Techno-pedagogical Skills of Prospective Teacher Educators

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Abstract

Techno-pedagogical skills in teacher education refer to the acquisition of knowledge and abilities for competent and confident use of internet resources, specialised software, and general computer applications. Techno-pedagogical abilities will directly or indirectly assist teacher education programmes. Beyond personal technology usage skills, technological pedagogical content knowledge includes knowledge of how to integrate technology with subject matter and the technology itself. As a result, in order to impart knowledge to the pupils of the contemporary digital society, teachers of the current generation should not only be knowledgeable in topic and pedagogy but also proficient in technology. The purpose of the current study is to examine the techno-pedagogical abilities of future teacher educators. The sample was chosen by the investigator using a technique called purposive random sampling. The prospective teacher educators who are enrolled in M. Ed. programmes affiliated with Tamil Nadu Teachers Education University in Chennai, Tamil Nadu, make up the study's sample. According to the percentage study, the techno-pedagogical skill level of potential teacher educators is average. The findings of the "t" test show that there is no appreciable difference between the techno-pedagogical abilities of male and female prospective teacher educators, but that female educator candidates do somewhat better than male educators. Additionally, it is discovered that there are no appreciable differences between the techno-pedagogical abilities of undergrad and graduate prospective teacher educators. The conclusion is further drawn that the Techno-Pedagogical skills of Undergraduate Prospective Teacher Educators are marginally superior to those of Postgraduate Prospective Teacher Educators. Therefore, it is essential that teachers possess the skills necessary to utilise ICT in the classroom efficiently. A teacher can become a more effective technology user, lifelong learner, maker of effective technological pedagogical subject knowledge, mentor, and facilitator with the aid of digital technology.
Keywords: Prospective teacher educators, ICT, Techno pedagogy, Content knowledge, Skill, Teacher Education, Teaching, Learning

Introduction

One skill for the twenty-first century is considered to be technology literacy. Given that today's students have grown up with an unparalleled level of technological exposure, teachers should be well-versed in the use of information and communication technologies. To be competent enough to deal with the pupils who have significant technology influence, a teacher must be a lifelong learner. He or she should be proficient in the abilities to use technology in a way that is advantageous to both the instructor and the students being taught. Understanding how ICT tools relate to the subject matter and pedagogy is necessary for effective technology integration in classroom learning. So a teacher in the twenty-first century needs to be knowledgeable about ICT in addition to curriculum and pedagogy. The words "pedagogy" and "techno," which are both derived from the Latin word "texere," respectively, relate to the "Science and Arts of Teaching" (to weave or fabricate). In this context, the word "techno" serves as a qualifier; it intersects or crosses the definition of "pedagogy" with its own content. The term "techno-pedagogy" describes the integration of teaching methods into the actual learning environment. To ensure that information is transmitted as simply and clearly as possible, one must be aware of the mediated learning environment. Whether a piece of education media is successful or not depends on techno-pedagogy. The use of education technology allows for the approximate construction of learning circumstances while keeping in mind the teaching and learning objectives and bringing the most effective teaching methods.

Review of Related Literature

The Techno-Pedagogical Skills of Secondary Teacher Education Students were examined by Sibichen, K. K. (2016). This study was carried out to determine the technological pedagogical abilities of secondary teacher education students. The study used the survey method. The findings show that graduate and post-graduate secondary teacher education students differ significantly in their abilities to implement instructional strategy and direction. The findings also show that there is a considerable difference in learning, evaluating, and techno-pedagogical skills between secondary teacher education students who have taken computer courses and those who have not. The current study thus demonstrates how technological pedagogical capabilities in the classroom modify traditional teaching-learning approaches. Thus, the development of knowledge and competency among teacher candidates depends greatly on their technological pedagogical skills.

