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A Study of Teacher Effectiveness of the Government Secondary School Teachers in Sikkim in Relation with Techno-Pedagogical Skills

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Abstract:

An effective teacher is one who consistently achieves his goals that are related either directly or indirectly to student learning. Teacher educators are, such, the avenues of effective teaching and the strategies adopted for that purpose needs orientation and reorientation with changing needs and priorities in teacher education. The quality of a nation depends upon the quality of its citizens and the quality of its citizens depends indirectly upon the quality of teacher education. The quality of teacher education depends more than any other factor, upon the quality of their teachers, so the education of teachers should be given more importance. Technology has made inroads into every sphere of human activity, including the field of education. It had totally transformed the face of didactic teaching and brought about far-reaching changes in the way in which knowledge was being shared. The objectives of the study are to find out significant difference if any in the teacher effectiveness and techno-pedagogical skills of teachers in relation to gender and locale. The descriptive method of survey was adopted. The sample of this study consisted of secondary school teachers of Sikkim. The findings of the study were that there was no significant difference in teacher effectiveness of teachers in relation to gender and locale variations. There was no significant difference in techno-pedagogical skills of teachers in relation to locale and gender variations. In each case the relationship between teacher effectiveness and techno-pedagogical skills was significant.

Keywords: *Teacher Effectiveness, Techno-Pedagogical Skills, ICT, Quality.*

Introduction:

The National Education Policy 2020 has also highlighted the importance of integrating technology in education and its uses in a separate chapter. 'New circumstances and realities require new initiatives. The recent rise in epidemics and pandemics necessitates that we are ready with alternative modes of quality education whenever and wherever traditional and in- person modes of education are not possible. In this regard, the National Education Policy 2020 recognizes the importance of leveraging the advantages of technology while acknowledging its potential risks and dangers. It calls for carefully designed and appropriately scaled pilot studies to determine how the benefits of online/digital education can be reaped while addressing or mitigating the downsides. In the meantime, the existing digital platforms and ongoing ICT- based educational initiatives must be optimized and expanded to meet the current and future challenges

in providing quality education for all.'

Concept of Teacher Effectiveness

Effective teachers are not thinking about what to do; they are responding in a predictable manner to the student behavior. In establishing a productive learning environment, effective teachers are recapturing instructional time that is often lost in administrative activities, discipline and transitions. Kulsum (2006) stated that teacher effectiveness includes characteristics of a teacher, his personality, attitudes etc., and process like teacher-pupil interaction and production variables like outcomes of teacher-learning process, namely pupil achievement whereas Anderson (1991) stated that an effective teacher is one who achieves the goals set by him or have set for him by others. An effective teacher must possess the knowledge and skills needed to attain the goals and must be able to use that knowledge and those skills appropriately if the goals are to be achieved.

Brodie (1998) described teaching effectiveness as the degree to which a teacher facilitates students' aspirations. Some common descriptors of effective teachers include enthusiastic, charismatic, and expressiveness whereas Taylor et al. (1999) emphasized that teachers who have higher rates of communication with parents are viewed as more effective. Effective teachers have more students in their classes on task, engaged in learning and spend more time working with small groups throughout the day. Kher et al. (1999) stated that effective teaching revolves around the connection between teachers and students. Whereas Richardson and Arundell (1989) noted that an effective teacher gives a variety of examples, properly plans lessons, has mastery over subject matter, and increases learning of students.

Concept of Techno Pedagogical Skills.

Techno pedagogical Skills refer to the skills needed to use technology for pedagogical reasons and competence to integrate technology into teaching. Gloria (2014) Techno-Pedagogy decides whether an education media product is successful or not. Pedagogy refers to 'Science and Arts of teaching'. Techno derived from the Latin word 'Texere' means 'weave or construct'. Techno-Pedagogy refers to weaving the techniques of teaching into the learning environment itself. Education Technology provides approximate designing learning situations, holding in view the objectives of the teaching and learning bring the best practices means of instructions which effect on learning. Acquiring techno- pedagogical proficiencies will make teaching and learning a pleasurable exercise as it would lessen the pressure on the teachers and enable the students to delve deeper into the domain of knowledge.

