

## AN INVESTIGATION INTO THE TECHNOPEDAGOGICAL COMPETENCY OF ELEMENTARY SCHOOL TEACHERS

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### **Abstract**

It is true that technology will not replace teachers, but teachers without technology will be replaced. On many occasions, according to changing demands in the educational policies of the nations and in compliance with the global benchmarks and standards in educational scenario, teachers are given for which they are not trained or prepared. This situation is often perceived as a challenge, but rarely addressed. Almost all countries of the world have made policies and programs for inclusive education, as response to a human rights issue. Inclusive education demands elementary teachers' competency in term of an all-inclusive pedagogy. Technopedagogy is considered as the pedagogy of the abled as well as differently abled. Moreover, talking of the pedagogy, the best medium of teaching should be not only pertinent to the subject matter, learners age, diverse needs of the diverse learners, but also the prevailing scenario (Covid time). Here the researcher determined to study elementary teachers' technopedagogical competency as the critical requirement of the teaching profession. . The study was conducted on a convenience sample of 168 elementary teachers from 84 schools covering all 14 districts of the State of Kerala, India. Normative survey method (through google form due to covid restrictions) is used for the study. Technopedagogical Competency Scale (TPCS) developed and standardized by the investigator is used as the research tool. The study revealed that elementary teachers' technopedagogical competency is low. The study concludes with implications and recommendations.

**Key words:** Technopedagogy, Competency, Elementary Teachers

### **THE RESEARCH CONTEXT**

Techno pedagogy can be defined as electronically mediated classes that integrate sound pedagogic principles of teaching & learning with the use of technology. Due to the unimaginable increase in the application of technological integration in classroom

transactions and the contemporary theoretical transformation in the teaching-learning approaches, teachers' techno-pedagogical competencies has become even more significant now than ever before. In fact, pedagogical processes are continuously influenced by the emerging new technologies supported tools, devices and innovative procedures and programs. Developing competencies allied with using, applying and integrating technology in pedagogical processes is of utmost importance for promoting quality and equity concerns. Thus, there is hue and cry all over the world to address the need for identifying and developing these competencies in teachers for guaranteeing their effective teaching learning transactions. For the survival in the teaching profession, teachers rich acquaintance 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.

## **THE RATIONALE**

Elementary education forms the foundation for all levels of learning and development. It empowers and equips individuals with analytical capabilities, instils confidence and fortifies them with determination to achieve goal-setting competencies. It, therefore, plays a pivotal role in improving the socioeconomic condition of the nation. For any country to grow, it is imperative that it has in place a strong elementary school driven education system. The strong and powerful elementary education depends upon the powerful elementary teachers. There are pleasures and pressures in elementary education. While working with young children is gratifying it comes with a great deal of responsibility. Elementary teacher has to pay a great and critical role in how students perform in their later school years. They are, in fact, aiding in establishing the foundation for students' life. Elementary teachers are instruments who can ignite powerful thoughts in students, helping them release their true potential. But teachers with the right competence only can inspire and influence entire student lives. They should know how to use different instructional strategies and pedagogies to accommodate students of varying backgrounds, learning styles and levels of academic readiness and disabilities. A set of skills of interweaving technology into teaching and learning both scientifically and aesthetically is expected from the elementary teachers. Such a study will be rewarding and fulfilling.

## **OPPORTUNITY STATEMENT**

Technopedagogy is the preferred way to implement the revolution of inclusion that should be supported by teaching methods specifically designed for the unique needs of the differently abled. In this regard, elementary teachers must possess technopedagogical competency to allow the student with special needs to actively participate in the general education system and thereby attain the noble aim of equity as envisaged by Right to Education Act 2009. Inclusion will be just a dumping if the elementary teachers are not adapted to this urgency through the acquisition of sound knowledge in inclusive education and the pedagogy thereof. Inclusion results in variety of learning problems which require special educational arrangements by way of modified curriculum, special instructional strategies, use of special aids and equipments and so on. All these can be attained through technopedagogical competency of. Hence the study.

## **RESEARCH QUESTION**

The research was initiated from the following legitimate question.

