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E-mail: smcedn@gmail.com

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EDITORIAL

"The status of the teachers reflects the socio-cultural ethos of the society. It is said that no people can rise above the level of its teachers".

A teacher is the cornerstone of the edifice of any educational system. Teacher plays a critical role in developing a knowledgeable society. Effective and productive learning on the part of the pupils can be achieved by employing qualitative teachers with desirable attitudes. Significant changes are needed to prepare a new generation of teachers equipped with knowledge, skills and values to help culturally different and disadvantaged students to learn to reduce conflicts peacefully and to become socially responsible citizens. Hence, challenging research in the field of teacher education programs, should support them in cultivating their teaching and identities.

This issue contains four research articles by teacher educators and research scholars on a wide spectrum of interest and concerns of school and teacher education. The research article on 'Lateral thinking influencing Mathematical problem solving ability' suggests ways and means to enable higher potentiality among children in their problem solving ability.

Another article on 'Techno pedagogical skills of Secondary Teacher Education students' deals with the vital area of concern, on the use of technology by teachers to transform the learning process.

The article on 'Challenges encountered by Parents and Teachers in handling children with mental retardation' throws light on the much needed awareness about mental retardation among Parents and teachers.

In the last article, it has been discussed that CAI package on English grammar developed by the investigator proved to be an effective and appropriate one, to use as supportive material to teach the English language.

We hope the readers of this Journal will find that the concepts and findings discussed here are more rewarding and will trigger new thinking and contribute towards their professional development.

To sustain and strengthen the journey of this Journal, the Editor invites from the contributors quality and empirical based articles that have a global bearing on education.

Dr. J.E. Vallabi
Associate Editor.

Research Article

Lateral Thinking Influencing Mathematical Problem Solving Ability

Dr. S. Prabu Shankar

Assistant Professor of Education

Department of Education

Institute of Advanced Study in Education

Chennai 600 015.

Abstract

This study is done with a view to find out the influence of lateral thinking in determining the problem solving ability in mathematics of children studying at the high school level. Lateral thinking, is the ability to think creatively, to use inspiration and imagination to solve problems by looking at them from other than the common perspectives (Flavell, 1990). The influence of lateral thinking in problem solving involves in discarding the general process involved, leaving behind traditional approaches, and throwing away preconceptions (Sternberg, 1992).

In this study, around 80 children studying at the high school level were considered as samples. Certain concepts in Algebra, Logarithms, Functions, Trigonometry and Theoretical Geometry were taught to the children and a test was framed with questions on the dimensions in par with the lateral thinking style. From their achievement scores it was observed that around 55% of children of the selected sample who had applied the lateral style were found to solve the problems with an ease and within a stipulated time. The remaining of the children who had stuck on with the conventional process of solving was found to solve it in a usual way and took an extended time. This study concludes that effective applicability of the lateral thinking style in teaching mathematics will enable higher potentiality among children in their problem solving ability.

Keywords: Lateral Thinking, Mathematical Problem Solving Ability, High School Students, Creative Thinking, Algebra, Trigonometry, Functions, Geometry, Achievement, Educational Research

INTRODUCTION

De Bono (1982) interprets the ability of problem solving in mathematics by means of the lateral thinking style as exploring multiple possibilities and approaches instead of pursuing a common single approach. Further it can be studied that solving problems by an apparently conventional method harass the capacity of thinking process as new strategies of solving a problem goes unidentified. Similar to creative thinking the lateral style techniques were used for changing concepts and perceptions and generating new ones; thus by exploring multiple possibilities and approaches instead of pursuing a single approach (Mc Cormick, 1989).

Mathematics is a strict academic that is supported by thorough basis, continent practice and strict discipline, that involves the study of such concepts as quantity, structure, space and change (Stoulz, 1989). Problem solving in mathematics is of a complex skill that holds several of the mental processes which in thinking style is prominent, the more the style is lateral the more creatively and the more innovatively the problem is solved. Also in lateral style problem solving becomes easier by the reason that the student tries to understand the complex nature of the problem and try not to solve but to provide a dimensional response which makes the solving much simpler (Sloane, 1994). Hence, the need to study the influence of lateral thinking in determining the problem solving in mathematics.

OBJECTIVES

- ❖ To study the influence of lateral thinking in determining the problem solving ability in mathematics of children studying at the high school level.
- ❖ To study the creative attitude of high school students towards problem solving in mathematics.
- ❖ To study the critical thinking style of high school students towards mathematical problem solving.

HYPOTHESES

H.1. There exists no significant association between lateral thinking and mathematical problem solving ability.

- a) Creative thinking (H.1.1)
- b) Critical thinking (H.1.2)

H.2. There is no significant difference between lateral thinking style and mathematical problem solving ability with respect to,

- a) Gender (H.2.1)
- b) Board of study (H.2.2)
- c) Qualification of the Teacher (H.2.3)
- d) Coaching (H.2.4)
- e) Previous Exam scores in Mathematics (H.2.5)
- f) Periods per week for Maths subject (H.2.6)

METHOD AND SAMPLE

Descriptive study based on the exploratory method of research was employed for the present study. The study employs (1 x 1) 'ex-post facto' design where lateral thinking of students was the independent variable with the critical and creative thinking as the dimensions and Mathematical

Previous Exam scores in Mathematics Coaching	75 and above	57	50.99	8.94	2.061	1.270	N.S
	60 to 75	23	48.68	6.58			
Periods per week for maths subject	5 to 6	40	54.45	11.09	2.722	1.531	N.S
	7 to 8	40	58.62	13.17			

** t-value significant at 0.01 level

* t-value significant at 0.05 level

Table 1 represents the mean and standard deviation scores of lateral thinking scores of the various subgroups of the sample selected based on the relevance of the present study. It can be observed from the table that boys and girls differ significantly (0.01 level) in their lateral thinking styles. Further it can be seen that the mean of lateral thinking scores of students studying in CBSE differ significantly high when compared to the scores of students studying in matriculation board and the level of significance is in line at 0.05 level.

