



WWJMRD 2018; 4(1): 306-308
www.wwjmr.com
International Journal
Peer Reviewed Journal
Refereed Journal
Indexed Journal
UGC Approved Journal
Impact Factor MJIF: 4.25
e-ISSN: 2454-6615

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A Study on Technological Pedagogical and Content Knowledge of B. Ed Student Teachers in Puducherry Region

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Abstract

A survey was conducted to study the Technological Pedagogical and Content Knowledge (TPACK) of B. Ed. student teachers in Puducherry region. Two hundred B.Ed. student teachers were selected through simple random sampling technique and used as the sample for the present study. The standardized Likert type of scale prepared by Ismail Sahin was used as the tool for the study. The tool consists of 47 items with five responses. The collected data were analyzed by using SPSS package. The result revealed that TPACK of B. Ed student teachers are moderate. There exists significant difference in TPACK of B. Ed student teachers with respect to degree, access of e-content and technology usage frequency in teaching learning process..

Keywords: Technological Pedagogical and Content knowledge (TPACK), B.Ed. student teachers

Introduction

Today our education system had a paradigm shift from chalk and talk method to digitalizing pedagogical approach through technological devices. As educators know, teaching is a complicated practice that requires an interweaving of many kinds of knowledge and skills. This paved a way to Technological pedagogical and content knowledge (TPACK) or Technological Pedagogical Content knowledge (TPCK) framework. This is very essential and required for effective teacher in technology enhanced learning environment. The idea of Technological pedagogical content knowledge was introduced by Punya Mishra, Professor and Matthew J. Kohler (2006), Professor at Michigan University and they have done an extensive research work in TPACK. Normally TPACK consists of seven different knowledge areas namely, Content Knowledge (CK), Pedagogical Knowledge (PK), Technological Knowledge (TK), Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK) and Technological Pedagogical and Content Knowledge (TPACK).

Content is the subject matter that is to be taught. Technology encompasses modern technologies such as computer, Internet, Mobile phone, i-pod, digital video, audio and common place technologies including overhead projectors, blackboards, and books. Pedagogy describes the collected practices, processes, strategies, procedures, and methods of teaching and learning. It also includes knowledge about the aims of instruction, assessment and student learning. Techno pedagogy competency is the ability of teachers to make use of technology in teaching. Techno pedagogy refers to electronically mediated courses that integrate sound pedagogical principles of teaching and learning with the use of technology.

Need For the Study

In today's world everyone is updating their skills and knowledge to meet the challenges of everyday life. Effective and joyful teaching and learning is possible when technology, pedagogy and content knowledge combines together.

Beaudin and Hadden (2004) revealed in their study that techno-pedagogical skill foster the students for further development, attainment of learning outcomes and maintain the context of designing classroom based resources through the use of ICT by the teachers. Therefore,

techno-pedagogy method was a necessary component of teacher education. Yurdakul (2011) revealed in his study that pre-service teachers need to provide opportunities to get practical knowledge and skills to use current technology during their training process. For that courses techno-pedagogical knowledge need to be added in teacher training programs. The technology centers in teaching and learning must be established in higher education institution. Sathiyaraj and Rajasekar (2013) found in their study that the techno-pedagogical competency needs to be improved in order to equip teachers to face the students belong to the digital era and also to face the challenges in the modern classroom.

The NCF (2005), and XII five year plans (2011), emphasized to provide connectivity, valuable content and low cost computing devices to all the Institutions of higher learning in the country.

Effective teaching depends on flexible access to rich, well-organized and integrated knowledge from different domains (Glaser, 1984; Putnam & Borko, 2000; Shulman, 1986, 1987), including knowledge of student thinking and learning, knowledge of subject matter, and increasing knowledge of technology.

We thought that content and pedagogy is sufficient for effective teaching and learning process, apart from these, a third component technology also plays vital role in the modern era. Hence the inclusion of technology, pedagogy and content knowledge helps the teacher, student and stakeholders to enhance their teaching and learning process.

Objectives of the Study

1. To study the Technological pedagogical and content knowledge of B. Ed student teachers
2. To study the Technological pedagogical and content knowledge of B. Ed student teachers with respect to Gender (Male/Female), Locality of college (Rural/Urban), Degree(UG/PG), Owing smart phone (Yes/No), Access the internet (Yes/No), Access of e-content(Yes/No), Technology usage frequency in teaching learning process (Frequently/Rarely).

