AN ASSESSMENT OF TECHNO-PEDAGOGICAL COMPETENCIESOF IN-SERVICE TEACHERS

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ABSTRACT

In this 21st century, the development of technology has changedtraditional methods of teaching and learning. Techno-pedagogical competence has become important for all the teachers. This research was carried out for the purpose of examining the techno-pedagogical competencies of in-service teachers. In line with this objective, teachers' techno-pedagogical competencies were studied in terms of experience, locality and type of institutions.In the present study, 100in-service teachers teaching in secondary schools of Sonepat district of Haryana, were selected as sample. The findings of the study reveal that the teachers in the sample group of the study have average level of techno-pedagogical competencies. Also, there exist significant differences in techno-pedagogical competencies of in-service teacherswith respect to their experience, locality of school and type of institutions.

Keywords:*Techno-Pedagogical Competencies, In-Service teachers, Secondary Schools*

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INTRODUCTION

An effective pedagogy is central in teaching learning processand important for helping students to learn more effectively and to develop their abilities and skills. The way of teaching the students is called as pedagogy. It refers to a teacher's basic understanding of how the students learn. It is a close relationship between the classroom culture and the techniques of teaching adopted by the teacher to develop the skills and attitudes of the

learners. Students become able to understand the subject matter thoroughly and apply that knowledge in their daily lives outside the four walls of the classroom. Pedagogy focuses on the classroom interactions between the teacher and students that create a substantial impact on the students' minds.The present educational system is changing rapidly due to knowledge explosion, digitalization and technological developments at all levels of education. Pedagogical processes are affected by the new technologies and Information and Communication Technology (ICT) supported tools, devices & innovative procedures. Therefore, it becomes very important to develop competencies and skills related with integration of informationand communication technology (ICT) in teaching-learning processes for improving the quality of education. Thus, there is a need to take up some urgent measures for identifying and developing techno-pedagogical competencies among in-service teachers.

Techno-pedagogy refers to the relationship between pedagogy and technology. In teaching-learning process, this term refers to teaching practices that take into account both pedagogical (teaching and learning methods, motivation, the development of students' skills), and technological aspects (using computers, the Internet, interactive whiteboards, etc.). The technological resources are used for learning purposes by teachers to make the teaching-learning environment supportive and interesting for teachers. Here, the Technology, therefore, is considered as a mean to support active teaching methods, and not as an end in itself. So, it is much more than the mere integration of technology in classrooms and improvements can be made in the theory and practice of teaching, learning and assessment (Sharples,2019). According to Lee & Tsai (2010)"Techno-pedagogical competency is the art of integrating sound pedagogic principles of teaching/learning with the use of technology. It refers to weaving the techniques of the craft of teaching into the learning environment itself". The impact of ICT on academic subjects showed mixed effects and no significant improvements in the performance of students related to PISA (OECD, 2015). Review of literature shows that there are significant differences in the techno pedagogical competencies of teachers with respect to gender, locality, stream, efficacy and type of colleges (Patra & Guha, 2017; Prakash &Hooda, 2018; Bala, 2018; Beri & Sharma, 2019 and Guru &Beaura, 2019). Nowadays, Information and Communication Technology (ICT) is considered as a tool that can help school authorities

and teachers to improve teaching-learning process in accordance with the educational objectives and needs of the society.

OBJECTIVES OF THE STUDY

1. To assess the techno-pedagogical competencies of in-service teachers.
2. To compare the techno-pedagogical competencies of in-service teachers on the basis of experience.
3. To compare the techno-pedagogical competencies of in-service teachers on the basis of locality.
4. To study the techno-pedagogical competencies of in-service teacher on the basis of type of institutions.

HYPOTHESES OF THE STUDY

Ho1: There exists no significant difference in techno-pedagogical competencies of in-service teachers on the basis of experience.

Ho2: There exists no significant difference in techno-pedagogical competencies of in-service teachers on the basis of locality.

Ho3: There exists no significant difference in techno-pedagogical competencies of in-service teachers on the basis on the type of institutions.

DELIMITATIONS OF THE STUDY

Due to paucity of time and resources and to make it more meaningful, the present study is delimited in the following aspects:

1. The present study is delimited to 100 senior secondary school teachers only.
2. The present study is delimited to Sonipat District only.
3. The study includes only one variable i.e. techno-pedagogical competencies.

RESEARCH METHOD

The descriptive survey technique was used for the present study. This method is widely used method in the field of research. It analyses the existing situation and makes

generalization on every important aspect of the prevalent phenomenon. It entails generalisation, interpretation, comparison, measurement, categorization, and assessment.

POPULATION & SAMPLE

Any group of people that share one or more traits that are important to the researcher constitutes a population. The population for the present study consisted of all senior secondary teachers of Govt. and Private schools of Haryana. It is impractical, but not entirely impossible, to measure the whole population. Therefore, a sample from the relevant population must be taken. Multistage sampling was used to collect the sample for the present study. First, information was gathered from the District Education Office's official website about every senior secondary school in the Sonepat district.10 schools wereselected randomly by lottery method. Out of these 10 schools, 05 schools (03schools from rural and 02 from urban area) were government and 05 schools (02 each from rural and 03 from urban area) were Private. From each of the selected school, 10 secondary school teachers were selected through systematic random sampling technique.

TOOL USED IN THE STUDY

The researchers used the following tool for the present study:

• Teacher's Techno-Pedagogical Competency Skills by Rajshekhar & Sathiya Raj (2013).

This scale consisted of 40 statements. Each statement is set against a five-point scale of 'always', 'Sometimes', 'Uncertain', 'Rarely' and 'Never' with the weightage of 5,4,3,2 and 1 in the order. This scale was administered on teachers teaching secondary classes.

