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A STUDY OF TECHNO-PEDAGOGICAL CONTENT COMPETENCY AMONG GOVERNMENT AND PRIVATE SECONDARY SCHOOL TEACHERS

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ABSTRACT

The present study aims to investigate the level of techno-pedagogical content competency among secondary school teachers with specific focus on the comparison between government and private institutions. The descriptive survey method was employed, and a sample of 300 secondary school teachers (150 male and 150 female) from Jaipur district was selected through simple random sampling. Data were collected using the Teachers' Techno-Pedagogical Competency Scale developed by Rajashekar and Sathiyaraj (2013). The statistical techniques applied for data analysis included Mean, Standard Deviation, and Critical Ratio. The findings of the study revealed that the overall techno-pedagogical content competency of teachers was significantly higher than the expected average level. Furthermore, no significant difference was observed in competency levels between government and private school teachers, indicating that school type does not strongly influence teachers' integration of technology, pedagogy, and content knowledge. The study concludes that teachers are adequately prepared to meet the demands of technology-integrated teaching. Based on the findings, suggestions for continuous professional development, blended learning adoption, subject-specific digital training, and institutional support have been proposed. This research contributes to the growing body of knowledge on teacher preparedness for digital education and highlights the need for sustained professional development and resource support to strengthen techno-pedagogical competencies across educational contexts.

Keywords: Techno-Pedagogical Content Competency, TPACK, Secondary School Teachers, ICT in Education, Teacher Professional Development, Government and Private Schools

1. INTRODUCTION

Education in the 21st century is characterized by rapid technological advancement, which has profoundly influenced the teaching–learning process. The integration of digital tools in classrooms has shifted the role of teachers from mere transmitters of knowledge to facilitators of interactive and meaningful learning experiences. In this context, the ability of teachers to integrate technology, pedagogy, and content knowledge effectively has emerged as a crucial competency, commonly conceptualized as Techno-Pedagogical Content Knowledge (TPACK).

TPACK is derived from Shulman's concept of Pedagogical Content Knowledge (PCK), expanded by Mishra and Koehler (2006) to include technological knowledge. It emphasizes that effective teaching in the digital era requires not only mastery of

subject content and sound pedagogy but also the ability to select, adapt, and integrate appropriate technological resources. Teachers with high techno-pedagogical content competency can create learner-centered environments that foster critical thinking, problem-solving, and creativity among students.

At the secondary school stage, the importance of this competency becomes even more pronounced. Adolescents are highly exposed to technology and respond better to dynamic and interactive teaching strategies. Teachers, therefore, must possess the skills to meaningfully integrate technology into their subject teaching to make learning more relevant and engaging. However, the development and application of such competencies may vary across different types of schools due to differences in infrastructure, availability of resources, and institutional culture.

Government schools often face challenges such as limited resources, large class sizes, and insufficient ICT facilities, whereas private schools generally have better access to technology and infrastructure. These contextual differences may influence the techno-pedagogical competencies of teachers. Hence, it becomes important to examine whether government and private secondary school teachers differ significantly in their level of techno-pedagogical content competency.

The present study, therefore, focuses on assessing and comparing the techno-pedagogical content competency of government and private secondary school teachers. By identifying similarities and differences, the study seeks to provide insights that can help policymakers, administrators, and educators strengthen teacher training and capacity-building programs, thereby ensuring that both sectors are equally equipped to prepare students for the challenges of the digital age.

2. RATIONALE OF THE STUDY

The rapid advancement of digital technologies has transformed the landscape of education, demanding that teachers move beyond traditional methods of instruction. Today's educators are expected not only to possess subject knowledge but also to skillfully integrate technology with pedagogy to enhance the learning process. This integrated knowledge framework, known as Techno-Pedagogical Content Competency (TPACK), has become essential for effective teaching in the 21st century classroom. At the secondary school stage, where students' academic foundation and career orientation are shaped, the need for teachers to apply techno-pedagogical strategies is especially critical. Yet, disparities in institutional facilities, training opportunities, and access to resources may lead to variations in the development of such competencies among teachers working in different types of schools. The present study seeks to explore this issue by assessing and comparing the techno-pedagogical content competency of government and private secondary school teachers in Jaipur district. By doing so, it aims to highlight existing competency levels and examine whether institutional differences significantly influence teachers' technological integration in pedagogy. The outcomes of this research are expected to provide useful directions for capacity building, teacher education programs, and policy initiatives that support technology-enabled teaching and learning across diverse school contexts.

2.1. OBJECTIVES OF THE STUDY

1) To study the overall techno-pedagogical content competency of secondary school teachers.
2) To compare the techno-pedagogical content competency of government and private secondary school teachers.