Lateral thinking mean scores of students taught by the Undergraduate teachers at the matriculation and CBSE boards were found to be high when compared to the mean scores of students taught by Post graduate teachers and the level of significance is found to be at 0.05 level. With respect to the coaching students who were coached 'other than school' were found

to highly differ in their lateral thinking mean scores when compared with the students who were coached 'only at school'; the level of significance being 0.01 level.

The subgroups classified based on the previous exam scores in mathematics does not show any significance difference in their lateral thinking style; but the mean scores of students who scored '75 marks and above' in the previous mathematics exam were found to be high when compared with the students who scored '65 marks till 75 marks'.

Periods per week allotted for teaching mathematics subjects does not show significance in the lateral thinking scores but it can be read from the table that the mean lateral thinking scores are found to be more where a maximum number of periods are allotted; i.e., with the class that is allotted with '7 periods to 8 periods per week'.

Table:2

Mean and S.D scores representing Mathematical Problem Solving Ability based on the dimensions of Lateral Thinking

Variables	Items	Respondents N	No. of correct responses				Level of significance
			Mean	S.D.	S.E.D.	t-value	
Creative thinking	50	80	7.481	1.976	0.317	2.058*	0.05
Critical thinking	50		8.133	2.031			

** t-value significant at 0.01 level

* t-value significant at 0.05 level

Table 2 represents the mean and standard deviation scores of mathematical problem solving ability based on the dimensions of lateral thinking style namely critical thinking and creative thinking. Of the 100 items chosen for the study from 5 areas in mathematics the first fifty items were of creative dimension and the second fifty items were of critical dimension. From Table 2, it can be interpreted that the mean mathematical problem solving ability scores based on critical thinking was found to be higher than the mean scores of creative thinking among students studying at IX standard level at the matriculation and CBSE boards; the level of significance being observed at 0.05 level.

Table:3

Correlation values representing the Lateral thinking and mathematical problem solving ability of students with respect to the subject areas

	Variables	r-value	Level of significance
	Creative Thinking!Critical Thinking		
Subject areas	Algebra (n=20)	0.452*	0.05
	Logarithms (n=20)	0.357	NS
	Functions (n=20)	0.670**	0.01
	Trigonometry (n=20)	0.311	NS
	Theoretical Geometry (n=20)	0.593**	0.01

Note: Degrees of freedom= 2

df is based on the number of items selected from each topic. •

** r-value significant at 0.01 level

* r-value significant at 0.05 level

Table 3, reveals the correlation values of lateral thinking with respect to the subject areas on which the items were being constructed for the present study to assess the mathematical problem solving ability. Marked or substantial correlation was found to exist among the subject areas namely Algebra ($r=0.452$, $p<0.05$), Functions ($r=0.670$, $p<0.01$), Theoretical Geometry ($r=0.593$, $p<0.01$). The correlation areas of the subject areas such as Logarithms ($r=0.357$, NS), Trigonometry ($r=0.311$, NS) were observed to hold no significance with respect to the correlation values of lateral thinking and mathematical problem solving.

FINDINGS AND INTERPRETATIONS

It was found that students studying in the CBSE schools were found to solve the questions with an ease when compared to the students studying in the Matriculation schools

This may be perhaps due to the fact that since CBSE syllabus is comparatively critical in nature than the Matriculation syllabus. Students studying in the CBSE stream might have developed the critical sense and creative ability in appreciating and solving the problem.

With regard to the present study on lateral thinking students learning from teachers working at the Post-Graduate (PG) level were found to better the students learning from

teachers working at the Under-Graduate (UG) level. UG teachers beyond their consistent experience lack critical skills in solving mathematics problems and also show less creativity in their problem solving approach when compared to the PG teachers. It is observed from the study that PG teachers handled mathematical problems with an insight that is critical and creative in nature and thus seems to be lateral when compared to the UG teachers.

Students who were coached other than the school were found to possess high lateral thinking scores when compared with the students who were coached only at school. The reason may be that, students who are being coached other than the school may get critically more knowledge and it happens for them to spend more time with a specified subject and this helps them to keep along with the subject more fluently and thus achieve critical and creative ability than compared with children who were coached only at the school.

The results concerning previous achievement scores in mathematics and the number of mathematics periods per week doesn't contribute to significance as these dimensions show very slight difference in the lateral thinking mean and standard deviation scores.

The major dimensions of lateral thinking namely creative thinking and critical thinking (Chapman, 2005 and De Bono, 1970) does show significance in their item variations and hence contribute to the mathematical problem solving ability of students studying at the high school level.

With respect to the present study lateral thinking scores were found to hold high correlation with mathematical problem solving ability and from Table.3 it is found to be significant with the subject areas such as algebra, functions and theoretical geometry. These areas at the high school level both at CBSE and Matriculation boards were found to hold comparatively higher thinking skills when compared with the other areas such as logarithms and trigonometry chosen for the present study. Hence it can be interpreted that the lateral thinking ability does play a prime role in achieving mathematical problem solving ability in certain subject areas of mathematics at CBSE and Matriculation boards at the high school level.

