TECHNO PEDAGOGICAL SKILLS OF BACHELOR OF EDUCATIONSTUDENTS OF ODISHA

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Abstract

The present study aimed at assessment of the techno pedagogical skills of Bachelor of Education (B.Ed) Students of Odisha & to compare the TP skills with respect to gender &stream of education. Descriptive Survey Method was adopted for the study. The sample of the study consisted of 200 B.Ed students of 4 Teacher Education Institutes of Odisha. Data were collected through a standardized tool developed by K.K. Sibichen and P. Annaraja (2009) namely Techno Pedagogical Skill Assessment Scale (TPSAS).Collected data were analysed with help of t test. The results of the study revealed that B.Ed students have positive and high techno-pedagogical skills in terms of learning, implementing instructional strategy and evaluation. Further, there is no significant difference found between male and female B.Ed students in techno- pedagogical skills and there is no significant difference found between male-arts and female-arts B.Ed students in their techno pedagogical skills but there is significant difference found between male-science and female science B.Ed students in their techno pedagogical skills.

Key words: Techno-Pedagogical Skills (TP Skill), Bachelor of Education (B.Ed) and Stream of Education

Introduction

"The technology itself is not transformative. It's the school, the pedagogy that is transformative."**(Tanya Byron)**

The emergence of new technology has influenced every aspects of human life. Today, a class room without technology is inconceivable. Due to these developments and evolution, standards of learning would be higher in the 21th century than it has been in the 20th century. In order to prepare the students to navigate the 21th century world they must be exposed to technology based instruction in the class room. To be able to survive and be successful in the future school environment, teachers would need to acquire additional knowledge and skills, both general and specific.

Almost all Committees &Policies on Education in India have consistently recommended integration of technology with teacher education as the foundation of all education process. Report of the Kothari Commission (1964-66, p. 87) states: "A sound

programme of professional education of teachers is essential for qualitative improvement of education. Investment in teacher education can yield very rich dividends because the financial resources required are small when measured against the resulting improvements in the education of millions." The number of teacher education student increased significantly in the past years and however the no. of students in secondary level increases to 383,01,000 from few thousand in the last century (Educational Statistics at a Glance, MHRD 2016, p-4). Hence teacher needed new method of instruction and testing and the students were looking for new way to communicate study and learn. University Education Commission (Radhakrishnan Commission, 1948-49) and the Secondary Education Commission (1952-53), as well as other Commissions and Committees had dealt with the issues related to educational reconstruction. Afterwards, the NPE 1986, as modified in 1992, stressed the need to employ educational technology to improve the quality of education led to two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS).

Government of India introduced the Computer Literacy and Studies in Schools (CLASS) as a pilot project initially with the introduction of BBC micro-computers. Under this project, a total of 12,000 such computers were received and distributed to Secondary and Senior Secondary schools through State Governments. The project was subsequently adopted as a centrally-sponsored scheme during the 8th5 year Plan (1993-98). The then Prime Minister of India, Shri Atal Bihari Vajpayee constituted National IT Task Force in 1998 which made several recommendations for making available computers, internet and educational software to teachers and students of schools, colleges and polytechnics by the year 2003 and paved the way for a more comprehensive centrally sponsored scheme namely Information and Communication Technology in Schools in 2004.National Curriculum Framework 2005 (NCF) has also highlighted that ICT can play a significant role in school education. It talked about the essential component related to establishment of 'smart schools' designed to become technology demonstrators.

Techno-Pedagogy: Literally, 'pedagogy' refers to the art &science of teaching. The word Techno is derived from the Latin word 'texere' which means to weave or fabricate. Combination of both the words 'techno pedagogy' means weaving the technology into the teaching learning process.

Dimensions of Techno Pedagogical Content Knowledge

   a.   Content knowledge (CK)

   b.   Pedagogical knowledge (PK)

   c.   Pedagogical Content Knowledge (PCK)

   d.   Technological Knowledge (TK)

   e.   Technological Content Knowledge (TCK)

   f.   Technological Pedagogical Knowledge (TPK)

   g.   Technological Pedagogical Knowledge (TPACK)
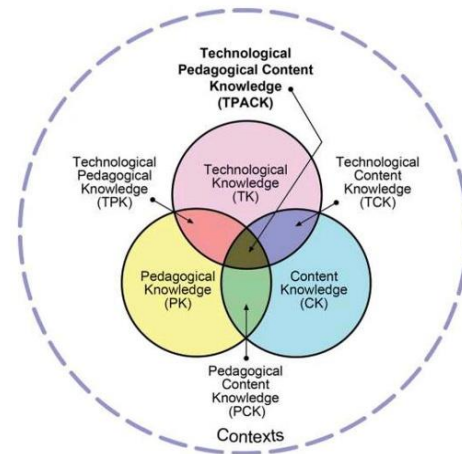