Whether the existing elementary teachers have sufficient technopedagogical knowledge to accommodate all types of disabled children and thereby make Inclusion a reality?

## **OBJECTIVES & HYOTHESES**

The study was framed two objectives. To find out the Attitude of elementary school teachers towards Inclusion in general and to find out specifically whether there is any significant difference in the Attitude of elementary school teachers towards Inclusion with regard to their Gender, Age, Educational Qualification, Experience and Type of Management. From the objectives two hypotheses is formulated; (1) the Attitude of elementary school teachers towards inclusive education is high and (2) there is no significant difference in the Attitude of elementary school teachers towards Inclusion with regard to their Gender, Age, Educational Qualification, Experience and Type of Management.

## METHODOLOGY IN BRIEF

The method of study adopted for the present study was Normative Survey Method, the most commonly used descriptive method in educational research. The tool constructed and validated by the investigator for collecting the data was Technopedagogical Competency Scale (TPCS). The population of the present study consisted of elementary school teachers of Kerala State. The investigator selected a sample of 168 teachers working in various schools from all the districts of Kerala State. Convenience sampling technique is used for sampling. The data collected were analyzed using appropriate statistical techniques.

## RESULTS & DISCUSSIONS

The first objective was to find out the Technopedagogical Competency of elementary school teachers. To find out this, the investigator calculated the mean, median, mode, standard deviation, and skewness and the result is shown below.

Total N	Mean	Median	Mode	SD	Skewness
168	46.8	47	47	4.948	-0.212

The table shows that the total sample of 168 elementary school teachers scores 46.8 as Mean with the standard deviation of 4.948 in their Technopedagogical Competency. The results obtained for Median and Mode is 47. The skewness is found to be -0.212. This shows that the total sample of 168 elementary school teachers scores 46.8 as their mean score in their technopedagogical competence whereas the maximum score of the scale used for the study is 108 representing the high competency. This status of elementary school teachers' score shows that their Technopedagogical Competency is **Low**.

## DISCUSSION

Technology seems to be a pressure among the Kerala elementary teachers than accepting it as a pleasure. The initial training of teachers does not provide them with the competencies necessary to use technology to promote inclusive learning in their teaching.

The practical supports for the elementary teachers in classrooms to help them in use of technology to promote inclusive education are not satisfactory. The elementary teachers are not appropriately supported to use technology in their daily practices by the school administrators. The creation of teacher networks for the profitable exchange of technological information, material and knowledge, thus favoring the development of *Communities of Practice* where endeavors are mutual, not because everyone shares the same ideas and practices but because such are negotiated collectively is not facilitated among elementary school teachers. Organizing the training of teachers and staff in order to instruct them in modern pedagogical methods and ways to use new hardware and software required to enhance the effectiveness of education remains as a dream in Kerala elementary sector. Elementary teachers are not motivated to play a fundamental role in capitalising the opportunities offered by new technologies to support the full inclusion of all students in mainstream education systems.

The second objective was to find out whether there is any significant difference in the Technopedagogical Competency of elementary school teachers with regard to their Gender, Age, Educational Qualification, Experience and type of Management.

### Analysis based on Gender

The t-Test was used to analyze the difference in Technopedagogical Competency between Male and Female elementary school teachers, and results are presented in the table below. Male teachers score 46.91 and female elementary teachers score 46.74 as mean in their Technopedagogical Competency. The obtained value of critical ratio is .226. The table values at .01 level and .05 level are and 1.96 and 2.58 respectively. The obtained value .266 is lower than the table value even at .05 level. This reveals that there is **No Significant Difference** between the Male and Female elementary school teachers in their Technopedagogical Competency.

Gender	N	Mean	SD	t	Test of Significance
Male	60	46.91	4.95	.266	$p < 0.01$
Female	108	46.74	4.96		

## DISCUSSION

This is a clear indication that the elementary teachers enjoy gender equality in Technopedagogical Competency as well. In the access to technology and technological skills, there is no gender bias in Kerala. All the elementary teachers may have equal exposure to technology. The technological changes may have reached the elementary teachers in the same pace irrespective of their gender. Even in the possession of modern technological instruments, Kerala is not gender biased. Gender is not at all a concern in utilizing the technology and its applications in Kerala society as compared to other states of the country.