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Research Article

Techno-pedagogical Skills for the Emerging Secondary Teacher Education Students

Dr. Sibichen K.K

Assistant Professor, St.Joseph's
Training College, Mannanam
Kottayam, Kerala.

Dr. Anisha.V.Gopalakrishnan

Assistant Professor, St.Joseph's
Training College, Mannanam
Kottayam, Kerala.

Abstract

This study has been undertaken with a view to find out the techno-pedagogical skills of secondary teacher education students. Survey method was adopted for the study. Results reveal that there is significant difference between graduate and post-graduate secondary teacher education students in their skills in implementing instructional strategy and guidance. Results also reveal that there is significant difference between secondary teacher education students who have attended computer course and who have not attended computer course in their skill in learning, evaluation and techno-pedagogical skills. The ANOVA test results reveal that there is significant difference among different optional subject secondary teacher education students in their techno-pedagogical skills. Physical science optional secondary teacher education students are better than English, Social science, Mathematics and Natural science optional secondary teacher education students in their skill in implementing instructional strategy. Thus the present study shows that how techno- pedagogical skills in the classroom redefine established teaching-learning styles. Thus techno- pedagogical skills of teacher trainees play a pivotal role in the acquisition of knowledge and competency.

Keywords: Techno-Pedagogical Skills, Secondary Teacher Education Students, Instructional Strategies, Computer Training, Graduate and Post-Graduate Differences, Learning and Evaluation Skills, Teacher Competency

INTRODUCTION

Teacher education involves professional preparation of teachers. The concept of teacher education is undergoing a rapid change throughout the world. It is no longer mere training as

conceived earlier. It means the acquisition of that type of knowledge or information, skill and ability which helps a teacher to discharge his/her professional duties and responsibilities effectively and efficiently. It means shaping and reshaping the attitudes, habits and personality of a teacher. As the educational scenario goes through a vast change in the newly emerging society, the teachers need to be well equipped with knowledge which would create curiosity in the students to learn new things (Dash, 2004).

Teacher education and teacher professional development are facing important quantitative and qualitative problems. It is estimated that 1535 million new teachers are needed to achieve UNESCO's goal of Education for All. Asian-Pacific region teacher education faces many challenges due to widespread changes in educational and curriculum reforms. Paradigms and approaches, derived from promising conceptual and technical tools and capable of renewing instruction and activity systems, are needed to prepare teachers for 21st-century teaching and learning. The value of technology in teaching and learning has been a subject of some contention in the education community for some time. Teachers' use of technology has an important role in education in the 21st century. Technology_ can provide powerful environments eliciting modern views of learning but may not change teachers' beliefs and practice. It depends on how teachers interpret the uses of tools and how they use them to transform the learning processes.

TECHNO-PEDAGOGY

Literally, 'pedagogy' refers to the art-science of teaching and 'techno' refers to the art-skill in handcrafting, derived from the Latin 'texere' (to weave or fabricate). Here, 'techno' is a qualifier; it intersects or crosses the meaning of 'pedagogy' with its own content. Techno-pedagogy refers to weaving the techniques of the craft of teaching into the learning environment itself. It requires conscious recognition of the mediated learning environment in order to maximize ease and clarity in the transmission of information.

SIGNIFICANCE OF THE STUDY

The recent curriculum framework 2005 as proposed by NCERT (National Council of Educational Research and Training), India focuses on the issues of connecting knowledge to life outside shifting from rote learning to constructing knowledge providing a wide range of experiences for the overall development of a child. The recent developments in technology have changed the world outside the classroom. Educators and policymakers believe that information and communication technologies are of supreme importance to the future of

education and, in turn, for the country at large. As ICT is becoming an integral element for educational reforms and innovations at secondary schools, this situation calls for an enhancement of pre-service education on ICT for prospective teachers (**Cher & Ching 2008**).

Many teacher trainees know the content well but have not learned to transform or translate that knowledge into meaningful instruction. Although pre-service teachers do have a knowledge with regard to information and communication technologies (ICT) they have little know-how or techno-pedagogical ability with which to integrate those technologies into their teaching practice. Directly or indirectly teacher education programme will benefit from techno-pedagogical skills. Technological pedagogical content knowledge extends beyond proficiency with technology for personal use to an understanding of how technology can be integrated with subject matter and the technology itself. In a 1995 study, the Office of Technology Assessment (OTA) found that teachers are reporting little use of technology and most teachers lack confidence to use technology effectively even though there is a greater availability of technologies in schools (Koehler, Mishra, & Yahya, 2004).

Teachers are expected to know 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).

Effective technology use includes such activities as linking curriculum outcomes with various technologies, establishing a learning context of discovery and process in the use of technology, collaborating with others both face-to-face and virtually: to achieve learning outcomes, simulating real-world environments, and assessing outcomes. Teacher trainees can use technology to assist effectively and efficiently achieving curriculum objectives. Technology can provide powerful environments eliciting modern views of learning but may not change teachers' beliefs and practice. It depends on how teachers interpret the use of tools and how they use them to transform the learning processes.

STATEMENT OF THE PROBLEM

Teacher trainees can use technology to assist effectively and efficiently achieving curriculum objectives. Technology can provide powerful environments eliciting modern views of learning. It depends on how teachers interpret the uses of tools and how they use them to transform the learning processes. Further, techno-pedagogical skills in teaching contribute a lot towards teaching competency. This is the rationale for studying the techno-pedagogical skills of secondary teacher education students.

