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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".

Researchers today need the knowledge and skills of science more than ever before in the scenario of knowledge economy and knowledge management. Science requires visions and the ability to observe the implications of results. Collecting data is part of the scientific process and it also needs to be analyzed and interpreted. Data are the applied part of scientific method and the results of the real world observations of phenomena. Research revolves around using scientific method to generate hypotheses and provide analyzable results. The scientific approach to educational research is challenging.

All scientific research has a goal and ultimate aim, repeated and refined experimentation gradually reaching an answer. These results are a way of gradually uncovering truths and finding out the processes that drive the universe around us. Only by having a structure to experimentation, can results be verified as acceptable constructions to success. Here are a few researchers who have contributed to human knowledge with different phenomena and different designs.

The focus of the Binulal. K.R research paper on "Effectiveness of emotional intelligence training on enhancing teaching competency among student teachers" addresses the issue of need for development of emotional intelligence in order to develop teaching competency among student teachers. The article on Working Memory Deficits: development of working Memory Skills among sixth standard students indicates significant relationship between working memory skills and performance in English and Mathematics.

The article on "The study on the problems faced by higher secondary school students in learning computer science" by John Milin Sandeep. M reveals that there exists significant difference between the students in learning computer science with respect to content, teaching and examination.

Dr.D. Sivakumar in his paper on "Problems faced by Postgraduate Biology teachers and their job satisfaction" has examined the problems in teaching and the influence of job satisfaction. Dr.R.Sahaya Mary, emphasises the importance of creativity in creating intellectual minds through her research oncreativity of eleventh standard students in Chennai.

We express our sincere gratitude to contributors and we look forward to more quality research articles from you which have relevance to school and teacher education.

Dr. A. Alma Juliet Pamela

Associate Editor.

Research Article

Development of Working Memory Skills among Sixth Standard Students

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Abstract

Previous research tracked the history of Working Memory studies which has demonstrated close relationships between working memory and students' scholastic attainment. The aim of the present study is to explore a method of improving working memory, using modified version of Dr. S. Malathi's(2004) working memory training module. Three hundred students aged eleven years who are studying in sixth standard are tested on measures of the phonological loop, visuo-spatial memory and central executive components of working memory test battery. The Achievement tests in English and Mathematics constructed and validated by the investigators are used. Fifty students are assigned to low working memory skill group on the basis of their performance, selected for the experimental study (Group? Rl X R2). It is observed that there exists significant relationship between working memory skills and performance in English and Mathematics. The results revealed that working memory training module resulted in significant improvements in tasks assessing the phonological loop, visuo-spatial memory and central executive components of working memory, achievement in English and Mathematics. The results are discussed in terms of implications for educational practice.

Keywords: Working Memory, Sixth Standard Students, Memory Training, Phonological Loop, Central Executive, Academic Achievement, English, Mathematics, Educational Research

INTRODUCTION

The term working memory refers to structures and processes provide temporary storage and manipulation of the information necessary for such complex cognitive tasks as language, comprehension, learning, and reasoning.

It is involved in the selection, initiation, and termination of information processing functions such as encoding, storing, and retrieving data. Working Memory is seen as the combination of a Central Executive which is assumed to be an attentional-controlling system, is important in skills such as chess playing, Visuo-Spatial Memory which manipulates visual images, and a Phonological Loop which stores and rehearses speech-based information and is necessary for the acquisition of both native and second-language vocabulary. Working Memory (WM) is responsible for temporarily maintaining and manipulating information during cognitive activity (Baddeley, 2000). It has been found to be closely related to a wide range of high-level cognitive abilities such as reasoning, problem- solving, and learning (Kyllonen & Christal, 1990).

The recent research has confirmed that the specificity of associations between working memory and attainment persist after differences in I.Q have been statistically controlled in children with learning difficulties (Swanson and Saez, 2003; Gathercole et al., 2006). The verbal working memory plays a crucial role in mathematical performance when children are younger. However, as they get older, other factors such as number knowledge and strategies play a greater role (Thevenot and Oakhill, 2005). This view is supported by recent evidence that working memory is a reliable indicator of mathematical disabilities in the first year of formal schooling (Gersten et al., 2005). There is growing evidence that mathematical deficits could result from poor working memory abilities. Low working memory scores have been found to be closely related to poor computational skills (Wilson and Swanson, 2001). Weak verbal working memory skills are also characteristics of poor performance on arithmetic word problems (Swanson and Sachse-Lee, 2001).