Hypotheses of the Study

1. Technological pedagogical and content knowledge of B. Ed student teachers is high.
2. There is no significant difference in the Technological Pedagogical and Content knowledge of B. Ed student teachers with respect to Gender (Male/Female), Locality of college (Rural/Urban), Degree(UG/PG), Owing smart phone (Yes/No), Access the internet (Yes/No), Access of e-content(Yes/No), Technology usage frequency in teaching learning process (Frequently/Rarely).

Method Used For the Study

Normative survey method was used for the present study.

Sample of the Study

Two hundred B. Ed. student teachers (Both first year and second year) were randomly selected as sample from four B.Ed. colleges situated in Puducherry region.

Tools Used For the Study

Description

Likert type of scale was used as tool for the present study. TPACK scale was standardized by Ismail Sahin (2011). The tool consists of 47 items with five responses, such as not at all, little, moderate, quiet and complete.

Scoring Procedure

All the items of the tool are positive statements. Hence, the scoring procedure as follows, 1- not at all, 2-little, 3-moderate, 4-quiet and 5- complete.

Reliability and Validity of the Scale

Reliability of the scale is TK-0.93, PK-0.90, CK-0.86, TPK-0.88, TCK-0.88, PCK-0.92 and TPACK- 0.92 which were established by Cronbach’s alpha coefficient method. High reliability value ensures high validity which was examined using Exploratory Factor Analysis (EFA).

Data Collection

The data from the sample was collected in person by the investigator. The purpose of the study was clearly explained and the sample was instructed to answer all the questions without psychological treat. If the subject is not able to understand any question, adequate assistance was given by the investigator.

Statistical Techniques Used

The data collected by the researcher from the sample were analyzed statistically by using SPSS package.

Analysis of the Study

The collected data were analyzed by using the SPSS package and results were presented in table 1 and 2.

Table-1: Mean, Median, Mode and Standard deviation of TPACK of B. Ed student teachers.

Variable	N	Mean	Median	Mode	Standard deviation
TPACK	200	127.48	126.73	125.42	42.06

The Mean, Median and Standard Deviation of the sample with respect to their TPACK are found to be 127.48, 126.73 and 42.06 respectively. The mean value falls with moderate technological pedagogical and content knowledge level. Hence the stated hypothesis is rejected.

Table-2: Mean standard deviation and “t” value of TPACK of B.Ed. student teachers with respect to different demographic variables.

Sample	Sub-sample	N	Mean	Standard deviation	‘t’ value	Level of significance
Gender	Male	100	128.72	42.47	1.08	NS
	Female	100	126.30	41.67		
Locality	Rural	85	126.41	41.71	1.45	NS
	Urban	115	129.05	42.75		
Degree	UG	162	122.54	40.43	6.49	S
	PG	38	131.42	43.36		
Owing smart phone	Yes	86	129.89	42.86	1.91	NS

	No	114	127.07	41.93		
Access the internet	Yes	91	129.91	42.87	1.53	NS
	No	109	126.85	41.86		
Access of e-content	Yes	72	134.63	44.42	6.79	S
	No	128	120.33	39.70		
Technology usage frequency	Frequently	106	133.85	44.17	8.07	S
	Rarely	94	121.11	39.96		

From the above table-2, the result revealed that there is no significant difference in the level of TPACK of B.Ed. student teachers with respect to Gender, locality of the school, owning smart phone and access the internet. On the other hand, there is a significant difference exists in the level of TPACK of sample with respect to degree, Access of e-content and Technology usage frequency in teaching learning process.

Major Findings

1. Technological pedagogical and content knowledge of B. Ed student teachers in Puducherry region is moderate.
2. B. Ed student teacher possessing Post graduate degree has high TPACK than the B. Ed student teacher having under graduate degree.
3. B.Ed. student teacher who accesses the e-content has high TPACK than those who are not access e-content in learning process.
4. B.Ed. student teachers who use technology frequently in teaching and learning process have high TPACK than the counterparts who use technology rarely.

Educational Implications

1. Integration of technology, content and pedagogy knowledge helps the teacher to teach effectively in the present scenario. TPACK helps the teacher to update their knowledge and skills which leads to enhance their professional development.
2. Technology enhanced class room climate promotes confidence among learners, encourage to learn, easy to access at their convenience and long term retention will be there.
3. TPACK classroom climate helps the teacher and students to communicate (Share knowledge, ideas, views, opinions...) with others locally and globally.

Conclusion

Teachers are the nation builder and shaping the young pupil towards the future career. At this situation, young pupil, even kids are willing to use technology in their day today life situations. So this is the right time to integrate technology, pedagogy and content in teaching and learning process. If we utilize technology in teaching and learning process, it will be more effective, meaningful and joyful.

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