### Analysis based on Age

The ANOVA was used to analyze the Difference in the Technopedagogical Competency of elementary school teachers based on their age groups of 25 to 35, 36 to 45 and 46 to 56; and results are represented in the table below.

Source of Variance	df	Sum of Squares	Mean Squares	F
Between Groups	2	320.074	160.037	6.97
Within Groups	165	3787.906	22.96	
<b>Total</b>	<b>167</b>			

Mean and SD of Elementary School Teachers Based on their Age

Age	N	Mean	SD
Between 25 to 35	49	48.97	4.73
Between 36 to 45	77	46.11	5.03
Between 46 to 56	42	45.69	4.38

Since the calculated F value 6.97 is greater than the table value 4.75 at 0.01 level, it is concluded that there is **Significant Difference** in the Technopedagogical Competency of elementary school teachers based on their Age. As results showed in the table, elementary school teachers aged between 25 to 35 score (48.97) higher than the teachers aged between 36 to 45 (46.11) and 46 to 56 (45.69) in their Technopedagogical Competency.

## DISCUSSION

For young generation technology is a pleasure and not a pressure when compared to the aged and are naturally more comfortable with technology. Young generation feel satisfied when they are technologically connected or wired. This may be affected their professional dimension as well. There is the reality of growing technological generation gap in Kerala. Young generation receives technology in the same pace of its changes and is eager to apply the technological applications in their daily routines and they take technology for granted.

### Analysis based on Educational Qualification

The ANOVA was used to analyze the difference in Technopedagogical Competency among elementary school teachers having different Educational qualifications; TTC only, UG with B.Ed and PG with B.Ed and results are presented in the table.

Source of Variance	df	Sum of Squares	Mean Squares	F
Between Groups	2	294.29	147.15	6.33
Within Groups	165	3836.66	23.25	
<b>Total</b>	<b>167</b>			

### Mean and SD of Elementary School Teachers Based on their Educational Qualification

Educational Qualification	N	Mean	SD
TTC	33	45.42	4.65
UG with B. Ed	81	46	4.69
PG with B. Ed	54	48.62	5.10

Since the calculated F value 6.33 is greater than the table value 4.75 at 0.01 level, it is concluded that there is **Significant Difference** in the Technopedagogical Competency of elementary school teachers based on their Educational Qualification. As results showed in the table, elementary school teachers with PG B.Ed score (48.62) higher than the teachers with UG B.Ed (46) and teachers with TTC (45.42) in their Technopedagogical Competency.

## DISCUSSION

Achieving a PG may have increased level of technological awareness and knowledge. The potential differences the curriculum and syllabus, structure and nature, the volume of

subject and methods of learning may be the reasons for such a difference. It is clear that postgraduate students are very differently distributed across both subject areas and methodology of learning than undergraduate patterns. PG holders may have done their researches using technology and thereby competent in technological applications.

### Analysis based on Experience

The ANOVA was used to analyze the difference in Technopedagogical Competency of elementary school teachers having different years of experience; below 10 years, 11 to 20 years and more than 20 years and results are presented in the table below.

Source of Variance	df	Sum of Squares	Mean Squares	F
Between Groups	2	131.015	65.51	2.73
Within Groups	165	3957.51	23.98	
<b>Total</b>	<b>167</b>			

Since the calculated F value 2.73 is less than the table value 4.75 at 0.01 level, it is concluded that there is **No significant Difference** in the Technopedagogical Competency of elementary school teachers based on their years of Experience. Experience is not a crucial factor in the technopedagogical competency of elementary teachers as well.

### Analysis based on Management

The ANOVA was used to analyze the Difference in the Technopedagogical Competency of Elementary school teachers based on their Type of management; Government, Aided and Private and results are presented in the table below.