Reading disabilities can be characterized by marked difficulties in mastering skills including word recognition, spelling, and reading comprehension. In addition, WM is related to academic achievement in the domain of reading (Daneman &Tardif, 1987), writing (Abu-

Rabia, 2003), mathematics, and science (De Smedt, Ghesquiere, & Verschaffel, 2004; Gathercole, Pickering, Knight, & Stegmann, 2004). As WM plays an important role in cognitive activity, researchers are exploring ways of applying WM research to improve abilities such as fluid intelligence the ability to understand complex relationships and solve new problems and science achievement (Martinez, 2000).

This paper tracks the history of WM studies, synthesizes the definition of WM, contrasts measures of WM, summarizes the relationship between WM and English Achievement and Mathematics achievement, and discusses how to apply significant findings from WM research to improve English Achievement and facilitate Mathematics learning using working memory skills.

Objectives of the Study

This research has three main objectives:

- To find the level of working memory skills among Sixth Standard Students.
- To investigate the relationship between working memory skills and performance in the areas of English and Mathematics.
- To examine the influences of Working Memory skills training module on working Memory, Achievement in English and Achievement in Mathematics.

Tools Used in the Study

Working Memory Test Battery: Modified version of Dr. S. Malathi's Working Memory test battery (2004) is used for this study by the investigators is composed of six tests designed to tap the three subcomponents such as Central Executive, Visuo-Spatial Memory, and a Phonological Loop.

Working Memory Skills Improvement Training Module: To improve the working memory skills of the students, the investigators used the modified version of Training Module constructed by Dr. S. Malathi (2004) which consists of twelve mental exercises to tap the three subcomponents such as Central Executive, Visuo-Spatial Memory, and a Phonological Loop of Working Memory.

Achievement Tests: The Achievement tests in English and Mathematics constructed out of twenty five marks and validated by the investigators are used. The reliability of the test in English is found to be 0.773 and the test in Mathematics is found to be 0.835.

Methodology

Survey method has been adopted to collect data from three hundred sixth standard students. Working Memory skills are assessed by the modified version of test battery (Dr. S. Malathi, 2004) developed by the investigators. Fifty students are assigned to low working memory skill group on the basis of their performance, selected for the experimental study (See Table I).A single group pre- test and post-test design Group? Rl X R2 is implemented to investigate the effect of working memory skills improvement training module on the students of low working memory skills. Rl is the initial result without introducing the experimental factor. R2 is the result after introduction of the experimental factor. X represents the working memory skills training module.

Table I

Level of Working Memory

Variable	Level of Working Memory	Sample	Percentage
Working Memory	Low	50	16.67
	Average	210	70.00
	High	40	13.33

Analysis of data

The results of the analysis on the study are presented below.

Table- II

Relationship between Working Memory and

Achievement in English, Mathematics

Variable	Correlation Coefficient	LS
WM & Ach. In English	0.722	**0.01**

WM & Ach. In Mathematics	**0.810**	**0.01**

From the Table-II, it is observed that that there is 72% positive relationship between Working Memory and Achievement in English and is significant at 0.0llevel, 81% positive relationship between Working Memory and Achievement in Mathematics.

Table Ill

Mean performance of students' outcome before and after intervention of WM skills improvement training module

Variable			N	**Pre-Test**		**Post-Test**		t	LS
				M	SD	**M**	SD		
WM	Central Executive	LRST	50	3.23	1.14	7.30	1.18	17.84	0.01
		CRT	50	3.03	1.12	7.55	1.11	17.07	0.01
		BDRT	50	3.33	1.59	7.58	1.52	13.21	0.01
	Visuo-Spatial Memory	SADMT	50	3.13	1.09	7.15	1.67	18.13	0.01
	Phonological Loop	FDRT	50	3.27	1.01	6.90	1.03	20.46	0.01
		SROW	50	3.05	0.99	7.15	1.67	19.57	0.01
Achievement		English	50	14.8	1.57	24.8	2.98	14.52	0.01
		Maths	50	15.3	1.46	22.9	3.15	10.27	0.01

Note:

Listening Recall Sub Test - LRST
Static and Dynamic Matrices Tests - SADMT
Counting Recall Test -
CRT Forward Digit Recall Test - FDRT
Backwards Digit Recall Test – BDRT
Serial Recall of Words - SROW

From the Table III, it is inferred that there exists significant difference between pre test and post test scores of all components of working memory, performance in English and Mathematics at 0.0llevel.

Discussion

From the findings, it is clear that the deficits are severe for all the components such as Central Executive, Visuo-Spatial Memory, and a Phonological Loop measures. Working Memory test battery is able to identify children who are at risk of encountering academic difficulties associated with problems in different subjects, with different components of

working memory deficits. These findings lend further weight to previous evidence that the central executive in particular play a crucial role in the acquisition of complex cognitive abilities and skills such as literacy, comprehension, and arithmetic (Swanson, 1994; Yuill et al., 1989). The post test scores are significantly higher than the pre test scores indicates that the Intervention Training Module found to be effective in enhancing Working Memory.