STATISTICAL TECHNIQUES USED

Without use of statistical techniques, raw scores do not have their own meaning and weight. After obtaining scores on all the variables, appropriate statistical techniques were used to analyze the data. These statistical designs were chosen keeping in the view the requirement of the objectives and corresponding hypotheses of the study. Percentage, Mean, S.D. and t-test were employed to assess the Techno-Pedagogical Competencies of In-Service Teachers of Sonipat District.

DATA ANALYSIS AND INTERPRETATION

In order to achieve the objectives and to test the null hypotheses, the present study has been analysed into three sections that are described below:

Section I: To assess the techno-pedagogical competencies of in-service teachers.
The data related to techno-pedagogical competenciesof in-service teachers have been analysed using Percentage Method which is given in table-1.

Table - 1
Teacher's Techno-Pedagogical Competency Skills (N = 100)

No. of Teachers	Percentage	Level of Teacher's Techno-pedagogical Competency Skills
20	20	Extremely High
25	25	High
40	40	Average
10	10	Low
5	5	Extremely Low

Table-1 indicates the level of teacher's techno-pedagogical competencies among 100 senior secondary school teachers. It is evident from the above table that the maximum teachers (40%) reported average level of techno-pedagogical competencies. 25% reported high level of techno-pedagogical competencies and 20% reported extremely high level of techno-pedagogical competencies, whereas 10% of total number reported low level of techno-pedagogical competencies and 5% reported extremely low level of techno-pedagogical competencies. Therefore, it can be concluded on the basis of above finding that majority of teachers have average level oftechno-pedagogical competencies.

Section II- Comparison of Techno-Pedagogical Competencies of In-Service Teachers on the basis of Experience, Locality and Type of Institution

In this section, the techno-pedagogical competencies of in-service teachers were compared on the basis of experience, locality and type of institution. The results are presented in the following tables:

Table – 2

Significance of Difference between Techno-Pedagogical Competencies of Less Experienced and More Experienced In-Service Teachers

Group	N	Mean	S.D.	t-ratio	Level of Significance
Less Experienced	50	201.11	16.88	2.82	Significant at 0.01 level
More Experienced	50	210.99	18.12		

The Table 2 shows that the mean scores of techno-pedagogical competencies of less experienced and more experienced in-service teachers are 201.11 and 210.99 respectively and standard deviations are 16.88 and 18.12 respectively the calculated 't'- value is 2.82 which is more than the table value at 0.01 level of significance. Therefore, the hypothesis that there is no significant difference in the techno-pedagogical competencies of less experienced and more experienced in-service teachers is rejected. It can be interpreted thatmore experienced teachers are more techno-pedagogically competent than less experienced teachers.

Table –3

Significance of Difference between Techno-Pedagogical Competencies of In-Service Teachers of Urban and Rural Schools

Group	N	Mean	S.D.	t-ratio	Level of Significance
Teachers of Urban Schools	50	211.43	19.86	2.44	Significant at 0.05 level
Teachers of Rural Schools	50	202.35	17.21		

Table 3 shows that the t- ratio for the difference in the mean scores of techno-pedagogical competencies of in-service teachers teaching in urban and rural areas is 2.44, which is in comparison to the table value was found significant at 0.05 level of significance.

Hence, the hypothesis no.2 that there exists no significant difference in the techno-pedagogical competencies of in-service teachers on the basis of locality (urban and rural) is rejected. It can be interpreted thatteachers working in urban schools are more techno-pedagogically competent than teachers working in rural schools.

Table –4

Significance of Difference between Techno-Pedagogical Competencies of In-Service Teachers of Government and Private Schools

Group	N	Mean	S.D.	t-ratio	Level of Significance
Teachers of Govt. Schools	50	203.98	16.01	3.37	Significant at 0.01 level
Teachers of Private School	50	215.87	19.11		

Table 4 shows that the mean scores of techno-pedagogical competencies of in-service teachers of Govt. and private schools are 203.98 and 215.87 respectively and standard deviations are 16.01 and 19.11 respectively.The calculated 't'- value is 3.37 which is more than the table value at 0.01 level of significance. Therefore, the hypothesis that there is no significant difference in the techno-pedagogical competencies of in-service teachers of government and private schoolsis rejected. It can be interpreted thatteachers working in private schools are more techno-pedagogically competent than teachers teaching in government schools.

CONCLUSION

The results of the study show that the teachers in the sample group of the study have an average level of techno-pedagogical competencies. Also, it can be concluded that the techno-pedagogical competencies of urban and private school teachers are better than the rural and government school teachers respectively. Findings of the study coincide with the findings of other studies carried out on the same issue in literature (Guru&Beura, 2019; Parkash& Hooda, 2018;Archambault & Crippen, 2009&Bal, 2012). According to the findings of the study, based on the experience of the teachers, there are statistically significant differences among teachers' techno-pedagogical competencies.

Technology enabled class room environment develops confidence among learners, encourage them to learn, and helps them to retain the acquired knowledge and skills in their memory for the long-term. Teacher education institutions should consider technology as a useful tool so that in-service teachers can successfully integrate technology in to their teaching. So, educationists, policy makers and administrators need to develop more detailed understanding of the settings, environments, ways & mechanisms through which ICT can be closely connected to the teachers and their Technological Pedagogical and Content Knowledge (TPACK). In-service teachers need to attend professional development programmes to learn innovative lesson plans and to update their knowledge of technology. The administration should allow enough freedom for in-service teachers to make decisions regarding the use of technology in the classroom instruction. They should also provide opportunities to in-service teachers for exposure to spectrum of techno-pedagogical skills on the one hand and orientation for developing insight in intelligent use of technology driven devices & procedures on the other as integration of technology, content and pedagogy knowledge help the teachers to teach effectively in the present scenario.

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