Universities are quickly adopting online training, according to Vincent Grenon, France Lafleur, and Ghislain Samson (2019). In particular, while adopting a synchronous delivery mode, it is crucial to think about how to effectively promote the development of the techno-pedagogical abilities of online educators. Using a convenience sample of 14 professors and lecturers, a descriptive research project was performed to examine a Web conferencing training programme. A pre-experimental design with a single group, pre-test, post-test, and data collection using observation and a questionnaire was used. The participant profiles with reference to their usage of technology, social media, and cloud computing were the main emphasis of the inquiry. Ten simulated circumstances allowed us to observe technological pedagogical abilities. Surprisingly, participants with great access to technology and social media according to their profiles did not outperform those with lower access. A higher score was achieved by using a variety of cloud computing services and watching more inclusive simulated situations. We advise that online instructors receive the appropriate training to ensure effective

performance and to get them ready for the transition from in-person education to online instruction while taking all potential difficulties into consideration.

Need and Significance of the Study

Candidates for teaching positions should have a certain set of competences because teaching is a vocation requiring particular knowledge and abilities. Recently, the abilities of organising and managing education, specialisation, coordination, and cooperation have been considered to be components of teacher competency. Developing techno-pedagogical expertise will make teaching and learning enjoyable since it will relieve pressure on teachers and allow students to engage more deeply in the process of learning. It aids a teacher in encouraging pupils to pursue self-directed learning, which is a crucial ability for today's learners to have. Technology can help future teachers accomplish curriculum goals more effectively and efficiently. Technology may not change teachers' attitudes and practises, but it can create environments that are effective in evoking modern conceptions of learning. Linking curriculum objectives to various technologies, creating a learning context of discovery and process in technology use, collaborating with others both physically and virtually to achieve learning objectives, simulating real-world settings, and evaluating results are all examples of effective technology use. Technology may not change teachers' attitudes and practises, but it can create environments that are effective in evoking modern conceptions of learning.

Statement of the Problem

The goal of teacher education is to give student teachers the skills and knowledge they need to effectively use and incorporate the right technology. Each teacher should be proficient in the efficient use of technology, pedagogy, and subject-specific material in their everyday classroom instruction. It is obvious that simply integrating technology into the learning process is insufficient. When it comes to using educational technology effectively, teachers must go beyond simply being proficient with the newest tools to comprehend the intricate web of connections between users, technologies, practises, and tools. In classrooms where technology is prevalent, teachers must comprehend their position. The study is titled ''Techno-pedagogical capabilities of Prospective Teacher Educators'' and its purpose is to examine the technological pedagogical abilities of these educators.

Objectives of the Study

1. To assess the techno-pedagogical proficiency of potential teacher educators.
2. To determine if there are any notable differences between male and female prospective teacher educators in terms of their techno-pedagogical skills.
3. To determine whether there are any notable differences between the techno-pedagogical abilities of undergrad and phd prospective teacher educators.
4. To determine if subject-based differences in the techno-pedagogical abilities of prospective teacher educators exist.

Hypotheses of the Study

1. Prospective teacher educators' technological pedagogical skill level is average.
2. There is no discernible difference between male and female prospective teacher educators in terms of their techno-pedagogical skills.
3. There is no appreciable difference between the techno-pedagogical abilities of the prospective teacher educators with undergraduate and graduate degrees.

Method used in the present study

Surveying was the method used in this investigation. The sample was chosen by the investigator using a technique called purposive random sampling. The study's sample consists of future teacher educators enrolled in M. Ed. programmes at TamilNadu Teachers Education University in Chennai, TamilNadu. 200 prospective teacher educators made up the sample; 75 of them were male students, 125 were female students, 135 were undergraduate students, and 65 were graduate students. The tool for the current study was the Techno-Pedagogical Skill Assessment Scale created by R. Rajalakshmi (2012). The test-retest procedure was utilised by the investigator to determine the tool's dependability. The Assessment Scale's reliability coefficient was calculated to be 0.75. The 't' test and statistical methods like the arithmetic mean and standard deviation were applied.

Hypotheses Testing
Hypothesis: 1

1. Prospective teacher educators have average levels of technological and pedagogical expertise.

The aforementioned null hypothesis was developed, and a percentage analysis was conducted, in order to determine the level of technological pedagogical skills of prospective teacher educators.

Table 1 Level of Techno-Pedagogical Skills of Prospective Teacher Educators

Variable	Low		Average		High		Total	
	N	%	N	%	N	%	N	%
Techno-Pedagogical skills	22	11	160	80	18	9	200	100

Table 1 shows that on the level of techno-pedagogical skills of prospective teacher educators, 80% of prospective teacher educators fall into the average group, 11% of prospective teacher educators fall into the low category, and 9% of prospective teacher educators fall into the high category.

