

## Practice of Techno Pedagogy among Higher Secondary School Teachers

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### Abstract

Online teaching has become an essential one in this present scenario. In this study the researcher tried to investigate the Techno-Pedagogical Practices of Higher Secondary School Teachers of Karur District. The objective of this study is to assess the levels of Techno-Pedagogical Practices of the Higher Secondary School Teachers of Karur District. Stratified random sampling technique was used to select the sample. The present study was conducted on the sample of 198 Higher Secondary School Teachers of Karur District. The collected data were subjected to descriptive and differential statistical analysis. From the results of this study, 97 out of the 198 Higher Secondary School Teachers in the Karur District have average Level of Techno-Pedagogical Practices, which means that Higher Secondary Teachers in general have average Level Techno-Pedagogical Practices. In terms of their Techno Pedagogical Practices, male teachers are better than female teachers. With regard to Techno-Pedagogical Practices, teachers with below 3 years of teaching experience outperform those with 3-5 years, 6-10, and above 10 years of teaching experience.

**Keywords:** Techno-Pedagogical Practices, Post Graduate Teachers, ICT, Education.

### Introduction

Technology offers greater opportunities for learners to have greater connections between class work and real world. Teachers must encourage their students to learn by themselves with the help of technology which make them to become a self learner. In classrooms where technology is a part of curriculum, students are more likely to initiate learning-based activities. Students should be given control of their education and help them to increase their motivation to explore and discover new things in the teaching learning process. For this teachers should be ready to handle the classes using Power Point Presentation, Smart board etc. Only then the students get motivated to use the technology in their learning process. Technology should help students in instilling a love of learning that will help them to reach new heights of achievement not only in schools and colleges, but throughout their lives. Knowing about technology and using it in teaching learning process will enhance our education.

### Literature Review

**Kalaimani and Stephen (2022)** studied on Technological Pedagogical Content Knowledge of High School Teachers in Chennai. The study used a descriptive survey method. The sample comprises of 30 high school teachers from Chennai. Data were gathered using Technological Pedagogical Content Knowledge (TPACK), tool was developed by the researcher with the assistance of the supervisor. Statistical approaches were used to analyse the acquired data. The study's findings indicated that there is no significant difference in high school teachers depending on gender or the subject. The findings of the study indicated that high school teachers have average levels of Technological Pedagogical Content Knowledge.

**Li, Y., et al. (2021)** investigated the College Teacher's TPACK Level During the Epidemic Situation: Taking Chu Kochen Honors College, Zhejiang University as an Example. Affected by COVID-19, Chinese Ministry of Education issued an important deployment named "Classes Suspended while Learning Continues" during

Spring Semester, 2020. Online teaching, therefore, has been carried out in all of Chinese universities between March and June, 2020. This study aimed to investigate college teachers' TPACK level during the epidemic situation. 91 teachers from Chu Kochen Honors College, Zhejiang University, were randomly invited to fill in the survey. The findings of the study indicated that: (1) the scores of teachers in content knowledge (CK) dimension were the highest, while it was lowest in technology knowledge (TK) dimension, in addition, technology-related knowledge was kept at a low level relatively; (2) gender and age had no significant impact on surveyed teachers' TPACK level while online teaching experience had a significant impact on TK dimension. Based on the findings, the researchers put forward several suggestions including perspectives from teacher training, comprehensive utilization of emerging technology to improve teachers' TPACK level.

**Nti, S. B. (2020)** conducted a study on the Techno-Pedagogical Competence of Junior High School Social Studies Teachers in Northern District of Adansi. The study was done on junior high school social studies teachers' competence in pedagogy and technology use when presenting social studies curriculum in the Northern District of Ghana's Ashanti Region. The study employed a quantitative, cross-sectional survey technique. All of the social studies instructors in the Adansi North District were included in the census process. Surveys were employed to gather information for the study. Data were collected and analysed. The study showed that all respondents, regardless of age or prior teaching experience, had a high level of pedagogical ability. It was also discovered that the respondents found it difficult to incorporate technology into the teaching of Social Studies material. The survey also discovered that the majority of respondents had low levels of competence with reference to techno-pedagogy. In order to improve instruction in the classroom, it was recommended that the Ghana Education Service and the Ministry of Education should offer ICT coaching and development programmes for all teachers.

### **Significance of the Study**

In the world of Digital Learning, driven by Information and Communication Technology, the teachers should possess certain Techno-Pedagogical Practices in order to make the best in the field of education. The deeper understanding of the technology is very important in this 21st century. There is no much study in this Techno-Pedagogical Practices of the Higher Secondary School teachers. Thus there is a research gap in this particular area. So, in this present study an attempt was taken to fill the research gap which is desirable and essential.