TITLE

Techno-pedagogical skills for the emerging secondary teacher education students

OBJECTIVES

- ❖ To find out the level of skill in learning, preparing lesson plan, preparing learning material, implementing instructional strategy, communication, evaluation, guidance and 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.
- ❖ To find out whether there is any significant difference between graduate and post-graduate 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.
- ❖ To find out whether there is any significant difference between secondary teacher education students who have attended computer course and who have not attended computer course in their skill in learning, preparing lesson plan, preparing learning material, implementing instructional strategy, communication, evaluation, guidance and techno-pedagogical skills.
- ❖ To find out whether there is any significant difference among English, Social science, Mathematics, Natural science and Physical science 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 of the secondary teacher education students.

METHOD USED IN THE PRESENT STUDY

The method adopted in the present study is survey

SAMPLE

The investigator used stratified random sampling technique for selecting the sample. The sample of the study is secondary teacher education students studying in the B. Ed. colleges affiliated to Mahatma Gandhi University, Kottayam. The sample consists of 75 secondary teacher education students, among them 37 are male students and 38 are female students.

TOOL USED

Techno-Pedagogical Skill Assessment Scale developed by Sibichen and Dr. P. Annaraja (2009). The investigator used test-retest method for establishing reliability of the tool. The reliability co-efficient of the Assessment Scale was computed to be 0.79

STATISTICAL TECHNIQUES USED

Arithmetic mean, Standard Deviation, 't' test & ANOVA

DATA ANALYSIS

TABLE 1.1

Level of techno-pedagogical skills of the secondary Teacher education students

Dimensions of Techno-pedagogical skills	Low		Moderate		High	
	No	%	No	%	No	%
Learning	15	20	47	62.7	13	17.3
Preparing lesson plan	13	17.3	49	65.3	13	17.3
Preparing learning material	15	20	49	65.3	11	14.7
Implementing instructional strategy	9	12	51	68	15	20
Communication	17	22.7	44	58.7	14	18.7
Evaluation	16	21.3	49	65.3	10	13.3
Guidance	14	18.7	51	68	10	13.3
Techno-pedagogical skills	16	21.3	47	62.7	12	16

It is inferred from the Table 1.1 that 21.3% of the secondary teacher education students have low, 62.7% of them have moderate and 16% of them have high level of techno-pedagogical skills.

TABLE 1.2**Difference between male and female secondary teacher education Students in their techno-pedagogical skills**

Dimensions of Techno-pedagogical skills	Male		Female		Calculated Value of 't'	Remarks at 5% level
	Mean	SD	Mean	SD		
Learning	22.11	5.30	20.42	6.30	1.25	NS
Preparing lesson plan	18.54	4.61	17.95	5.43	0.50	NS
Preparing learning material	19.32	6.24	18	6.95	0.86	NS
Implementing instructional strategy	22.11	4.97	23.34	4.65	1.11	NS
Communication	19.95	5.31	20.45	5.93	0.38	NS
Evaluation	18.24	6.72	16.82	7.00	0.89	NS
Guidance	24.16	5.11	23.63	5.48	0.43	NS
Techno-pedagogical skills	144.43	28.23	140.61	29.68	0.57	NS

(At 5% level of significance the table value of "t" is 1.96)

It is inferred from the Table 1.2 that there is no 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.

TABLE 1.3**Difference between graduate and post-graduate secondary teacher education students in their techno-pedagogical skills**

Dimensions of Techno-pedagogical skills	Graduate		Pos -graduate		Calculated Value of 't'	Remarks at 5% level
	Mean	SD	Mean	SD		
Leaming	20.82	5.31	21.69	6.45	0.62	NS
Preparing lesson plan	18.47	4.96	18.13	5.07	0.29	NS
Preparing learning material	17.53	6.77	19.38	6.48	1.19	NS
Implementing instructional strategy	21.53	4.70	23.72	4.77	1.97	S
Communication	19.44	5.58	20.90	5.72	1.09	NS
Evaluation	17.18	6.07	17.97	7.66	0.48	NS
Guidance	22.24	4.49	25.67	5.37	2.93	S
Techno-pedagogical skills	137.21	27.89	147.46	29.83	1.51	NS

(At 5% level of significance the table value of "t" is 1.96)

It is inferred from the table 1.3 that there is no significant difference between graduate and post-graduate secondary teacher education students in their skill in learning, preparing lesson plan, preparing learning material, communication, evaluation and techno-pedagogical skills. But there is significant difference between graduate and post-graduate secondary teacher education students in their skills in implementing instructional strategy and guidance.

TABLE 1.4

Difference between secondary teacher education students who have attended computer course and who have not attended computer course in their techno-pedagogical skills

Dimensions of Techno-pedagogical skills	Who have attended computer course		Who have not attended computer course		Calculated Value of 't'	Remarks at 5% level
	Mean	SD	Mean	SD		
Learning	22.17	5.81	19.09	5.62	2.10	S
Preparing lesson plan	17.94	5.33	18.77	4.28	0.64	NS
Preparing learning material	18.96	6.90	17.77	6.03	0.70	NS
Implementing instructional strategy	22.77	5.91	2.77	4.23	0.03	NS
Communication	20.62	5.87	19.14	5.00	1.03	NS
Evaluation	18.52	7.37	15.23	5.07	1.90	S
Guidance	24.42	4.99	22.91	5.84	1.13	NS
Techno-pedagogical skills	145.40	30.78	135.68	23.67	1.32	S

(At 5% level of significance the table value of "t" is 1.96)

It is inferred from the Table 1.4 that there is no significant difference between secondary teacher education students who have attended computer course and who have not attended computer course in their skill in preparing lesson plan, preparing learning material, implementing instructional strategy, communication and guidance, but there is significant difference between secondary teacher education students who have attended computer course and who have not attended computer course in their skill in learning, evaluation and techno-pedagogical skills.

