

A Comparative Study of Teacher Techno-Pedagogical Competency based upon Gender, Stream and Experience of Senior Secondary Teachers in Uttarakhand

Paper Submission: 15/10/2020, Date of Acceptance: 26/10/2020, Date of Publication: 27/10/2020



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Abstract

The research article focuses on the teacher techno-pedagogical competency of senior secondary teachers of Uttarakhand with respect to gender, stream and experience. The sample of the study consisted of 411 senior secondary teachers of Uttarakhand. To collect the requisite data for the present study, the investigator used standardized tool of teacher techno-pedagogical competency scale (2013) developed by Dr. S. Rajsekhar & K. Satyaraj. The data analysis was done with the help of mean, SD, 't' value and one way ANOVA test. The results revealed that there were no major difference of gender, stream and experience of senior secondary teacher in relation to their techno-pedagogical competency.

Keywords: Teacher Techno -Pedagogical Competency, Senior Secondary Teacher.

Introduction

The educational commission report (1964-66) emphasized the role of teacher in the education process as "The most important factor contemplated educational Teacher his personal qualities, his qualification, his professional training and the place that he occupies in community" The commission further added, "Even the best curriculum and the more perfect syllabus remain dead unless quickened into the life by the right methods of teaching and the right kind of teachers".

In the modern technological progressive scenario there is an increasing integration of digital technology in education process. It provides a powerful and effective environment for the classroom interaction. Integration of technology in our educational system generates two terms: "technology in education and technology of education". By "technology in education", it meant application of machine, gadgets or equipment to develop the quality of education. This aspect is depicted as the hardware approach. The term "Technology of Education" refers to application of theories and laws/rules in education and related disciplines for the purpose of improving the quality of education. This feature of educational technology is complied the logical, methodical, systematic and scientific process in educational practice. It changed the role of teacher, aim of teaching, classroom interaction, methods, strategies, technique and tools of teaching, subject area or content and also assessment and evolution process in the teaching learning process.

So it is necessary that appropriate integration of technology in the teaching learning process is the prime requirement. Science and technology by itself will not lead to change. Hence teacher should have the competency to integrate technology that has the potential to bring reflection and transformation in the teaching learning process through the development of new professional skills. Technology does not replace the teacher but it changes the role of teacher. Each and every teacher should be familiar with how to employ technology, pedagogy and subject area or content effectively in their daily instructional strategies.

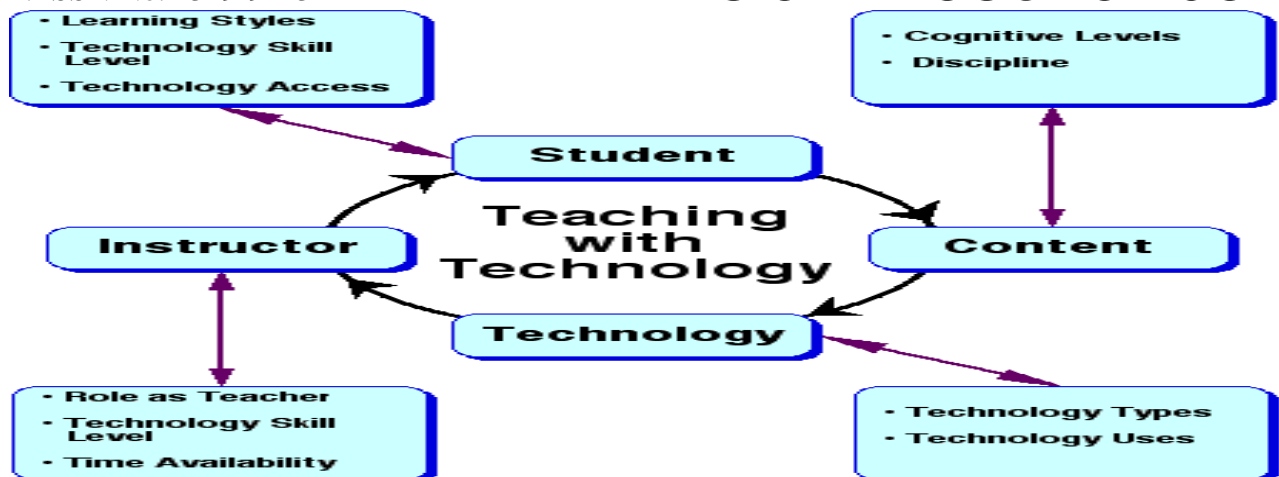


Figure 1: Model for teaching with technology Source: university of Michigan

“Techno- pedagogical skill is based on enhancing the efficiency and learning practices for professional improvement by technology integration” Archambault L; Crippen: K;Cox:S.& Graham. C. R. (2009).