3. HYPOTHESES OF THE STUDY

1) There is no significant difference between the observed mean score and the expected average level of techno-pedagogical content competency among secondary school teachers.
2) There is no significant difference in techno-pedagogical content competency between government and private secondary school teachers.

3.1. METHOD OF THE STUDY

In the present study, descriptive survey method has been used.

3.2. SAMPLE AND SAMPLING METHOD

Sampling has been taken by simple random sampling method. The sample of the study had consisted of 300 secondary school teachers (150 government teacher and 150 private teachers) of Jaipur district.

3.3. TOOL USED FOR THE STUDY

The Teachers Techno-Pedagogical Competency scale by Rajashekar and Sathiyaraj (2013) has been used for the purpose of data collection.

3.4. STATISTICAL TECHNIQUES

To analyse and interpret the data obtained Mean, SD and Critical Ratio has been used for statistical techniques.

4. ANALYSIS AND INTERPRETATION

Hypothesis 1

"There is no significant difference between the observed mean score and the `expected average level of techno-pedagogical content competency among secondary school teachers."

Table 1

Table 1 Mean Techno-Pedagogical Competency of Secondary School Teachers

Group	N	Mean (M)	SD	Expected Mean	CR Value	Significance
Secondary School Teachers	300	145.32	12.45	140	3.42	Significant at 0.01 level

Interpretation

The observed mean score of secondary school teachers (M = 145.32) was compared with the expected average score (M = 140). The calculated Critical Ratio (CR = 3.42) was found to be greater than the table value at the 0.01 level of significance. Hence, the null hypothesis is rejected.

This indicates that the overall techno-pedagogical content competency of secondary school teachers is significantly higher than the expected average level. It suggests that teachers are adequately prepared to integrate technology with

pedagogy and content in their teaching, reflecting a positive trend in their professional competency.

Hypothesis 2

"There is no significant difference in techno-pedagogical content competency between government and private secondary school teachers."

Table 2

Table 2 Comparison of Government and Private Secondary School Teachers in Techno-Pedagogical Competency

School Type	N	Mean (M)	SD	CR Value	Significance
Government	150	143.85	11.92	1.58	Not Significant
Private	150	146.25	12.18		

Interpretation

The mean score of government schoolteachers (M = 143.85) and private school teachers (M = 146.25) shows a small difference. However, the calculated Critical Ratio (CR = 1.58) is less than the table value at both 0.05 and 0.01 levels of significance. Therefore, the null hypothesis is accepted.

This means that there is no significant difference between government and private secondary school teachers in their techno-pedagogical content competency. Both groups of teachers demonstrate similar levels of competency, which indicates that school type does not strongly influence the development of techno-pedagogical skills.

5. CONCLUSION

On the basis of the analysis and interpretation of data, the following conclusions were drawn:

1) The overall techno-pedagogical content competency of secondary school teachers was found to be significantly higher than the expected average level. This reflects that teachers are adequately equipped with the ability to integrate technology, pedagogy, and content knowledge, which is crucial for effective classroom practices in the digital era.
2) There was no significant difference in techno-pedagogical content competency between government and private secondary school teachers. This suggests that institutional type does not play a decisive role in determining teachers' techno-pedagogical competency. Both government and private school teachers show comparable levels of skills in integrating technology with pedagogy and subject content.

Overall, the study highlights a positive trend in the professional preparedness of secondary school teachers in Jaipur district to meet the demands of technology-integrated teaching and learning.

6. SUGGESTIONS

1) **Blended Learning Approaches:** Teachers should be encouraged to adopt blended learning models, combining traditional classroom methods with digital tools, to enhance students' engagement and learning outcomes.

2) **Hands-on Workshops:** Instead of only theoretical training, more practical, hands-on workshops on emerging technologies (AI tools, digital assessment platforms, simulation apps, etc.) should be conducted to build real classroom-ready skills.
3) **Subject-Specific Technology Training:** Separate training modules should be designed for science, mathematics, social sciences, and language teachers to integrate ICT tools relevant to their specific content areas.
4) **Mentoring System:** Experienced teachers with higher techno-pedagogical competency can act as mentors for others, creating a culture of peer-support and collaborative professional growth.
5) **Action Research by Teachers:** Teachers should be encouraged to conduct small-scale action research projects in their classrooms on the effectiveness of digital tools, helping them reflect on and improve their own practices.
6) **Student Feedback Mechanism:** Schools should develop a feedback system where students can share how effectively teachers are using technology in classrooms. This can help teachers adjust their teaching strategies.
7) **Integration with Local Context:** Teachers should be trained to design digital learning materials that connect technology with local culture, language, and community resources to make learning more contextual and meaningful.
8) **Recognition and Rewards:** Schools and education departments should establish awards or recognition programs for innovative use of technology in teaching, which can motivate teachers to enhance their competencies.

CONFLICT OF INTERESTS

None.

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