TABLE 1.5

Difference among different optional subject secondary teacher education students in their techno-pedagogical skills

Dimensions of Techno-pedagogical skills	Sources of Variation	Sum of Squares	Mean Square Variation	df	Calculated Value of 'F'	Remarks at 5% level
Learning	Below 50000	58.92	14.73	4	0.384	NS
	Above 50000	2453.62	38.33	64		
Preparing lesson plan	Below 50000	62.47	15.61	4	0.568	NS
	Above 50000	1758.40	27.47	64		
Preparing learning material	Below 50000	59.69	14.92	4	0.337	NS
	Above 50000	2832.85	44.26	64		
Implementing instructional strategy	Below 50000	307.145	76.78	4	3.78	S
	Above 50000	1300.01	20.31	64		
Communication	Below 50000	55.928	13.98	4	0.447	NS
	Above 50000	2000.36	3.25	64		
Evaluation	Below 50000	291.04	72.76	4	1.68	NS
	Above 50000	2761.82	43.15	64		
Guidance	Below 50000	139.08	34.77	4	1.19	NS
	Above 50000	1863.46	29.11	64		
Techno-pedagogical skills	Below 50000	2124.67	51.17	4	0.619	NS
	Above 50000	54915.52	858.05	64		

(At 5% level of significance the table value of "F" at 4, 64 df is 2.51)

It is inferred from the Table 1.5 that there is no significant difference among English, Social science, Mathematics, Natural science and Physical science secondary teacher education students in their skill in learning, preparing lesson plan, preparing learning material, communication, evaluation, guidance and techno-pedagogical skills. But there is significant difference among English, Social science, Mathematics, Natural science and Physical science secondary teacher education students in their skill in implementing instructional strategy.

TABLE 1.6

Association between Parents' Annual Income and Techno-pedagogical Skills of the Secondary Teacher Education Students.

Dimensions of Techno-pedagogical skills	Parents' Annual Income	Low		Moderate		High		Calculated Value of 'xz'	Remarks at 5% level
		N	%	N	%	N	%		
Learning	Below 50000	9	60	35	79.5	6	50	4.94	NS
	Above 50000	6	40	9	20.5	6	50		
Preparing lesson plan	Below 50000	8	61.5	35	76.1	7	58.3	2.04	NS
	Above 50000	5	38.5	11	23.9	5	41.7		
Preparing learning material	Below 50000	11	73.3	32	71.1	7	63.6	0.314	NS
	Above 50000	4	26.7	13	28.9	4	36.4		
Implementing instructional strategy	Below 50000	6	66.7	35	71.4	9	69.2	0.04	NS
	Above 50000	3	33.3	14	28.6	4	30.8		
Communication	Below 50000	14	82.4	30	75.0	6	42.9	6.67	S
	Above 50000	3	17.6	10	2	8	57.1		
Evaluation	Below 50000	12	75	34	73.9	4	44.4	3.346	NS
	Above 50000	4	25	12	26.1	5	55.6		
Guidance	Below 50000	13	100	29	60.4	8	80	8.20	S
	Above 50000	0	0	19	39.6	2	20.0		
Techno-pedagogical skills	Below 50000	12	75	32	72.7	6	54.5	1.60	NS
	Above 50000	4	25	12	27.3	5	45.5		

(At 5% level of significance the table value of 'x²' is 5.99)

It is inferred from the Table 1.6 that there is no significant association between parents' annual income and skill in learning, preparing lesson plan, preparing learning material, implementing instructional strategy and evaluation of the secondary teacher education students, but there is significant association between parents' annual income and skill in communication and guidance of the secondary teacher education students.

FINDINGS AND CONCLUSIONS

't' test results reveal that there is significant difference between graduate and post-graduate secondary teacher education students in their skills in implementing instructional strategy and guidance. While comparing the mean scores of graduate and post-graduate secondary teacher education students in their skills in implementing instructional strategy,

post-graduate secondary teacher education students (mean=23.72) are better than graduate secondary teacher education students (mean=21.53) in their skills in implementing instructional strategy. This may be due to the fact that post-graduate students are more familiar with a variety of instructional strategies related to their discipline. While comparing the mean scores of graduate and post-graduate secondary teacher education students in their skills in guidance, post-graduate secondary teacher education students (mean=25.67) are better than graduate secondary teacher education students (mean=22.24) in their skills in guidance. This may be due to the fact that post-graduate students have more experience and self-confidence compared to graduate secondary teacher education students.

't' test results reveal that there is significant difference between secondary teacher education students who have attended computer course and who have not attended computer course in their skill in learning, evaluation and techno-pedagogical skills.

While comparing the mean scores of secondary teacher education students who have attended computer course and who have not attended computer course in their skill in learning, secondary teacher education students who have attended computer course (mean=22.17) are better than those who have not attended computer course (mean=19.09) in their skill in learning. This may be due to the fact that secondary teacher education students who have attended computer course fare well due to their acquaintance with ICT and which provides powerful environments for eliciting modern views of learning.

While comparing the mean scores of secondary teacher education students who have attended computer course and who have not attended computer course in their skill in evaluation, secondary teacher education students who have attended computer course (mean=18.52) are better than those who have not attended computer course (mean=15.23) in their skill in evaluation. This may be due to the fact that secondary teacher education students who have attended computer course have more access to acquire a variety of evaluation techniques which are available through internet.