Techno- pedagogy is the hybrid method in which ICT resources are utilized in the classroom interaction. It is the art and craft of incorporating teaching learning experiences in an effective manner to transform the knowledge and information. It is the boon for effective interaction, increases the attention interest and motivation of the learner, and reflective transformation of knowledge. But there are many obstacles. Lack of ICT facilities, lack of knowledge of how to use technological tools and attitude of teacher for the changing dynamics of education. So proficiency of technology and skill of pedagogical competency is the need and demand of teacher for the desirable change of knowledge, skill and attitude of the learner.

Objectives of the study

1. To compare the teacher techno -pedagogical competency of senior secondary male & female teachers in uttarakhand.
2. To compare the teacher techno pedagogical competency of senior secondary art & science teachers in uttarakhand.
3. To compare the teacher techno- pedagogical competency of senior secondary teachers in relation to their experience.

Review of Literature

Bala & Kokla (2018) aimed there work to explore the predictors of techno-pedagogical competence among teachers of senior secondary schools. In this study the data was gathered from 100 teachers of senior secondary school, both from government and private schools using stratified random sampling technique. In this study, teacher’s techno-pedagogical competence scale by S. Rajashekar and K. Sathiyaraj (2013) was used for collecting the data. The application of statistical techniques such as percentage, mean, t-test, standard deviation was used to analyze the data. The research findings indicated that there is no significant difference in male and female senior secondary school teachers with respect to their techno-

pedagogical competence but on the other hand government and private senior secondary school teachers differ significantly from each other with respect to their techno-pedagogical competence. Private senior secondary school teachers possess more techno-pedagogical competence as compared to government senior secondary school teachers.

Sana et al., (2019) measured the impact of antecedent knowledge and techno-pedagogical competence of teachers on the achievement of the learners after implementation of a complete computer based interactive multimedia courseware, To achieve their aim they adopted Solomon’s four group research design, where two pairs of equivalent experimental and control groups of students along with their teachers were purposively selected by matched pair sampling from two schools. During the implementation of the interactive courseware the antecedent knowledge and techno-pedagogical competence of the teachers were measured and compared. The result revealed that only knowledge is not sufficient to implement such type of technology in the classroom both knowledge and techno-pedagogical competence can be taken into consideration. Besides this, a minimum level of the antecedent knowledge and techno-pedagogical competence of teachers are also necessary for successful implementation of the Courseware.

Beri & Sharma, (2019) had conducted a study to evaluate the technological, pedagogical and content knowledge (TPACK) competencies among teacher-educator in teaching training college in the state of Punjab. They used a five point Likert scale in their study. 200 teachers –educators working in different teaching-training colleges in the state of Punjab were selected through random sampling method. The finding of the study show that the technological pedagogical and content knowledge competencies have found high in the teacher-educator of Punjab region. The study revealed that there are statistically significant difference in the competencies of teacher- educators with respect to gender, locality of college, stream and type of colleges.

Chen & Jang; (2019) in their study was to explored the interrelationship between Taiwanese