Source of Variance	df	Sum of Squares	Mean Squares	F
Between Groups	2	2102.90	1051.45	87.4
Within Groups	165	1985.62	12.03	
<b>Total</b>	<b>167</b>			

Mean and SD of Elementary School Teachers Based on their Management

Type of Management	N	Mean	SD
Govt	56	43.51	4.14
Aided	56	45.17	4.02
Private	56	51.71	1.63



Since the calculated F value 87.4 is greater than the table value 4.75 at 0.01 level, it is concluded that there is **Significant Difference** in the Technopedagogical Competency of elementary school teachers based on their type of Management. Private teachers score (51.71) higher than the Aided teachers (45.17) and Govt teachers (43.51) in their Technopedagogical Competency.

## **DISCUSSION**

The private teachers may have the full facility to integrate technology in the classroom. As private schools are competing one another, all teachers are forced to use technology in the classrooms. Private management is very particular in technological competence in the selection process of teachers. As the survival of the fittest is the reality in private sector, teachers may be equipped with all necessary competencies related to their profession. The school management always gives priority and preference to use technopedagogy in the classrooms.

## **EDUCATIONAL IMPLICATIONS**

It was found that elementary school teachers' Technopedagogical Competency is low. Thus the study identifies the knowledge base that supports teachers' pedagogic decisions regarding inclusive education, describe how teachers practice the principles of inclusion, and detail ways in which their teacher education programme has prepared them to address issues of diversity. Moreover the study also points out teacher educators' perceptions and knowledge of, and pedagogic practices related to inclusive education. The present competency of elementary teachers cannot valuably reinforce the principles of inclusion and inclusive curricula as inclusive education requires that teachers have additional technopedagogical skills to be able to design inclusive lessons with a variety of methods that cater to diverse student needs. Here all teachers are not prepared to act on the belief that all students including students with disabilities belonging in general education classrooms and are not aware of the approaches related to technology integration in education have changed from techno centric integration to technopedagogical integration.

## RECOMMENDATIONS

Thematic Training for Capacity Building of elementary teachers can be arranged to update them with current policies and competencies. Autonomy of Teacher Education Institutions can be tested depending on the specific profile of the educational offer of each scholastic teacher education institution to support function specific to the teachers' needs in regard to didactic methodologies and pedagogies based on advanced technology. Public Private Partnership (PPPs) will not be an experiment as the success of PPP is well established globally. The potential areas of partnership can be Mobilization & awareness building, Resource support, Training of School Management Committees (SMC), Development of curriculum and pedagogy, Technopedagogical training for teachers etc. Rejuvenation of Pre-Service Training Programs is the need of the hour. The curriculum should be mentored in order to build human resources according to the new world order and training must be done at the pre-service level. Constitutional Values, Inclusive Education, Technopedagogy should be a compulsory subject for all teacher candidates and an integral part of teacher training curricula. Making In-service Training Programs Alive is another solution.

Focusing on the Pre-school and Elementary School Levels and to prioritize is very important because as the earlier in life those children with special needs receive educational support, the more successful their schooling will be in later years, and the higher their quality of life as adults. Targeting Local Needs is necessary when creating teacher training programs or developing curriculum adaptations. Creating a Network of Key Training Institutions and Developing a Network of Key Teachers will help to identify the Past, Pitfalls, Present and Possibilities of our policy programs. This, in turn, allows the teachers to be equipped in the implementation process of our state policies. Participation of non-state players like NGOs, international and corporate foundations, and private trusts and societies in School Education will be more effective if the Governments work together with them to make Right of Education of every child a reality

## CONCLUSION

It is a great time to be a teacher in India in the light of Right To Education Act. Implementation demands far more. The concept of equity and equality of educational opportunities sometimes remains only in paper due to teachers' lack of awareness or indifference to these concepts and the lack of competence. A vast gap of resources, facilities and efficiency exist in the State of Kerala. It is important to assess the readiness of States in India in implementing RTE the Act. In order to meet the challenges and surmount the hurdles that stand in the way of implementing Inclusive Education, it is needful to concentrate all efforts with full dedication and commitment. Not only the central and State governments but the nation as a whole should take responsibility in this regard. Each state should formulate a *State Programme of Action* and each district and school should formulate a *Programme of Action* of its own by taking into account the *State Programme of Action*. There is need to develop a systematic and robust monitoring and evaluation system and a strong support and facilitating centre in the States to prioritise and address the issues.

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