FIGURE 1

Techno Pedagogical Content Knowledge

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Techno Pedagogical Skills: Techno-pedagogical skills are defined as the ability to use ICT in a pedagogical context it includes learning, planning instructions, implementing instructional strategy and evaluation through ICT.

Rationale of the Study: The National Council for Teacher Education has defined teacher education as a programme of education, research and training of persons to teach from pre-primary to higher education level. Teacher education is a programme that is related to the development of teacher proficiency and competence that would enable and empower the teacher to meet the requirements of the profession and face the challenges therein. However with explosion of scientific and technological knowledge and according to future educational and societal demand, technology considered as a vital part of teacher education programme. Different studies had been conducted on TPACK at national and international level. Jeyaraj, I. &Ramnath, R. (2018), Kumar, S. (2018), Pradeep, K. S. L. (2018), Sathya, G. (2017), Sharma, A. (2017), Sekhar, J. M. A. (2016), Kumar, C. & Ashok, (2015), Thakur, N. (2015), Sibichen, K.K. (2010) had conducted studies in India. Gloria, R. (2018), Yildiz, A. (2017), Sezer, B. (2014) also had studied abroad relating techno pedagogy competencies with various factors.After analysis all of studies related to techno-pedagogicalskill, it was found that, techno pedagogical skills are very much helpful for Science and Mathematics teaching. Teacher feels less anxiety and low stressed, while taking the class by the help of techno pedagogicalskills& there is no significantdifference foundbetween attitude of male and female teachers towards techno pedagogicalskills.

However there was no study conductedon Techno Pedagogical Skills with respect to Stream of Education and no such studies were conducted on state B.Ed students of Odisha. So after going through such types of studies and research gaps, it is a pertinent question before the investigatori.e. techno pedagogical skills of B.Edstudents of Odisha with respect to gender & stream of education.

Objectives of the Study: The following werethe objectives of the study.

a. To assess the techno pedagogical skills of B.Ed students

b. To compare techno pedagogical skills of B.Ed students with reference to stream of study

c. To compare techno pedagogical skillsof B.Ed students with reference to gender.

Hypotheses: Following were the hypotheses of the study.

H_{01}- There is no significant difference in techno pedagogical skills between students of Arts stream and students of Science stream.

H_{02}- There is no significant difference in techno pedagogical skills between male Arts students and female Arts students.

H_{03}- There is no significant difference in techno pedagogical skills between male Science students and female Science students.

Method: The present study was aimed to study the current status of techno pedagogical skills of B.Ed students of Odisha, for which Descriptive Survey Method was adopted.

Population & Sample of the Study: The population of the study was the total no of final year B.Ed Students of various IASES, CTES, Govt. Teacher Training colleges, DIETs of Odisha. That was 2000 No. of B.Ed Students studying in 3 IASEs, 11 CTES, 5 DIETs and one Governments B.Ed college of Odisha.

The sample of present study was consisted of 200 B.Ed students selected from 4 teacher training institutes. Out of 200, 100 students were selected from Science stream (50 male& 50 female) and 100 students were selected from Arts stream (50 male& 50 female). To select sample Stratified Random Sampling technique was adopted.

Delimitations of the Study: Major delimitations of the study as followed:

i. This study was confined to 4 Governments B.Ed Institute of Odisha, from which 200 B.Ed students were taken as sample.

ii. The technopedagogicalskills were measured only through Techno-Pedagogical SkillAssessmentScale developed by K.K. Sibichen and P. Annaraja (2009).

iii. The research conducted was purely quantitative in nature; therefore all the behavioural traits may not be covered.

Tools Used: Techno Pedagogical Skill Assessment Scale(TPSAS)developed by K.K. Sibichenand P. Annaraja (2009) was used to find techno pedagogical skillsof Bachelor of Education (B.Ed) students. Dimensions of the tool was Learning, Preparing lesson plan, Preparing learning material, Implementing instructional strategies, Communication, Assessment & Guidance. The tool was a 5 point Likart scale having 49 items in it.