### **Objectives of the Study**

The objectives profound for this study are:

1. To assess the levels of Techno-Pedagogical Practices of the Higher Secondary School Teachers of Karur District.
2. To find out the significance of difference, if any in the Techno-Pedagogical Practices of the Higher Secondary School Teachers of Karur District with respect to certain select variables like Age, Gender, Academic Qualification, Professional Qualification, and Teaching Experience.

### **Hypothesis of the Study**

The following null hypotheses were formulated on the basis of the above objectives:

1. The Higher Secondary School Teachers of Karur District do not involve themselves in any Techno-Pedagogical Practices.
2. There is no significant difference in the mean Techno-pedagogical practices of the Higher Secondary School teachers of Karur District with respect to certain select variables like Age, Gender, Academic Qualification, Professional Qualifications and Teaching Experience.

### **Methodology of the Study**

For the present study the researcher used Survey method. The population of the study is the PG teachers working in the higher secondary schools of Karur District. The present study was conducted on the sample of 198 Higher Secondary School teachers from 18 schools of Karur District selected by stratified random sampling technique. The researcher used Techno-Pedagogical Practices Assessment Scale for Teachers (TPPAS)

developed by the investigator for the purpose of data collection in the present study. The collected data was statistically analysed using Mean, Standard Deviation, 't' test and ANOVA.

### Analysis and Interpretation of Data

#### Hypothesis 1

The Higher Secondary School teachers of Karur District do not involve themselves in any Techno-Pedagogical Practices.

**Table 1**  
**Analysis of the Mean Techno- Pedagogical scores of the whole sample**

Variables	No. of Teachers	Maximum obtainable score	Mean
Techno-Pedagogical Practices.	198	90	33.96

Table 1 shows the mean score for techno-pedagogical practices for the entire sample of 198 higher secondary school teachers in the Karur District. The average score for technological pedagogical practices is 33.96 out of a possible 90. It shows that the higher secondary school teachers in the Karur District use technology for teaching in the average level. Hence, the hypothesis, “the higher secondary school teachers of Karur District do not involve themselves in any techno-pedagogical practices” is not accepted and it is concluded that postgraduate teachers have certain level of techno pedagogical practices.

**Table 2**  
**Level of Techno-Pedagogical scores of the whole sample**

Levels	Scores	No. of Teachers	Percentage
Low	0-30	62	31.5%
Average	31-60	97	48.9%
High	61-90	39	19.6%

According to Table 2, the levels of techno-pedagogical practices among higher secondary school teachers in the Karur District range from low to high; as many as 62 teachers (31.5 %) have low levels, 97 teachers (48.9 %) have average levels, and 39 teachers (19.6 %) have high levels. It is important to note that a maximum of 97 teachers (48.9 %) come under the Average level category. Hence, the hypothesis, “the higher secondary school teachers of Karur District do not involve themselves in any techno-pedagogical practices” is not accepted. Further, it is concluded that the higher secondary school teachers of Karur District have an average level of techno-pedagogical practices.

#### Hypothesis 2

There is no significant difference in the techno-pedagogical practices levels of the higher secondary school teachers of Karur District with respect to their age.

**Table 3**  
**Mean Techno-Pedagogical Scores of the Sample, Sub-Grouped on the basis of their Age**

Variables	Age	No. of Teachers	Mean
Techno-Pedagogical Practices	25-35	62	23.6
	36-46	97	27.8
	47-58	39	24.5

It is evident from table 3, that the mean techno-pedagogical practices scores of the higher secondary school teachers on the basis of age group 25-35 is 23.6, which is higher than that of the teachers in the age group 36-46 is 27.8 and that of the teachers from 47-58 is 24.5. For better understanding summary of ANOVA showing the significance of difference among the mean techno-pedagogical practices scores of the higher secondary school teachers of Karur District on the basis of their age is presented in the following table.

**Table 4**  
**Significance of Difference among the Mean with Techno-Pedagogical Practices Scores of the Sample, Sub-Grouped on the basis of their Age**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean square	'F' Value
Between Groups	17.28	2	8.64	1.00*
Within Groups	1680.6	195	8.61	

\*Not Significant at.05 Level

It is clear from the table 4, that the 'F' value is 1.00 which is not significant at 0.05 level with df (2,195). It indicates that the mean scores with techno-pedagogical practices of the higher secondary school teachers of Karur District, sub-grouped on the basis of their age do not differ significantly. Hence, the null hypothesis, "there is no significant difference in the mean techno-pedagogical practices of the higher secondary school teachers of Karur District on the basis of their age" is accepted. Hence, it is concluded that the teachers, who are in 36-46 years of age are better than their teachers of 25-35 and 47-58 years in the techno-pedagogical practices.