't' test results reveal that there is significant difference between secondary teacher education students who have attended computer course and who have not attended computer course in their techno-pedagogical skills. While comparing the mean scores of secondary teacher education students who have attended computer course and who have not attended computer course in their techno-pedagogical skills, secondary teacher education students who have attended computer course (mean=145.40) are better than those who have not attended

computer course(mean= 135.68) in their techno-pedagogical skills. This may be due the fact that exposure to computer course enables student teachers' to integrate technology with classroom teaching. Moreover, they know how to use technology effectively and efficiently in classroom.

The ANOVA test results reveal that there is significant difference among different optional subject secondary teacher education students in their techno-pedagogical skills. Physical science optional secondary teacher education students are better than English, Social science, Mathematics and Natural science optional secondary teacher education students in their skill in implementing instructional strategy. This may be due the fact that Physical science optional secondary teacher education students are better trained in Physical science discipline and are more likely adapt to different instructional strategies in their respective discipline.

Thus the present study shows that how techno-pedagogical skills in the classroom redefine established teaching-learning styles. Thus techno-pedagogical skills of teacher trainees play a pivotal role in the acquisition of knowledge and competency.

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Research Article

Challenges Encountered by Parents and Teachers in Handling Children with Mental Retardation

Dr. M.Manivannan

Associate Professor & Head

School of Special Education and
Rehabilitation, TamilNadu Open University
Anna Salai, Saidapet, Chennai - 600 015.

Dr.K.S.Premila

Assistant Professor,

School of Special Education and Rehabilitation
TamilNadu Open University
Anna Salai, Saidapet, Chennai - 600 015.

Abstract

Teachers are having more responsibilities than anyone else to cater to the needs of disabled children. Dedication and determination in the profession are essential for doing service to the community, especially disabled community. If they are not committed to this cause, they do injustice to the profession. Parents' role is very crucial to develop the child with mental retardation because of various factors like social stigma, unaware of the developmental milestones etc. Parents are to be educated to develop the child with mental retardation a proper manner. Almost all parents are psychologically affected by knowing their child is mentally retarded. The investigators who are in special education field, wanted to study the challenges faced by teachers and parents in handling children with mental retardation.

Keywords: Children with Mental Retardation, Special Education, Challenges, Parents, Teachers, Inclusive Education, Developmental Milestones, Psychological Impact

INTRODUCTION

Every individual human being is unique and differently abled. Individuals differ from each other in terms of intellectual capacity, physical strength, emotionality, spirituality and sociability. Mental retardation is one of the disability conditions of several disabilities. Without understanding the nature of disability condition of children with mental retardation, we simply refuse to accept them. We have to train these children to cope with other non-disabled children in their studies and environment. These children with mental retardation need more training for a longer period.

OBJECTIVES

- ❖ To study the impact of independent variable such as gender, locality, educational status, family status, onset of children's disability, distance between home and centre and marriage pattern on the dependent variable 'challenges of parents' in handling children with mental retardation.
- ❖ To analyse the impact of independent variables such as gender, locality, professional qualification, marital status, and children's disability on the dependent variable 'challenges of teachers' in handling children with mental retardation.

METHODOLOGY

SAMPLE

A total of 50 parents and 50 teachers were selected from 14 schools through random sampling technique.

RESEARCH DESIGN

An exploratory research approach similar to that of a survey was used for the present study.

PROCEDURE

The tools namely, Parent's challenges on Mental Retardation Scale (PCMRS) and Teacher's challenges on Mental Retardation Scale (TCMRS) were used to collect data. The data were collected from the parents and the teachers of Erode and Coimbatore Districts in Tamilnadu. The t test was applied for analysing the data and interpreting the results.

Table 1:
Challenges of Parents in Handling Children with Mental Retardation

Variable	Number of Parents	Mean	Standard Deviation (SD)	t'	df	p	Result
Male	34	149.29	15.46	2.099	48	0.046	

Female	16	138.56	17.49				No Significant difference at 0.01 level
Rural	25	147.8	13.51	0.817	48	0.419	No Significant difference at 0.01 level
Urban	25	143.92	19.54				
Literate	38	144	15.95	-1.306	48	0.21	No Significant difference at 0.01 level
illiterate	12	151.75	18.5				
Joint	8	157.5	12.126	2.772	48	0.016	No Significant difference at 0.01 level
Nuclear family	42	143.64	16.68				
Male Children	35	143.63	16.59	-1.462	48	0.155	No Significant difference at 0.01 level
Female Children	15	151.07	16.44				
By Birth	29	146.28	18.51	0.213	48	0.8.2	No Significant difference at 0.01 level
After Birth	21	145-.29	14.36				
Distance Below 10 kms	14	149.57	19.59	0.882	48	0.388	No Significant difference at 0.01 level
Distance Above 10 kms	36	144.42	15.56				
Close Relative Marriage	7	158.14	22.16	1.644	48	0.145	No Significant difference at 0.01 level
Outside Marriage	43	143.86	15.08				

The table 1 shows the results obtained from the parents regarding the challenges faced by them in handling children with mental retardation. It also reveals that there was no significant difference between male and female; rural and urban; literate and illiterate; male children and female children; by birth and after birth; distance below 10 kms and distance

above 10 kms; and close relative marriage and outside marriage with regard to challenges of parents faced in handling children with Mental Retardation. Significant difference was found between joint family and nuclear family of parents with regard to challenges faced in handling children in the Mental Retardation.

It was inferred that male parents, parents of rural area, illiterates, joint family, parents having female children, disabled child by birth, child's centre below 10 kms distance, and close relative marriage faced more challenges than their corresponding attributes of variables.