Statistical Techniques Used: For hypotheses testing both descriptive statistics such as 'Mean, SD' & inferential statistics such as 't – test' was employed.

Analysis & Interpretation of Data:

1. Techno Pedagogical Skills of Bachelor of Education Students

The main objective of the study was to explore TP skills of B.Ed students. For this, the investigator collected data from 200 B.Ed students and then the score obtained to statistical analysis i.e. Mean, SD. The result is presented in the table 1.

Table1 TP Skills of B.Ed Students

B.Ed Students	N	M	SD	Low	Moderate	High
Arts	100	176.67	21.43	10%	39%	51%
Male- Arts	50	178.46	19.54	8%	38%	54%
Female- Arts	50	174.88	23.03	12%	40%	48%
Science	100	178.25	18.75	8%	33%	59%
Male- Science	50	174.04	18.16	10%	39%	51%
Female- Science	50	182.46	18.38	6%	30%	64%

Table no. 1 revealed that the result of male-Arts, female-Arts, male-Science and female-Science B.Ed Students had the Mean and SD as 178.46, 19.54", "174.88, 23.03","174.04, 18.16", "182.46, 18.38" respectively. It also found that female- Science B.Ed student had maximum TP Skill (M= 182.46).

The findings also shows that 8% of total male-Arts students have low, 38% of them have moderate and 54% of them have high TP skills where as 12% of total female-Arts students have low, 40% of them have moderate and 48% of them have high TP skills.Similarly 10% of total male-Science students have low, 36% of them have moderate

and 54% of them have high TP skills and 6% of total female-Science students have low, 30% of them have moderate and 64% of them have high TP skills.

The study also shows that 10% of total Arts-B.Ed students have low, 39% of them have moderate and 51% of them have high TP skills and 8% of total Science-B.Ed students have low, 33% of them have moderate and 59% of them have highTP skills. The present study was supported by the studies Pradeep(2018), Thakur(2015).

2. Variation in TP skills of Arts & Science B.EdStudents

In order to compare TP skills of Arts & Science B.Ed students, the researcher had calculated the Mean, SD and t value of TP skills score. The same is presented in table 2.

Table 2 Difference between Arts and Science B.Ed Students in their Techno Pedagogical Skills

Stream of Education	N	Mean	SD	T ratio	df	P value	Remark
Science	100	178.25	18.75	0.5549	198	1.97	NS
Arts	100	176.67	21.43				

Table 2 revealed that Science B.Ed students (mean = 178.25, SD= 18.75) are slightly higherthan the Arts B.Ed students (Mean = 176.67, SD=21.43) in their TP skills.In order to test the hypothesis, investigator has computed t value and is also reported on the table 2.

The figure 2 also supports the findings.The obtained t value (0.5549)was not significant at 0.05 significance level for the df198. The table value for df 198 is 1.97 at 0.05 level of significance. Though t value is not significant the null hypothesis H_{01} "There is no significant difference in techno pedagogical skills between students of Arts stream and students of Science stream is accepted."The findings of the studysupported by studies Yildiz(2017), Sathya(2017), Pradeep(2018).
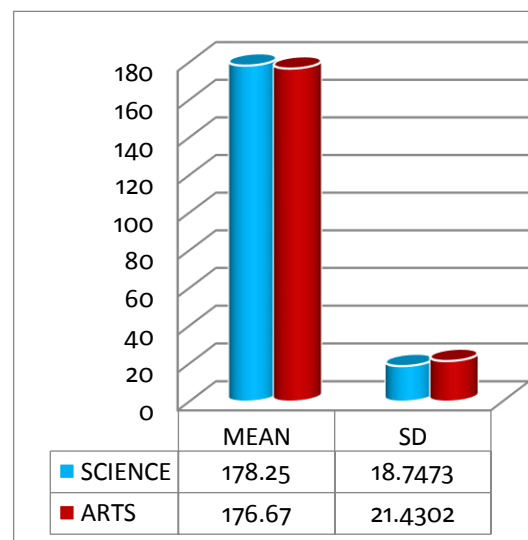
	MEAN	SD
SCIENCE	178.25	18.7473
ARTS	176.67	21.4302

FIGURE 2

Difference between Arts & Science B.Ed students in their TP skills

3. Variation in TP Skills of male-Arts and female-Arts B.EdStudents

For determining the significance of difference in TP Skills of male-Arts and female-Arts students, the Mean, SD & t value was calculated and reported in table 3.