Hypothesis: 2

2. The technological pedagogical talents of the male and female prospective teacher educators are similar. The aforementioned null hypothesis was created in order to examine whether there is any statistically significant difference between the mean Techno-Pedagogical Skills scores of the Male and Female Prospective Teacher Educators.

Table 2 Means, Standard Deviations and t-value of Techno-Pedagogical Skills Scores of Male and Female Prospective Teacher Educators

Variable	Sex	N	Mean	SD	t
Techno-Pedagogical skills	Male	75	150.09	12.077	0.009*
	Female	125	150.11	16.517	

*Not significant at 0.05 level

According to Table 2, male prospective teacher educators have a mean Techno-Pedagogical Skills score of 150.09, which is a bit lower than the mean Techno-Pedagogical Skills score for female prospective teacher educators, which is 150.11. Additionally, the t-value of 0.009, which is not significant at the 0.05 level with df = 197, can be noticed. It shows that

there are no appreciable differences between the mean Techno-Pedagogical abilities scores of the Male and Female Prospective Teacher Educators. Therefore, it is acknowledged that there is no discernible difference between the technological pedagogical abilities of male and female prospective teacher educators. Additionally, it is established that female prospective teachers have slightly greater technological pedagogical knowledge than male prospective teachers.

Hypothesis: 3

2. There is no appreciable difference between the techno-pedagogical abilities of the prospective teacher educators with undergraduate and graduate degrees. The t-test was used to attempt to test the null hypothesis above in order to see whether there is any statistically significant difference between the mean Techno-Pedagogical Skills score of Under-graduate and Post-graduate Prospective Teacher Educators.

Table 3 Means, Standard Deviations and t-value of Techno-Pedagogical Skills Scores of Under-graduate and Post-graduate Prospective Teacher Educators

Variable	Educational Qualification	N	Mean	SD	t
Techno-Pedagogical skills	Under-graduate	135	150.09	11.116	1.000*
	Post-graduate	65	148.65	20.816	

*Not significant at 0.05 level

According to Table 3, prospective teacher educators who are undergraduate students have a mean Techno-Pedagogical Skills score of 150.90, which is somewhat higher than prospective teacher educators who are post-graduate students, who have a mean Techno-Pedagogical Skills score of 148.65. Additionally, the t-value of 1.000, which is not significant at the 0.05 level with df = 198, can be noticed. It shows that there are no appreciable differences between the mean Techno-Pedagogical abilities scores of Undergraduate and Postgraduate Prospective Teacher Educators. Therefore, it is acknowledged that there is no discernible difference between the techno-pedagogical abilities of undergraduate and graduate prospective teacher educators. It is further stated that the Techno-Pedagogical skills of Undergraduate Prospective Teacher Educators are marginally superior to those of Postgraduate Prospective Teacher Educators.

Findings and Conclusions

According to the percentage analysis, the techno-pedagogical proficiency of aspiring teacher educators is average. The findings of the "t" test show that there is no discernible difference in the techno-pedagogical abilities of male and female prospective teacher educators. Additionally, it is discovered that there are no appreciable differences between the techno-pedagogical abilities of Undergraduate and Postgraduate Prospective Teacher Educators, but that Undergraduate Prospective Teacher Educators perform marginally better than Postgraduate Prospective Teacher Educators. Without a doubt, technology has developed into a potent tool that is upending conventional educational practises. The efficacy and efficiency of the educational system may be enhanced by teachers' and teacher educators' technological pedagogical skills. Nowadays, the majority of educational institutions have ICT facilities right inside their colleges. They are raising awareness of the value and usefulness of technology in the field of teacher

education. Only those teacher educators and training graduates who have been educated in a creative, inventive, and effective manner to apply techno-pedagogical abilities to nurture pupils in line with the demands of changing times may play an effective role. Additionally, because modern education emphasises technology-enhanced learning, a teacher's techno-pedagogical expertise aids in the selection of the most successful teaching techniques and instructional resources.

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