Table 2:

Challenges of Teachers in Handling Children with Mental Retardation

Variable	Number of Teacher	Mean	(SD)	't'	df	P	Result
Male	21	134.190	2.136	15.531	48	0.000	No Significant difference at
Female	29	83.276	17.474				
Rural	33	89.182	22.950	-11.26	48	0.00	No Significant difference at 0.01 level
Urban	17	34.706	2.592				
No Special Education	28	109.86	28.64	1.47	48	0.149	No Significant difference at 0.01 level
Having Special Education	22	98.05	27.91				

The table 2 shows the results obtained from the teachers regarding the challenges faced by them in handling children with mental retardation. It also reveals that there was no significant difference between teachers having no special education and teachers having special education with regard to challenges of teachers faced in handling children with Mental Retardation. Significant difference was found between male and female; rural and urban; Married and Unmarried: teachers having disabled children and teachers with no disabled children with regard to challenges faced in handling children in the Mental Retardation.

It was inferred that male teachers, teachers of urban area, no special education, unmarried, and having no disabled children faced more challenges than their corresponding attributes of variables.

DISCUSSION

Male Parents encountered more challenges in handling children with mental retardation than female parents due to the reason that male parents faced social stigma and they thought that their prestige are lost. When compared to urban areas, parents of rural areas faced more challenges because these parents did not have more awareness in handling children with mental retardation. In joint family system, the parents of the disabled child were blamed due to the birth of disabled child. Hence, parents of joint family had more challenges in handling the children with MR than nuclear family.

Male teachers had no patients in handling children with MR. Therefore, male teachers faced more challenges in handling children with MR than female teachers. Urban teachers faced more challenges than rural teachers in handling children with MR because urban teachers' involvement with the children was less. Unmarried teachers encountered more challenges than married teachers due to the reason that they felt lot of difficulties in daily living activities and education of children with MR.

RECOMMENDATIONS

- i) Parental education on awareness about mental retardation is very much needed in handling children with MR.
- ii) For successful implementation of mass campaign programme for orienting parents, the health professionals, administrators and teachers should be sensitized on disability management.
- iii) All teachers of schools should be sensitized through short-term, long-term in- service training programmes on disability management.
- iv) A great emphasize should be given in the curriculum of teachers education on disability studies. The National Council for Teacher Education (NCTE) should make the disability studies as one of the core curricular aspects in all levels of teacher education programmes.

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Research Article

A Study on the Effect of Computer Assisted Instructional Package as a Self-Learning Material in Learning English Grammar among the VIII Standard Students

A.Francy Merline Sowmya,

Lecturer in Biological Science,
St. Peters College of Education,
Karumathapatty.

Fr. Noel Stephen

St. Joseph College of
Education,
Ooty

Mr.M.Senthilkumar

Lecturer in Computer Science,
St. Peters College of Education,
Karumathapatty.

Abstract

Education refers to the process by which society, through its different institution deliberately transmit its cultural heritage to its young its accumulated values, knowledge and skills from one generation to another. Education is often regarded as synonymous with learning, as the acquired experience of any sort of intellectual, emotional or sensory-motor experienced. Thus Education is a product of experience. The main issues of enhancing the teaching learning process are a large collection of people in the classrooms. The number of students is so large with diverse learning needs and the resources are so meager that the objectives of the system becomes far reaching the goal and require much longer time if the system depends entirely upon traditional instruction. Educational technology is a system in education in which machines, materials, media, men and methods are integrated and work together for the fulfilment of educational objectives. The present education system is utilizing the mode of audio and video technology for communication. The children are passive learners and are becoming auto learner. The child is motivated to learn on his own. The Child is forced to set pattern of thinking and learning. They are stimulated by the imaginary world of computers. The children are unconsciously thrown into fantasy world. This exposure is making the child to imitate the modes and roles and devoid of thinking.

Keywords: Computer Assisted Instruction, Self-Learning Material, English Grammar, VIII Standard Students, Educational Technology, Audio-Visual Learning, Student-Centered Learning, Teaching-Learning Process

Educational Technology in English teaching

Educational Technology has been regarded as an integral part of the whole teaching learning process. The role of the teacher in a class room is still significant, but has to acquire and promote new methods to become more relevant and easy. It can also help to overcome the difficulties such as lack of verbalizing faced in the classes, to improve the quality of education. The audio-visual aids improve the teaching and make learning more effective.

Due to scientific development and technological improvements a monumental amount of educational technology devices have been invented. These devices have changed many activities in class room teaching especially in English grammar teaching. Computers pave a fruitful way for the study of English Grammar

Need for the Study

Due to poor understanding some students particularly the average and slow learners find difficulties in understanding the structural usage in English language. The English grammar is one area which challenges to the average and slow learners. Unless some device is made, these pupils cannot comprehend the concept in the said content area. Hence it is the duty of the English teacher to devise an instructional strategy which would support him in realizing the envisaged _instructional objectives. Here comes the Educational Technology particularly computer technology in teaching to rescue the English teacher from the said crisis.

Review of Related Literature

J. Cooper (2006) made a study on 'The digital divide' on this study examines the evidence for the digital divide based on gender. The evidence shows that the digital divide affects people of all ages and a cross international boundaries. We suggest that the digital divide is fundamentally a problem of computer anxiety whose roots are deep in socialization patterns of boys and girls and that interact with the stereo type of computers as toys for boys.