The working memory skills training module facilitate students' Visuo-spatial working memory uses a kind of visual sketchpad of the brain which allows students to envision something, to keep it in their "mind's eye", to be better equipped to remember patterns, images, and sequences of events to meet everyday challenges which in turn assist students to perform efficiently and effectively in academics. Working memory skills provide a resource for the individual to integrate knowledge from long term memory with information in temporary storage (Swan & Saez, 2003, Swenze & Frankenberger, 2004). The working memory skills training module would have assisted students to complete independent activities, such as puzzles, reading and understanding the content, mental arithmetic to perform better in post-tests.

Working memory assessments may play a useful role in screening for children at risk of educational underachievement (Ford & Sibler, 1994; Gathercole & Adams, 1993). The working memory tests employed in the present study use stimuli and methods provide fluid and sensitive indicators of the student's ability to acquire knowledge and understanding in key aspects of the program to achieve better in post-tests.

If the children frequently fail in individual learning situations simply because they cannot store and manipulate information in working memory, their progress is acquiring complex knowledge and skills in areas such as literacy and mathematics will be slow and difficult. So the training of working memory in children with low working memory skills leads to substantial gains in academic attainments (Turley-Ames & Whitfield, 2003). Therefore significant post test scores in this study support that Working memory skills enhance to adhere to work plans, such as participating ingroup activities in the class, sustaining focus and interest throughout lectures, meeting deadlines to complete assignments, listening, recalling, prioritizing multiple activities, etc. to achieve academically in English and mathematics.

Conclusion

The present study proves the greater effectiveness of working memory improving exercises in enhancing working memory skills and achievement in English and Mathematics.

Poor working memory skills result in pervasive learning difficulties which act as a bottleneck for learning in many of the individual learning episodes required to increment the acquisition of knowledge (Gathercole, 2004).

A classroom based intervention should be designed to reduce memory related failures that lie at the root of substantial learning difficulties is strongly recommended. This study may enrich the educators and the findings of the study will serve as a database for the future research.

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Research Article

Effectiveness of Emotional Intelligence Training on Enhancing Teaching Competencies among Student Teachers

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Abstract

Teaching competencies are the need of the hour to create and maintain positive relationship with students and extend variety in learning. The research on teaching effectiveness clearly points out the importance of emotional intelligence skills. These skills are best taught in person centered classroom environments and are the most important aspects of teaching excellence. The present study is an attempt to relate the effects of emotional intelligence training in the development of teaching competencies of student teachers. Here the training is aimed at encouraging the student teachers to explore and develop skills necessary for successful classroom management. The investigator adopted single group experimental design and selected ninety six student teachers as the sample for the present study. The results of the study revealed that emotional intelligence training has a significant effect on enhancing the teaching competencies among student teachers. The subsamples based on gender and locality have no significant effect on teaching competencies of student teachers, while the subsamples based on subject of specialisation and educational status have significant effect on teaching competencies of student teachers due to emotional intelligence training. The study recommends that teaching learning resources need to be designed creatively to facilitate emotional intelligence training based on different teaching skills and hence the process of teaching learning effective.

Keywords: Emotional Intelligence, Teaching Competencies, Student Teachers, EI Training, Classroom Management, Experimental Study, Gender Differences, Locality, Subject Specialization, Educational Research.

INTRODUCTION

Teaching competencies are the need of the hour to create and maintain positive relationship with students and extend variety in learning. It also includes the prerequisite knowledge of the subjects they teach as well as the teaching skills. Several procedures and programmes are available to develop teaching skills among student teachers at teacher education level. However the student teachers lack the basic skills to deal effectively in the classroom during teaching practice sessions. In this context, emotional intelligence training plays a vital role in achieving the predetermined objectives of the teacher education curriculum. The research on teaching effectiveness clearly points out the importance of emotional intelligence skills. These skills are best taught in person centered classroom environments and are the most important aspects of teaching excellence.

Affective learning involves development of feelings, emotions, attitude, interests, appreciation and predispositions. Emotion is an affective experience that accompanies generalized linear adjustment and mental physiological stirred up states in the individual and that shows itself in his own behaviour. Emotional intelligence is a form of social intelligence that involves the ability to monitor one's own and others feelings and emotions to discriminate among and to use this information to guide one's thinking and action. It is a confluence of cognitive, affective and behavioral skills that one can learn and develop in becoming the best and most effective person. It is the learned and developed ability to think constructively and behave effectively and wisely.