Thakur (2015) today, the techno-pedagogical competency is very much needed for teachers in teaching and learning process, as it facilitates effective teaching and learning. The techno- pedagogical competency is nothing but the ability of the teachers to make use of technology effectively in teaching. The teachers develop techno-pedagogical competencies then they may try to make use of this often in teaching and it will in turn make the learning process simple and effective. In techno pedagogy, there are three areasof knowledge, namely: content, pedagogy, and technology. Content is the subject matter that is to be taught. Technology encompasses modern technologies such as computer, Internet, digital video and commonplace 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.

Sibichen (2016) Teachers are expected to know how to successfully integrate ICT into his/her subject areas to make learning more meaningful. This knowledge development during pre- service training has gained much importance with the notion that exposure to ICT during this time is helpful in increasing student teachers‟ willingness to integrate technology with classroom teaching. Pre-service teachers need to plan to

use computers in their classrooms. Integrating technology in the classroom redefines established teacher-learner relationships and teaching learning styles (Sibichen & Annaraja 2010). constant updates, feel forced to respond to work-related information in real-time, and engage in almost habitual multi-tasking. They feel compelled to work faster because information flows faster, and have little time to spend on sustained thinking and creative analysis.

Review of Related Literature

Grant (2009) made a detailed study on comparison of student perceptions of their computer skills to their actual abilities. The objectives of the study were to know the computer skills, based on the results it can be realigned and enhance an introductory business computer applications course. 200 business students were taken as a sample for the study. The two tools used were i.e. (i) students' perceptions of their computer proficiency and (ii) a computer skills assessment to measure their actual performance. The result revealed that, there was a significant difference in the perception and performance of their word processing skills and spreadsheet skills and there was no significant difference in the perception and performance of their presentation skills. Based on the results, the curriculum for the introductory course was redesigned in order to cope up with the relevant skills.

Sawhney & Kaur (2011) examined teacher effectiveness in relation to the self- concept of elementary school teachers. Teacher Effectiveness Scale by Kumar and Mutha and Self- Concept Inventory by Mohsin were used for data collection from elementary school teachers of Punjab State. Results of the study revealed that there was no significant difference found in the teacher effectiveness of male and female teachers. A significant difference was found between the self-concept of male and female elementary school teachers. There existed a significant relationship between teacher effectiveness and self-concept of male and female elementary school teachers.

Joo and Lim (2015) examined the structural relationships between secondary school teacher's TPACK, perception of school support for technology use, techno-stress, and intention to use technology in Korea, where a SMART education initiative has been announced recently for K-12 education. The study employed structural equation modeling in order to examine the causal relationships among the variables, and data from 312 secondary school "teachers" were analyzed. The results indicated that TPACK and school support had "significant" effects on techno-stress. In addition, "techno-stress" "significantly" influenced teacher's intentions to use technology. At the end, "techno-stress" "significantly" mediated TPACK, school support and the intention to use technology.

Sibichen (2016) conducted a study on techno-pedagogical skills of the secondary teacher education students to find out whether there is any significant difference between male and female secondary teacher education students in their skill in learning, preparing lesson plan, preparing learning material, implementing instructional strategy, communication, evaluation, guidance and techno-pedagogical skills. The method adopted in the present study was a survey. The investigator used stratified random sampling technique for selecting the sample and it was found that there is no significant difference between male and female secondary teacher education students in their skill in learning, preparing lesson plan, implementing instructional strategy, communication, evaluation, guidance and techno pedagogical skills.

Ozdemir (2016) conducted a study on Techno-Pedagogical Education Competencies (TPACK) of Pre-Service Elementary School and Preschool Teachers. The objectives of the study were to determine the TPACK of pre-service elementary school and preschool teachers. Descriptive method was adopted for the study. 995 pre-service elementary school and preschool teachers from three state universities were taken as samples for the study. The study found the means of third year and fourth year pre-service teachers in the

departments of elementary school teaching and preschool teaching to be high. The TPACK mean scores of the pre-service elementary school and preschool teachers were found to be high. The TPACK mean scores of senior pre-service elementary school and preschool teachers were significantly different from those of junior pre-service preschool teachers. Their pre-service education had positive effects on their TPACK. This study emphasizes that teacher education should give opportunities to adopt and use technology along with their regular curriculum in their daily classroom practices. During teaching practice, a minimum few classes should be dealt with the assistance of technology. Technology usage should be considered as one of the criteria for assessing teaching competency.