Table 3 Difference between male-Arts and female-Arts B.Ed Students in their Techno Pedagogical Skills

Arts Students	N	Mean	SD	T ratio	Df	P value	Remark
Male Arts	50	178.46	19.5427	0.8382	98	1.98	NS
Female Arts	50	174.88	23.0258				

From table 3 it is inferred that male-Arts B.Ed students (mean = 178.46, SD= 19.59) were slightly better than female Arts B.Ed students (mean = 174.88, SD= 23.02) in their TP skills. The figure 3 indicates that the Mean value is not differing due to Gender variation.

The obtained t value (0.8382) was not significant at 0.05 significance level for the df 98 due to table value for df 98 is 1.98 at 0.05 level of significance. Though t value is not significant.Hence the null hypothesis H_{02}"There is no significant difference in techno pedagogical skills between male Arts students and female Arts students is accepted."This finding was supported by Pradeep(2018), Sathya(2017), Sekhar(2016), Sibichen(2010), Yildiz(2017).
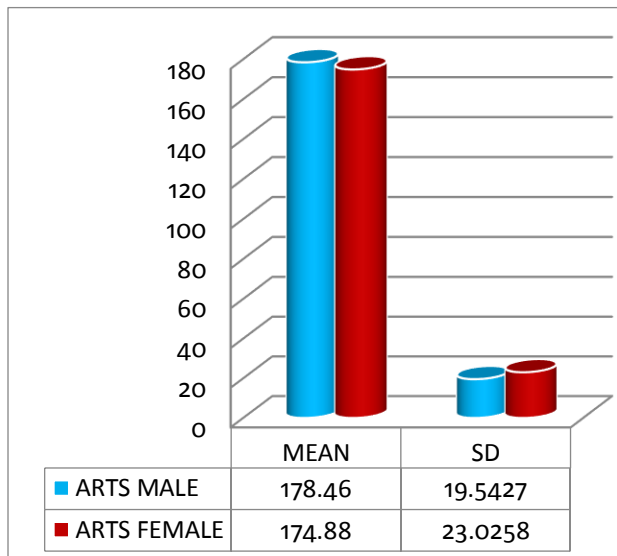
4. Variation in TP Skills ofmale-Science &female-Science B.Ed Students

For determining the significance of difference in TP Skills of male-Science and female-Science students, the M, SD & t value was calculated and reported in table 4.

FIGURE3

Difference between male-Arts &female-ArtsB.Ed students in their TP skills

	MEAN	SD
ARTS MALE	178.46	19.5427
ARTS FEMALE	174.88	23.0258

Table 4 Difference between male-Science and female-Science B.Ed Students in their Techno Pedagogical Skills

Science Students	N	Mean	SD	T ratio	df	P value	Remark
Male Science	50	174.04	18.1603	2.3045	98	1.98	S
Female Science	50	182.46	18.3761				

It was inferred from the above table that female-Science students (M= 182.46, SD= 18.3761) were high TP skills than male-Science students (M= 174.04, SD= 18.1603).The figure 4 shows the difference between the means of male-Science and female-Science B.Ed Students.

Obtained t value i.e. 2.3045, which is higher than the reference value i.e. 1.98 at 5% level of significance. Hence the null hypothesis H_{03} is rejected and the alternate hypothesis, "There existsignificant difference between male-Science and female-Science B.Ed students in their techno pedagogical skills" is accepted. This finding is supported by Sezer (2014), Kumar (2015), Sathiyaraj (2013).
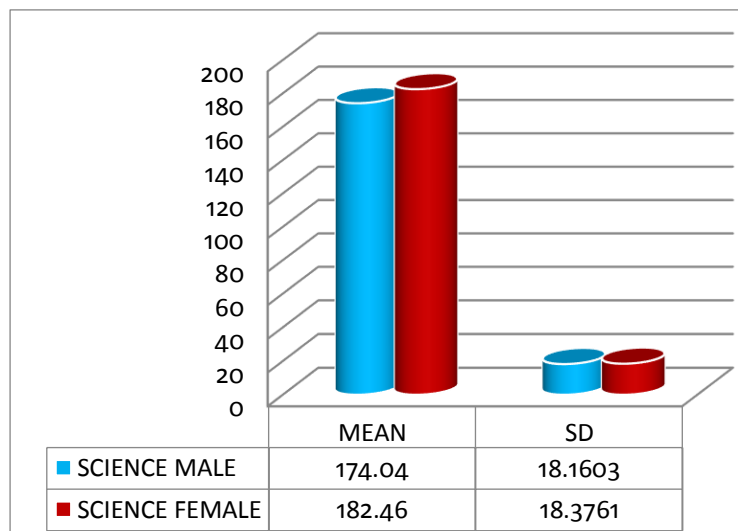