### Hypothesis 3

There is no significant difference in the techno-pedagogical practices levels of the higher secondary school teachers of Karur District with respect to their Gender.

**Table 5**  
**Difference between male and female higher secondary school teachers with regard to Techno Pedagogical Practices**

Gender	N	Mean	SD	't' value
Male	78	38.62	24.18	2.56*
Female	120	34.54	19.28	

\*Not Significant at 0.05 level

It is evident from table 5, that the 't' value is 2.56, which is not significant at 0.5 level. It indicates that there are considerable differences between the male and female teacher's scores on technological pedagogical practices. Hence, the null hypothesis, "there is no significant difference in the techno-pedagogical of the higher secondary school teachers of Karur District with respect to their gender" is accepted. Further, it can be seen that the mean techno-pedagogical score of male teachers is 38.62, which is higher than that of the female teachers whose mean scores is 34.54. Therefore, it is concluded that the male teachers are better than the female teachers in their techno-pedagogical practices.

### Hypothesis 4

There is no significant difference in the techno-pedagogical practices levels of the higher secondary school teachers of Karur District with respect to their academic qualification.

**Table 6**  
**Mean Techno-Pedagogical practices Scores of the Sample, Sub-Grouped on the basis of their Academic Qualification**

Variables	Academic Qualification	No. of Teachers	Mean
Techno-Pedagogical Practices	M.A.	75	25.4
	M.Sc.	106	25.3
	M.Com.	17	21.5

It is clear from the table 6, that the mean scores techno-pedagogical practices of the higher secondary school teachers on the basis of academic qualification M.A. is 25.4, which is higher than that of the teachers in the age group M.Sc., is 25.3 and that of the teachers from M.Com., is 21.5. For better understanding summary of ANOVA showing the significance of difference among the mean techno-pedagogical practices scores of the higher secondary school teachers of Karur District on the basis of their academic qualification is presented in the following table.

**Table 7**  
**Significance Difference among the Mean, Techno-Pedagogical Practices scores of the Sample, Sub-Grouped on the basis of their Academic Qualification**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean square	'F' Value
Between Groups	23.25	2	11.63	1.388*
Within Groups	1633.01	195	8.37	

\*Not Significant at 0.05 level

It is evident from the table 7, that the 'F' value is 1.388 which is not significant at 0.05 level with df (2,195). It indicates that the mean techno-pedagogical practices scores of the higher secondary school teachers of Karur District, sup-grouped on the basis of their academic qualification do not differ significantly. Hence, the null hypothesis, "there is no significant difference in the mean techno-pedagogical practices of the higher secondary school teachers of Karur District on the basis of their academic qualification" is accepted. Hence, it is concluded that the teachers, who are with M.Sc., academic qualification are better than their counterparts in the techno-pedagogical practices.

#### Hypothesis 5

There is no significant difference in the mean techno-pedagogical practices levels of the higher secondary school teachers of Karur District with respect to their professional qualification.

**Table 8**  
**Difference between B.Ed and M.Ed qualified higher secondary school teachers with regard to Techno Pedagogical Practices**

Professional Qualification	N	Mean	SD	't' value
B.Ed.	172	29.16	20.16	0.331*
M.Ed.	26	30.63	21.00	

\*Not Significant at 0.05 level

It is clear from the table 8, that the t-value is 0.331 which is not significant at this level. It indicates that the techno pedagogical practices scores of the B.Ed., and M.Ed., qualification teachers differ significantly. Hence, the null hypothesis, “there is no significant difference in the techno-pedagogical of the higher secondary school teachers of Karur District with respect to their professional qualification” is accepted. Further, it can be seen that the mean techno-pedagogical score of teachers with B.Ed. qualification is 29.16, which is higher than that of the teachers with M.Ed. qualification whose mean scores is 30.63. Therefore, it is concluded that the teachers, with M.Ed., qualification are better than the teacher with B.Ed. qualification in the techno-pedagogical practices.

### Hypothesis 6

There is no significant difference in the techno-pedagogical practices levels of the higher secondary school teachers of Karur District with respect to their Teaching Experience.