Jeyaraj (2018) examined the Technological Pedagogical and Content Knowledge (TPACK) of B. Ed. Student Teachers in Puducherry Region. Two hundred B.Ed. student teachers were selected by adopting to select the sample for the present survey. The standardized Likert type of scale prepared by Ismail Sahin was used as the tool for the study. The tool comprised 47 items with five responses. The collected data were analyzed by using the SPSS package. The result revealed that TPACK of B. Ed. students were moderate. There exists a significant difference in TPACK of B. Ed. student teachers with respect to educational qualification, access to e-content and technology usage frequency in the teaching learning process. Further the author stated that integration of technology, content and pedagogy knowledge helps the teacher to teach effectively in the present scenario. TPACK helped the teacher to update their knowledge and skills which led to enhance their professional development.

Significance of the Study

Teacher effectiveness is the measure of success of a teacher in carrying out institutional and other specified duties demanded by the nature of his /her position. Teachers are the natural role models to the younger generation. Today's teachers are required to be more effective and truer to their profession. In order to be able to articulate teaching with a new paradigm of learning, be adoptive and supportive in dealing with new sets of students belonging to different age groups, diverse ethnicities and with a broad range of background and prior knowledge, teachers need to be lifelong learners themselves. Teacher effectiveness is important because effective teaching helps student learning. It has become even more important as the emphasis on quality in higher education has increased. From the above discussion it becomes clear that teacher effectiveness is directly related to student achievement. Moreover, the qualities of an effective teacher have an impact on students' performance. Effective teachers strive to motivate and engage all their students in learning rather than simply accepting that some students cannot be engaged and destined to do poorly. They believe every student is capable of achieving success at school and they do all they can to find ways of making each student successful. (Habib 2017)

In an effort to upgrade the quality of education, emphasis has been placed in enhancing and improving teachers' training and provision of inputs like teaching aids. But the proliferation of information technology products and services in learning environments as a result of rapid innovation leads to a greater requirement of meticulous planning in integration processes. In this regard, the burden placed upon teachers within their classroom increases. Teaching effectiveness has become a big question with the innovations and development of educational technologies. This Covid-19 pandemic has played a substantial role in highlighting the scope of the various technologies in the teaching learning process. Throughout the pandemic it was revealed to the world that the teaching learning process has shifted beyond the four walls of the classroom. There are no barriers to stop this process. This shift not only made the teaching learning readily available but it also made everyone, especially the teachers realize how much they have been lacking behind in terms of digital learning. But it was expected that the teachers were ready for taking the classes effectively through various online platforms during this pandemic and the process of teaching learning successfully made its way throughout the pandemic lockdown. Through this study the researcher intends to conduct a

study on the effectiveness of teachers keeping in view their techno- pedagogical skills. Thus, this study was an effort to see the effectiveness of the teachers of the 21st century in terms of their techno-pedagogical skills in Sikkim.

Statement of the Problem

In view of the gap identified through review of related literature the study entitled as follows-

"A Study of Teacher Effectiveness of the Government Secondary School Teachers in Sikkim in Relation with Techno-Pedagogical Skills"

Objectives of the Study

1. To find out teacher effectiveness of the teachers of Government Secondary Schools in Sikkim in relation with Gender variation.
2. To find out teacher effectiveness of the teachers of Government Secondary Schools in Sikkim in relation with Locale variation.
3. To find out techno-pedagogical skills of the teachers of Government Secondary Schools in Sikkim in relation with Gender variation.
4. To find out techno-pedagogical skills of the teachers of Government Secondary Schools in Sikkim in relation with Locale variation.
5. To investigate the correlation between teacher effectiveness and techno-pedagogical skills of the teachers of Government Secondary Schools in Sikkim.

Hypotheses of the Study

Ho1. There is no significant difference in teacher effectiveness of the teachers of government secondary schools in Sikkim in relation with Gender variation.

Ho2. There is no significant difference in teacher effectiveness of the teachers of government secondary schools in Sikkim in relation with Locale variation.

Ho3. There is no significant difference in techno-pedagogical skills of the teachers of government secondary schools in Sikkim in relation with Gender variation.

Ho4. There is no significant difference in techno-pedagogical skills of the teachers of Government Secondary Schools in Sikkim in relation with Locale variation.

Ho5. There is no significant relation between teacher effectiveness and techno-pedagogical skills of the teachers of Government Secondary Schools in Sikkim.