E: ISSN No. 2349-9443

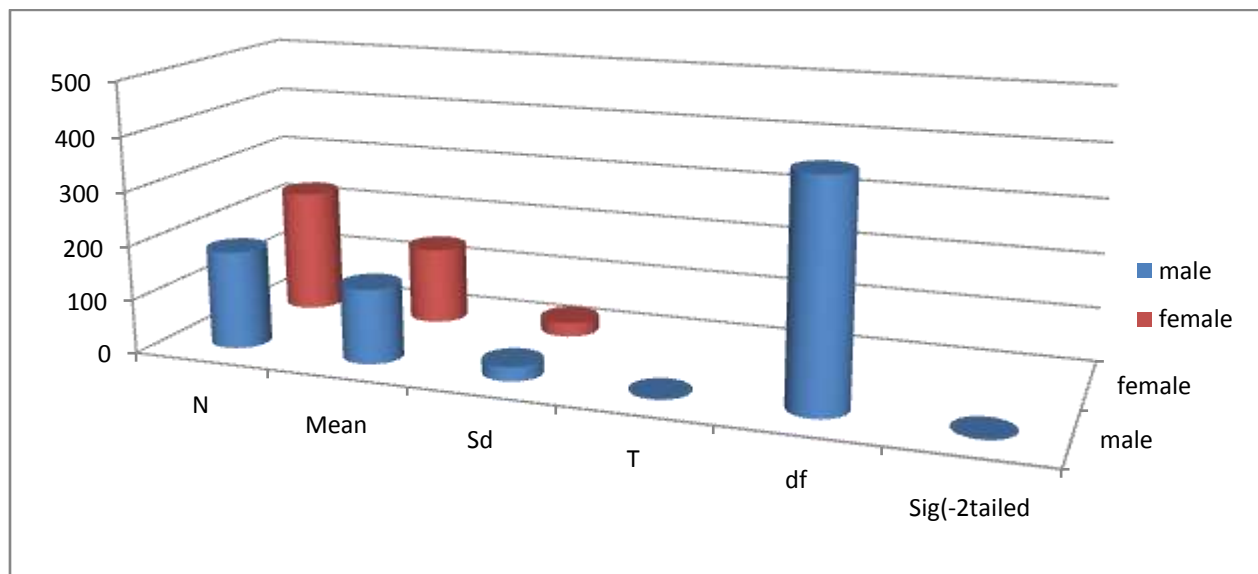
secondary in-service teachers' self-regulation (SR) and technological pedagogical and content knowledge (TPACK) in the national context (N=386). Descriptive analysis, Pearson's bivariate correlation, and canonical correlation analysis were used to examine the interrelationship between the two sets of variables. Result showed that teachers scored highest on monitoring capability and controlling capability (MC/CC) but lowest on information and communications technology (ICT)- related SR. Moreover, the participants scored greatest on content knowledge (CK) but lowest on technology knowledge (TK) and technological pedagogical content knowledge (TPACK). In-service teachers' (MC/CC) and reflection capability higher with CK and pedagogical content knowledge (PCK) but lower with TK and TPCK. Conversely, ICT was associated more significantly with TK and TPCK but less significantly with CK and PCK.

Hypothesis of the study-

1. There is no significant difference in teacher techno-pedagogical competency of senior secondary teachers on the basis of gender.

Table 1: Mean, S.D. and 't' value of male and female senior secondary teachers on Teacher techno-pedagogical competency

| Teacher Techno -pedagogical Competence | Gender | N | Mean | Std. Deviation | t | df | Sig. (2-tailed) |
|----------------------------------------|--------|-----|--------|----------------|---|----|-----------------|
| | male | 181 | 138.32 | 25.962 | | | |
| | female | 230 | 142.36 | 26.038 | | | |



Graphical Representation of Table 1

The above data shows that the obtained 't' value is 1.564 which is less than the table value 1.98 with 'df' 409, which is not significant at 0.05 level. It shows that the mean score of male teachers on teacher techno-pedagogical competency was 138.32 and female teachers mean score was 142.36. It may be concluded that there is no significant difference

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2. There is no significant difference in teacher techno-pedagogical competency of senior secondary teachers on the basis of stream.
3. There is no significant difference in teacher techno-pedagogical competency of senior secondary teachers on the basis of experience.

Methodology

Method- A descriptive survey method was applied in conducting the study.

Sample

Sample of 411 senior secondary teachers from different school in uttarakhand was selected by simple random sample techniques.

Tools

The researcher used the standardized tool-teacher techno pedagogical competence scale (2013) developed by S. Rajshekhar and sathiyraj for collecting of the data.

Analysis and interpretation of data

Hypothesis 1- There is no significant difference in teacher techno-pedagogical competency of senior secondary teachers on the basis of gender.

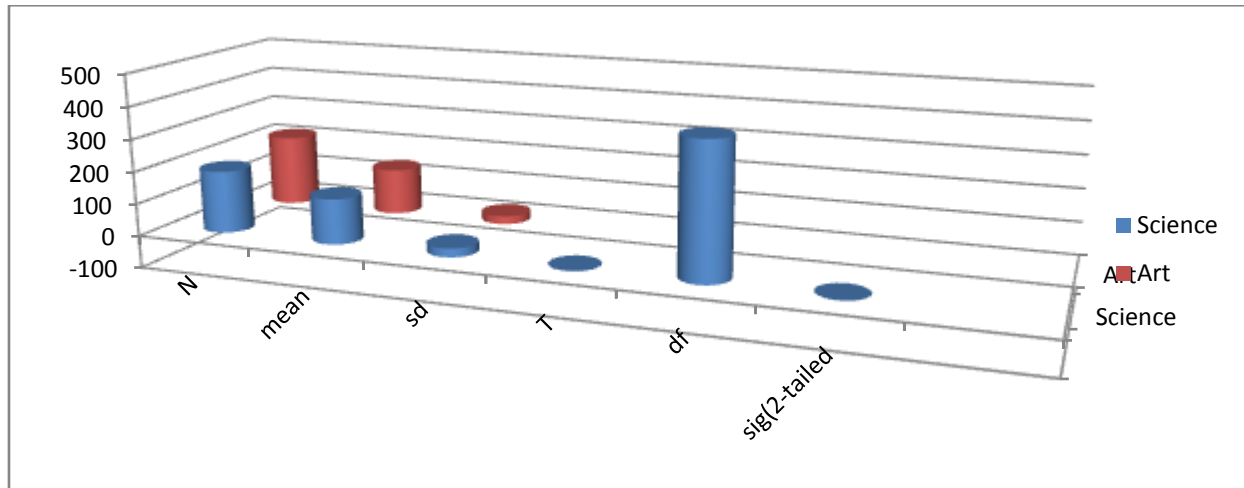
between male and female senior secondary teachers on techno-pedagogical competency; hence the null Hypothesis H0-1 is accepted.