**Table 9**  
**Mean Techno-Pedagogical practices scores of the Sample, Sub-Grouped on the basis of their Teaching Experience**

Variables	Teaching Experience	No. of Teachers	Mean
Techno-Pedagogical Practices	Below 3 years	15	27.30
	3-5 years	34	26.50
	6-10 years	46	25.64
	10 years and above	103	25.16

It is evident from the table 9, that the mean techno-pedagogical scores of the higher secondary school teachers on the basis of teaching experience below 3 years is 27.30, that of the teacher with 3-5 years is 26.50 and that of the teachers with 6-10 years is 25.64 and that of the teacher with 10 years and above is 25.16. For better understanding summary of ANOVA showing the significance of difference among the mean techno-pedagogical practices scores of the higher secondary school teachers of Karur District on the basis of their teaching experience is presented in the following table.

**Table 10**  
**Significance Difference among the Mean, Techno-Pedagogical Practices Scores of the Sample, Sub-Grouped on the basis of their Teaching Experience**

Source of Variation	Sum of Squares	Degrees of Freedom	Mean square	‘F’ Value
Between Groups	48.29	3	16.09	0.217*
Within Groups	21302.48	194	109.80	

\*Not Significant at 0.05 level

It is clear from the table 10, that the ‘F’ value is 0.217 which is not significant at 0.05 level with df (3,195). It indicates that the mean techno-pedagogical practices scores of the higher secondary school teachers of Karur District, sub-grouped on the basis of their teaching experience do not differ significantly. Hence, the null hypothesis, “there is no significant difference in the mean techno-pedagogical practices of the higher secondary school teachers of Karur District on the basis of their teaching experience” is accepted. Hence, it is concluded that the teachers with Teaching Experience of below 3 years are better than the teachers with 3-5years, 6-10 years and 10 years and above in the Techno-Pedagogical Practices.

### Findings of the Study

1. The Level of Techno Pedagogical Practices of Higher Secondary School Teachers is found to be average.
2. The Mean Score of Higher Secondary School Teachers on the basis of their Age differ significantly in their Techno-Pedagogical Practices. The teachers in 36-46 years of age are better than the teacher in 25-35 and 47-58 years of age.
3. The Mean Score of Male and Female Higher Secondary School Teachers differ significantly in their Techno-Pedagogical Practices. The Male teachers are better than the Female Teachers in their Techno-Pedagogical Practices.
4. The Mean Score of Higher Secondary School Teachers on the basis of their Academic Qualification differ significantly in their Techno-Pedagogical Practices. The teachers who have completed M.Sc are better in the Techno-Pedagogical Practices than those who have completed M.A. and M.Com.
5. The Mean Score of Higher Secondary School Teachers on the basis of their Professional Qualification differ significantly in their Techno-Pedagogical Practices. The teachers who have completed M.Ed are better than the teachers with B.Ed Qualification in the Techno-Pedagogical Practices.
6. The Mean Score of Higher Secondary School Teachers on the basis of their Teaching Experience differ significantly in their Techno-Pedagogical Practices. The teachers with below 3 years of teaching experience are better than the teachers with 3-5 years, 6-10 years and 10 years and above in the Techno-Pedagogical Practices.

### Discussion

In light of the above findings, the study is discussed to enable successful use of technology in classroom. The Level of Techno Pedagogical Practices of Higher Secondary School Teachers is found to be average. So there is a need for teachers to attend workshops and get appropriate in-service IT training that can provide them the necessary Technological knowledge and skills. The teachers in 36-46 years of age are better than the teacher in 25-35 and 47-58 years of age. So the teachers with 25-35 years and 47-58 years should be given practice in developing their technological and pedagogical skills. The most recent TPACK strategy should be included in teacher training, and chances for hands in experience must be made available. The effects of technology and the evolving nature of education must be taken into account and should introduce advanced ideas based on necessity in order to help instructors grow their ICT skills and apply them to attain curricular learning goals. Some teachers lack the personal computers they need to advance their IT skills. Authorities should help the teachers by providing them personal computers to develop their techno-pedagogical practices in their classroom.

### Conclusion

Techno-pedagogy is the major deciding factor for the hybrid method of teaching. In the last two decades, higher education institutions all around the world have incorporated advancements in techno-pedagogical skills. The art and skill of teaching with technology should be developed by teachers, who should also be able to incorporate technology into teaching and learning. It is vital that the teachers who don't have the techno-pedagogical competence should develop their skill to be effective in the teaching process. It is sure that no teacher can survive in teaching without the techno pedagogical knowledge.

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