Operational Definitions of the terms used

Teacher Effectiveness. In the present study teacher effectiveness means that those teachers have attained the needed competence in their roles and functions, such as the preparation and planning for teaching, classroom management, knowledge of subject matter, teacher characteristics and their interpersonal relations. Also, these teachers excel in their other personality characteristics. They are said to be effective teachers. Teacher effectiveness includes characteristics of a teacher, his personality, attitudes etc., and processes like teacher-

pupil interaction and production variables like outcomes of teaching- learning process, namely pupil achievement.

Techno Pedagogical Skills. It refers to teachers' technology integration competencies based on the components of the teaching-learning process.

Government Secondary School Teachers. The term secondary school teachers used in this present study are referred to the secondary teachers working in government schools in all six districts of Sikkim

Sikkim. Sikkim is the 22nd state of India. All the six districts of Sikkim: Gyalshing, Namchi, Soreng, Gangtok, Pakyong and Mangan.

Scope and Delimitation of the study

The present study focused on studying the effectiveness of secondary school teachers of Sikkim in relation to their techno-pedagogical skills. The scope of the study is delimited to assess the teacher effectiveness of secondary school teachers of Sikkim only.

Methodology: Research Design: The study was descriptive survey research undertaking quantitative data.

Population: The target population of the study was all the teachers teaching in all the government secondary schools of Sikkim.

Sampling: One hundred secondary school teachers from government schools of Sikkim were selected from sampling random procedure.

Research Tools

The success of any research endeavor is largely dependent upon the tools which are used for the data collection. The following tools were used by the investigator in the study.

- Teacher Effectiveness Scale (KTES) by Umme Kulsum (2000)
- Techno-Pedagogical Skill Assessment Scale by Sibichen and Annaraja (2009)

Analysis and Interpretation of data: Hypotheses testing

Under this subsection attempts were made by the investigator to interpret the data in terms of the objectives and hypotheses formulated earlier. For this the sample was split into two sub-samples namely: Male teachers Vs Female teachers and Rural Vs Urban, In order to make a statistical comparison the 't' ratios were calculated in all the cases and the results were presented in each and every cases. For determining the significance of difference between the means and variances of each of the contrasts the 't' ratios were calculated and tested for significance at 0.05 level and 0.01 level of significance and depending upon the result, the hypotheses were rejected or accepted. The corroboration of earlier studies was made with regard to the result and interpretation was made accordingly. The details of this were presented below.

Analysis of Teacher Effectiveness of teachers in Relation to Gender Variation

In order to test to test the gender difference in teacher effectiveness of teachers, 't' ratio had been calculated and presented below:

Table 1: Test of significance of difference on Teacher Effectiveness of teachers due to gender variation

Variation	Sub Sample	N	M	SD	SE_D	't'	Remark
Gender	Male	50	109.46	30.36	5.98	1.18	NS
	Female	50	116.56	29.45			

P values of t at 0.05 level= 1.98, 0.01 level= 2.63 for df 98, NS refers to Not Significant

It was quite evident from the above table that the obtained value of 't' ratio was 1.18 which was smaller than the table value 0.05 level= 1.98, 0.01 level= 2.63. Hence the 't' ratio (1.18) in case of gender variation was not significant at 0.05 and 0.01 level and we may conclude that there was no significant difference between male and female teachers in their teacher effectiveness. The result was in the conformity with the earlier studies done by Sawhney & Kaur (2011), Joo and Lim (2015) and Jeyaraj (2018) who found there is no significant difference between male and female teachers on teacher effectiveness.

Analysis of Teacher Effectiveness of teachers in Relation to Locale Variation

In order to test to test the locale difference in teacher effectiveness of teachers, 't' ratio had been calculated and presented below:

Table 2: Test of significance of difference on Teacher Effectiveness of teachers due to locale variation

Variation	Sub Sample	N	M	SD	SE_D	't'	Remark
Locale	Rural	50	116.52	31.04	5.98	1.17	NS
	Urban	50	109.5	28.75			

It was quite evident from the above table that the obtained value of 't' ratio was 1.17 which was smaller than the table value 0.05 level= 1.98, 0.01 level= 2.63. Hence the 't' ratio (1.17) in case of locale variation was not significant at 0.05 and 0.01 level and we may conclude that there was no significant difference in their teacher effectiveness due to locale difference. The result was in the conformity with the earlier studies done by Sawhney & Kaur (2011), Joo and Lim (2015) and Jeyaraj (2018) who found that there does not exist any difference due to locale variation.

