Study

The research was done in the capital of Bihar, Patna, India. Patna is an ancient city in South Asia and people have always resided in it. It is also a large learning centre in Eastern India. There are many government and private schools in the city which provide undergraduate programs of a Bachelor of Education (B.Ed.) and Diploma in Elementary Education (D.El.Ed.).

Population and Sample

The population of the study was comprised of all the pre-service teachers of primary level in B.Ed. colleges of Patna district. A sample size of 150 pre-service teachers was obtained in the study. The participants were selected using a simple random sampling method which provided them with equal selection opportunity and reduced the selection bias. The sample of 150 was deemed sufficient due to the general principles of the statistical theory, according to which at least 100-150 respondents are needed to carry out the correlational studies to achieve any meaningful results.

Data Analysis and Interpretation

Demographic Profile of The Study

Gender

Table 1: Gender of the respondents

Particular	Frequency	Percentage%
Male	45	30.00%
Female	105	70.00%
Total	150	100.00%

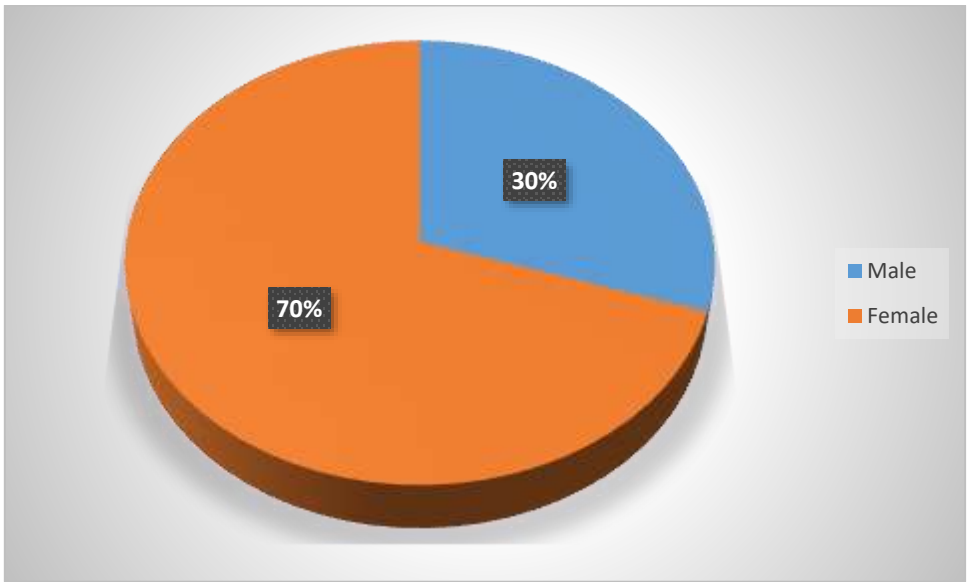


Figure 1: Gender of the respondents

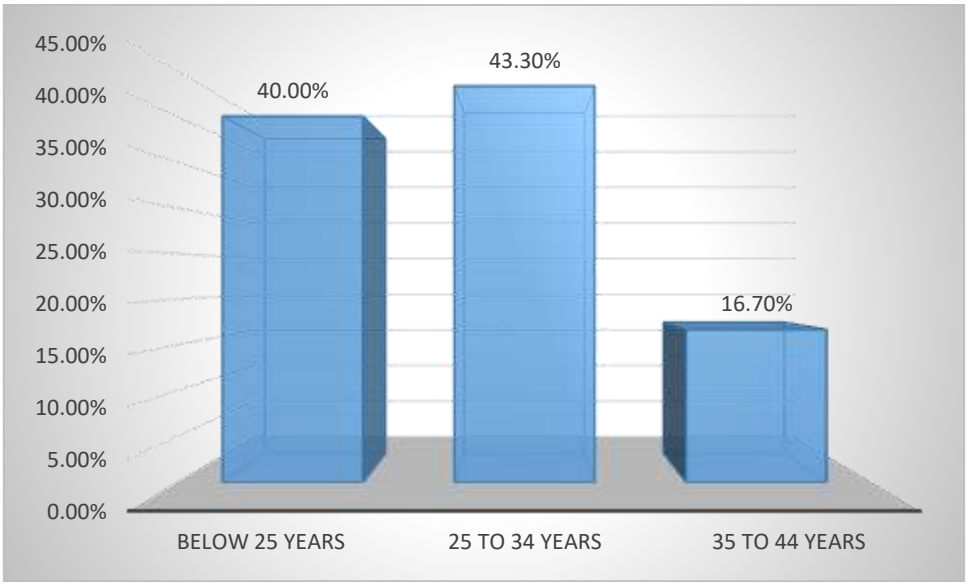
The table indicates the responses of the number of men and women to the questions. The sample consisted of 150 individuals, 45 of whom were males (30 percent of the sample) and 105 who were females (70 percent). This implies that the majority of the respondents were women.