Hypothesis 2

There is no significant difference in teacher techno-pedagogical competency of senior secondary teachers on the basis of stream.

Table 2: Mean, SD and 't' value of science and arts senior secondary teachers on Teacher Techno - Pedagogical Competency.

| Teacher Techno-Pedagogical Competency | Stream | N | Mean | Std. Deviation | t | df | Sig. (2-tailed) |
|---------------------------------------|---------|--------|--------|----------------|-----|------|-----------------|
| | science | 192 | 139.34 | 26.847 | | | |
| art | 219 | 141.67 | 25.342 | -.906 | 409 | .366 | |



Graphical Representation of Table 2

The above data shows that the obtained 't' value is -0.906 which is less than the table value 1.98 with 'df' 409 insignificant at 0.05 level. It shows that the mean score of science teachers was 139.34 and arts teachers mean score was 141.67 it concludes that there is no significant difference between science and

arts senior secondary teachers so the null hypothesis H0-2 is accepted.

Hypothesis: 3

There is no significant difference in teacher techno-pedagogical competency of senior secondary teachers on the basis of experience.

Table-3 Comparison among groups on the basis of experience for Teacher Techno-Pedagogical Competency

| | 0 to 10 yers-1 | 11 to 20 years-2 | Above 2o years-3s | N | Mean | Std. Deviation | |
|---------------------------------------|----------------|------------------|-------------------|-------|--------|----------------|--------|
| Teacher Techno-Pedagogical Competency | 1 | 2 | 3 | 201 | 141.71 | 24.857 | |
| | | | | 169 | 139.82 | 27.625 | |
| | | | | 41 | 138.20 | 25.426 | |
| | | | | Total | 411 | 140.58 | 26.050 |

Table 4: Mean, S.D. 'f' value of senior secondary teacher of teacher techno- pedagogical competency

| ANOVA | | | | | | |
|---------------------------------------|----------------|----------------|-----|-------------|------|------|
| | | Sum of Squares | df | Mean Square | F | Sig. |
| Teacher Techno-Pedagogical Competency | Between Groups | 585.224 | 2 | 292.612 | .430 | .651 |
| | Within Groups | 277644.795 | 408 | 680.502 | | |
| | Total | 278230.019 | 410 | | | |

The above data shows that the obtained 'f' value of .430 is less than the table value 1.98 with 'df' 409 and therefore insignificant at 0.05 level. It also shows that the mean score of 0-10 experience group teachers was 141.71, 2 experience group teachers mean score was 139.82 and 3 experience group of teachers mean score was 138.20, there standard value ware 24.857, 27.625 and 25.426 .It concludes that not significant difference is observed between experience group and within experience group of senior secondary teachers. So the null hypothesis H0-3 is accepted and the conclusion is that all three groups are not different in teacher techno-pedagogical competency.

Findings of the Study

The finding of the study is that -

1. Gender does not influence teacher techno-pedagogical competency of the senior secondary teachers.
2. Stream does not influence teacher techno-pedagogical competency of the senior secondary teachers.
3. Experience does not influence on teacher techno-pedagogical competency of the senior secondary teachers.

Conclusion

Techno-pedagogy is the main deciding feature for the recently most discussed hybrid approach of Meta teaching. The rapid development is educational technology has changed the teaching and learning processes to a great extent. The teacher needs to be familiar with the application of

E: ISSN No. 2349-9443

technological theories and practices in their teaching and develop the techno-pedagogical competency.

Implication of the study

Use of techno-pedagogical skill can break down some of the barriers leading to underachievement of the student dissatisfaction and educational execution (Das 2007). In spite of the fact that planning and implication of initiatives for enhancing role of teachers pedagogical competency in schools will need to develop strategies for effective techno-pedagogical competency and media development and sustainability technology is never a substitute for good teaching. Without techno-pedagogical competency no electronic delivery can achieve good result. This study can apply at all levels of education, and all area of subject.

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