Analysis of Techno-Pedagogical Skills of teachers in Relation to Gender Variation

One of the objectives of the study was to estimate the Techno-Pedagogical Skills of teachers in relation to gender variation. For this the null hypothesis Ho_3 was formulated as follows, "There will be no significant difference in the Techno-Pedagogical Skills of teachers in relation to gender variation". In order to test the gender difference in Techno-Pedagogical Skills of teachers, 't' ratio had been calculated and presented below:

Table 3: Test of significance of difference on Techno-Pedagogical Skills of teachers due to gender variation

Variation	Sub Sample	N	M	SD	SE_D	't'	Remark
Gender	Male	50	23.38	7.58	1.51	1.35	NS
	Female	50	25.42	7.50			

It was quite evident from the above table that the obtained value of 't' ratio was 1.35 which was smaller than the table value 0.05 level= 1.98, 0.01 level= 2.63. Hence the 't' ratio (1.35) in case of gender variation was not significant at 0.05 and 0.01 level. So, the null hypothesis Ho_3 could not be rejected and concluded that there was no significant difference between male and female teachers in their Techno-Pedagogical Skills.

Analysis of Techno-Pedagogical Skills of teachers in Relation to locale Variation

One of the objectives of the study was to estimate the Techno-Pedagogical Skills of teachers in relation to locale variation. For this the null hypothesis Ho_4 was formulated as follows "There will be no significant difference in the Techno-Pedagogical Skills of teachers in relation to locale variation". For the appropriateness of the study, 't' ratio was calculated as shown in the following table.

Table 4: Test of significance of difference on Techno-Pedagogical Skills of teachers due to locale variation

Variation	Sub Sample	N	M	SD	SE_D	't'	Remark
Locale	Rural	50	24.86	7.27	1.52	0.61	NS
	Urban	50	23.94	7.91			

On the above given data, it was quite evident that the obtained value of 't' ratio was 0.61 and less than table value which is 1.98 at 0.05 level and 2.63 at 0.01 level of significance. Hence the 't' ratio could not be significant. So, the null hypothesis Ho_4 could not be rejected and it was concluded that there was no significant difference between teachers belonging from rural and urban area on their Techno-Pedagogical Skills.

Relationship Study between Teacher Effectiveness and Techno-Pedagogical Skills

In this study also the investigator attempted to find out relationship between teacher effectiveness and Techno-Pedagogical Skills. In that context, relationship between teacher effectiveness and Techno-Pedagogical Skills in relation to the gender and locale variables were computed and the result was presented in a table 5.

Table 5: Co-efficient of co-relation between Teacher Effectiveness and Techno-Pedagogical Skills

Variation	Sub-sample	N	R	Remarks
Gender	Male	50	0.38	p<.01
	Female	50	0.31	p<.05
Locale	Rural	50	0.44	p<.01
	Urban	50	0.36	p<.05
Total		100	0.45	P<.01

From the table, it was observed that in each case the relationship was significant. The study was in conformity with earlier studies of Sawhney & Kaur (2011), Joo and Lim (2015) and Jeyaraj (2018).

Findings of the study

- There is no difference in Teacher Effectiveness in terms of gender variation.
- The distribution is normal distribution.
- Locale variation also did not play any vital role in the teacher effectiveness of teachers.
- Male and Female teachers belonging from different locale did not influence the Techno-Pedagogical Skills of teachers.
- In each case the relationship between teacher effectiveness and Techno-Pedagogical Skills is significant.

Conclusion:

Teaching is considered to be the most sacred and distinctive profession. History is full of evidence about the nation where education has brought significant progress. With the change in demands, the profession of teaching has become demanding. Teaching has always remained a dynamic activity. It imparts knowledge, information, experience and education. As stated in the report of the International Commission on Education (1996) in any event, no reform can succeed without the co-operation and active participation of teachers. The social, cultural and material status of educators should be considered as a matter of priority. Teacher educators are, such, the avenues of effective teaching and the strategies adopted for that purpose needs orientation and reorientation with changing needs and priorities in teacher education. The quality of a nation depends upon the quality of its citizens and the quality of its citizens depends indirectly upon the quality of teacher education. Acquiring techno- pedagogical proficiencies will make teaching and learning a pleasurable exercise as it would lessen the pressure on the teachers and enable the students to delve deeper into the domain of knowledge. Technology has made inroads into every sphere of human activity, including the field of education. It had totally transformed the face of didactic teaching and brought about far-reaching changes in the way in which knowledge was being shared.

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