Age

Table 2: Age of the respondents

Particular	Frequency	Percentage%
Below 25 years	60	40.00%

25 to 34 years	65	43.3%
35 to 44 years	25	16.7%
Total	150	100

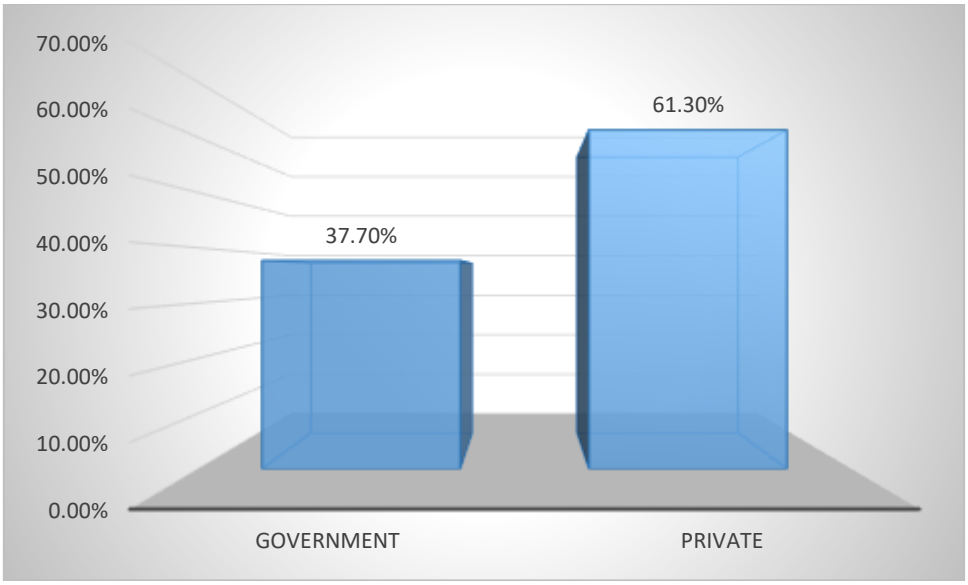


The age of the people that responded to the survey is as seen in Table 2. Among the total participants (150), 60 (40 percent) were aged below 25 years and 65 (43.3 percent) were aged between 25 and 34 years (25 percent). This implies that majority of the respondents were young adults, and the majority of them were aged between 25 and 34.

Table 3: College wise distribution of respondents

College

Particular	Frequency	Percentage%
Government	58	37.7%
Private	92	61.3%
Total	500	100.0



The distribution of the people who responded has been indicated in Table 3. Among the 500 respondents, 58 (37.7) were students in the government colleges and 92 (61.3) were students in the private colleges. It is an indication that a higher number of the respondents attended private colleges as opposed to government colleges.

Results of the respondents

Descriptive Statistics

Table 4: Descriptive Statistics of TPACK and Life Skills Scores

Variable	Mean	SD
TPACK Score	3.78	0.56
Life Skills Score	4.02	0.61

The descriptive statistics of TPACK and Life Skills scores of the respondents are presented in Table 4. The mean score of TPACK was 3.78 with a standard deviation of 0.56. It implies that the individuals to take the test were nearly well informed regarding technology, teaching and content. The mean of Life Skills was slightly high, at 4.02, and the standard deviation was 0.61. This implies that the majority of the population possessed good life skills though their scores were not identical.

Correlation Analysis

Table 5: Correlation between TPACK and Life Skills

Variable	r	p
TPACK ↔ Life Skills	0.62	< 0.001

Table 5 demonstrates the correlation between the TPACK and the Life Skills scores. The findings indicate that there is a positive relationship of 0.62 that is significant at $p = 0.001$. It indicates that the relationship is moderate to strong, and thus the individuals that score higher on TPACK are likely to score higher on Life Skills.

Regression Analysis

The results of the regression showed that TPACK is a strong predictor of life skills ($\beta = 0.59$, $t = 7.85$, $p < 0.001$), accounting for 38% of the variance ($R^2 = 0.38$).

Conclusion

The study revealed that pre-service primary teachers in Patna had moderate high scores in TPACK and life skills. The analysis revealed that TPACK and life skills had a significant positive relationship and therefore teachers with advanced technological, pedagogical, and content knowledge had higher life skills. These results highlight the importance of involving TPACK development in teachers training programs to support instructional competences and enable the wholesome personal and professional growth of future teachers.

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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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