J. Horne et al (2007) made a study on 'Gender differences in computerized and conventional educational tests. This study shows no significant difference on the computerized modules, but girls performed significantly higher than boys on the paper version of the spelling module. It is possible that computerized assessment does not detect the established gender

effect due to differences between males and females in motivation computer experience and competitiveness, Further large- scale studies are necessary to confirm these findings.

OBJECTIVES OF THE STUDY:

GENERAL OBJECTIVES:

To develop, validate and standardize a CAI package on English grammar teaching for VIII standard students.

To find out whether there is any significant difference between the Conventional Lecture Method (CLM) and the Computer Assisted Instruction (CAI) as an individualized instructional strategy in teaching English grammar among VIII standard students.

SPECIFIC OBJECTIVES:

- To find out the effectiveness of conventional method of teaching on English grammar for VIII standard students.
- To find out the effectiveness of CAI package on English grammar teaching for VIII standard students.
- To compare the effectiveness in learning through two different methods (CAI teaching method and Conventional Lecture method) in teaching English grammar among the VIII standard students.

METHOD OF RESEARCH:

In this present Study Two group Experimental design was employed.

Sampling

In the present study the investigator has selected secondary school novice students ie., eighth standard students who have not been exposed to the content of the particular grammatical usages (until, since, for, as long as) by using purposive sampling technique .They are the students of Chavara Vidya Bhavan Higher Secondary School, Coimbatore.

Sample Details:

The investigator divides the students into two groups

- (i) Control group 25
- (ii) Experimental group 25 total students -50

Variables of the study:**Dependent variables:**

The dependent variables are the condition or characteristics that appear, disappear, a change as the experimenter introduces, removes or changes according to the independent variables. In this study the investigator considers the Achievement of the students in the contents as the dependent variables.

Independent Variables:

CAI Package: CAI is a narrower term and most often refers to drill and practice tutorial or simulation activities offered either by themselves or as supplement to traditional teaching directed instruction.

Tools used for the study:

Tools used in the study are as follows

1. Eighth syllabus based Computer Assisted Instructional package was developed in Flash by the investigator having the content area 'grammatical structure usage' prescribed for STD VIII in English language learning.
2. The development of a computer assisted instruction program materials is a very critical task. The investigator considered himself as a programmer. The investigator has selected a topic in English grammar (structural usage) and has developed the teaching material through flash 8 software. The investigator collected the diagrams, pictures, stills from the internet. The pictures and stills are relevant to the content
3. A separate pre-test was developed by the investigator to assess the knowledge of the students in English grammar usages at VIII standard in order to establish the entry level and exit level knowledge among the control group and experimental group in terms of learning in English grammar (grammatical structure usage)
4. Objective based objective tests (CRTS) in the selected areas were developed by the investigator and administered duly. During the post test phase was conducted to assess the terminal behavior of the students who formed as the subject of the experiment.

DATA COLLECTION PROCEDURE:

The investigator has handled two phases of data collection among the selective secondary school novice students.

PHASE I:

On the first day, a pre-test was conducted for the both the groups (viz., experimental and control group). On the second day, conventional teaching of 45 minutes duration was conducted for the control group, whereas the CAI package was administered to the experimental group.

PHASE II:

On the third day, post test was conducted to both the groups at the same time and the data was collected.

STATISTICAL TREATMENT

Considering the objective and hypothesis of the present study the collected data from the two phases were analyzed using the appropriate statistical techniques. The investigator employed t-test to find out the effectiveness of the computer based instruction on correct grammar usages in English language.

ANALYSIS AND INTERPRETATION**Hypothesis I:**

There will be a significant mean score difference in knowledge in English grammar between pre-test and post-test phases among the students of the experimental group.

	N	Mean	SD	t-value	Result
Pre test	25	8.48	1.93	7.806	significant
Post test	25	17.56			

From the table it is observed that the difference is more during the post study phase since the student were exposed to the experimental difference in knowledge between pre and post test phase of the study among the students of experimental group. Variable i.e. CAI package tutorial. Further this difference is statistically significant and 0.01 levels which indicate that the difference is definite due to manipulation of experimental variable. Further, we can

accept the above hypothesis; hence we can conclude that the tutorial mode of CAI package made a significant knowledge acquisition by the learners of the experimental group.

Hypothesis II:

There will be a mean score difference in knowledge in English grammar between pre-test and post-test among the students of the control group.

Phases	N	Mean	SD	t-value	Result
Pre test	25	11.2	3.85	6.2	significant
Post test	25	16			

From the table it is observed that the difference is more during the post-test since the students were exposed to the control variable (i.e.) conventional teaching. Further difference is definitely due to manipulation of control variable. Hence we accept the above hypothesis. So, we conclude from above findings that there is a knowledge gain between pre and post-test among the learners in the control group.

Hypothesis III:

There will be a mean score difference in knowledge gain in English grammar between control and experimental group of VIII standard students during pre – post test phases

Phases	N	Mean	SD	t-value	Result
Experimental	25	9.08	1.93	2.122	significant
Control	25	6.84			

From the table it is observed that the difference is more in the experimental group during the pre-post test phase (i.e.) CAI package. As the experimental group was only shown the CAI Package we see differences in the knowledge gain the mean score. Further this, difference is statistically significant at 0.01 levels.

So we conclude that the knowledge gain of experimental group is more than that of the control group.

CONCLUSION

From the results and findings of the present study it is concluded that the CAI package on English grammar developed by the investigator for the VIII std students is an effective and appropriate one for using as a supportive material to teach English language. The selected VIII

std students have gained more knowledge on the structural usage of grammatical students in English language through the CAI package. Further, CAI package on English grammar is convenient for low achievers and high achievers.

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