	MEAN	SD
SCIENCE MALE	174.04	18.1603
SCIENCE FEMALE	182.46	18.3761

FIGURE4

Difference between male-Science &female-Science B.Ed students in their TP skills

Major Findings

1. B.Ed Students of Odisha have high TP skills. That is planning, preparing plan, Implementing learning strategies.

2. Female- Science B.Ed students have highest TP skills in terms of Learning, Preparing lesson plan, Preparing learning material, Implementing instructional strategies, Communication, Assessment & Guidance.

3. There is no significant difference in TP skills between students of Arts stream and students of Science stream.

4. There is no significant difference in TP skills between male Arts students and female Arts students.

5. There is significant difference in TP skills between male Science students and female Science students.

Discussion: The present study intended to study the Techno Pedagogical skills of B.Ed students and also to find out if there has any difference of TP skills among B.Ed students with respect to background variables such as Stream of Education and Gender.

The present study revealed that the TP skill among B.Ed students are high. It may be due to technological and internet are a part of our life now. This finding slightly different from studies of Jeyaraj&Ramnath(2018). Kumar(2018), Sekhar(2016), Sathiyaraj(2013) because they have moderate or low level of TPskills. The present study was supported by the studies Pradeep(2018), Thakur(2015).

The study also revealed that there exist no significant difference in techno pedagogical skills between students of Arts stream and students of Science stream. The findings of the study was different from the findings of the studies Sezer(2014), Kumar(2015) as the results revealed that there was some significant difference in TP skills among students. But the study was supported by the findings of the studies Yildiz(2017), Sathya(2017), Pradeep(2018)

The result of the study found that there no significant difference in techno exist pedagogical skills between male Arts students and female Arts students. This finding was supported by Pradeep(2018), Sathya(2017), Sekhar(2016), Sibichen(2010), Yildiz(2017) but the findings of the study was slightly different from the finding of the studies Sezer(2014), Kumar(2015), Sathiyaraj (2013) as the results revealed that there was significant difference in TP skills among students.

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Educational Implication: On the basis of major findings of the study, it is clear that there is a need to take some effective measures to intensify proper implementation of technology in teacher education. The result revealed that B.Ed students of Odisha collectively have high techno pedagogical skills. However the individual scores of some students are still low.

1. This study will help to policy maker and Teacher Educators to take care of this area and more emphasis should be given to development of techno-pedagogical skills and competencies of B.Ed students.

2. Practical works must be emphasized in the curriculum of the B.Ed students rather theoretical papers.

3. Various workshop, seminar and skill development programmes will surely help to deal with professional growth of teacher educators.

4. It also helps the administrators to prepare some in-service skill enhancement programme for teacher educators so they can effectively manage the changes in knowledge and technological changes in the world.

5. It also helps the B.Ed students to understand the pros and cons of TPACK. Student should try to understand how to blend technology with pedagogy and with content so that they can effectively learn through it, transact curriculum confidently and evaluate their work regularly.

6. It will help the governing bodies to provide Necessary infrastructural facilities like adequate classrooms, computers, internet and communication technologies for teacher training institutions for smooth functioning.

7. It will help to plan well defined educational policy integration of technology with different levels of teaching and learning.

Suggestion for Further Research: The present study has certain limitations and the techno pedagogical area is so wide hence various suggestions regarding the further study.

1. The present study was conducted on four institutes in Odisha, which can be extended considering population at another place.

2. It was evaluating TP skills of 200 B.Ed. students, which can be extended to large no of sample for more comprehensiveness result and better generalization.

3. It was conducted on B.Ed. student, further elementary teacher students, college students, vocational, differently able students can also be considered as sample for future research.

4. The present study was focuses on variables like gender and stream of education, which also can be conducted on other variables like socio economic status, achievement level, discipline etc.

5. Further, Influence of techno-pedagogical skills on teaching competency of teacher trainees can be studied.

6. Influence of techno-pedagogical content knowledge with reference to other variables can be studied.

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