Significance of the Study

Emotional Intelligence is a set of qualities and competencies that captures a broad collection of individual skills and dispositions, usually referred to as soft skills or inter and intra-personal skills, that are outside the traditional areas of specific knowledge, general intelligence and technical or professional skills. Emotional intelligence consists of five factors: Knowing one's emotions, managing emotions, motivating oneself, recognizing emotions in others and handling relationships (Goleman,1995). Emotionally intelligent peoples have the ability to marshal their emotional impulses, they have the self-awareness to know what they are feeling and are able to think about and express those things; they have empathy for the feeling of others and insight into how others think.

Researchers today are interested in finding the effects of emotional intelligence on learning and thereby the teaching learning process and analysing the various other facets of EQ. Emotional intelligence improves individual and institutional performance. It plays a significant role in the kind of learning activity a student do in classroom and the relationship he or she enjoys in the school.

Review of Related Literature

Schutte & Malouff (2002) provided beginning university students with information and skills training related to emotional intelligence as part of an introductory university class. The students who received emotional intelligence training scored significantly higher on trait or typical emotional intelligence at the end of the term and were more likely to complete their first year of university than control students with no intervention. The retention rate for the students in the emotional intelligence training group was 98%, while that of the students in the comparison group was 87%.

Slaski & Carwright (2003) compared managers who received emotional intelligence training for one day per week for a period of four weeks, with a matched group of managers assigned to a control comparison condition. The managers in the training group scored significantly higher on typical or trait emotional intelligence and also had significantly better scores for self-rated mental health and work morale, when compared to the managers in the control group.

Recent research (Goad, 2005 & Justice, 2006) has indicated the importance and value of emotional intelligence in teacher education programmes. According to their research, it is indicated that pre-service teacher education induction experiences with mentoring and alternative certification programmes could be strengthened by providing emotional intelligence training in preparing new teachers. Emotional intelligence skills were linked to both classroom management performance and teacher retention factors for new and novice teachers. independent variable with the critical and creative thinking as the dimensions and Mathematical problem solving as the dependent variable,

Fletcher et al. (2009) found that a seven month-long workshop on emotional intelligence training resulted in participants scoring significantly higher on typical emotional intelligence than medical students in the control group. The authors pointed out that these

results should be viewed with caution as the design used a non-equivalent control group and there was a high dropout rate in the training group.

Aremu & Moyosola (2012) investigated the effectiveness of emotional intelligence training on teaching skill efficacy of career frustrated teachers. Teacher sense of efficacy scale, locus of control ofbehaviour scale and demographic data form were administered to the teachers. The results of the study showed that emotional intelligence training effectively enhanced teaching self-efficacy of career frustrated teachers. Locus of control significantly influenced teaching self-efficacy of the experimental group, while gender was not significant. It was recommended that emotional intelligence training of career frustrated teachers should be encouraged to improve their teaching self-efficacy.

Based on the review of related literature, it can be concluded that there is preliminary evidence to suggest that emotional intelligence training can be effective in increasing the competencies comprising emotional intelligence. Further the reviews indicate that emotional intelligence training may have the potential to improve various skills needed to deal effectively in the classroom. The present study is an attempt to relate the effects of emotional intelligence training in the development of teaching competencies of student teachers. Here the training is aimed at encouraging the student teachers to explore and develop skills necessary for successful classroom management.

Objectives

- To find out the effectiveness of emotional intelligence training on enhancing teaching competencies of student teachers
- To compare the effectiveness of emotional intelligence training on teaching competencies of student teachers with respect to the subsamples based on gender, locality, subject of specialisation and educational status.

Hypotheses

- There is no significant difference in the teaching competency scores obtained before and after the emotional intelligence training.

- There is no significant difference in the post test scores of teaching competency with respect to the subsamples based on gender (male & female), locality (rural & urban), subject of specialisation (science & arts) and Educational status (PG & UG).

Methodology

Method: The investigator adopted experimental method with pre-test- post-test single group (experimental group) design. During the initial spell of teaching practice (B.Ed curriculum, University of Kerala), a pre-test was given to the student teachers to measure the teaching competence. Then emotional intelligence training was given to them for one month of five continuous sessions. After the training programme, student teachers underwent the second spell of teaching practice and they were given the post test to measure the teaching competence.

Sample: Purposive sampling method was adopted by the investigator for the present study and which consisted of96 student teachers from a B.Ed college in Kollam district, Kerala.

Instruments used: (a) Instructional programmes based on the activities to develop emotional intelligence. (b) Ateaching competency scale developed andstandardised by the investigator.

Treatment: After the pre-test given to the participants, they were exposed to five continuous sessions. The outline of each session is given below.

Session 1: Self-awareness: Self-awareness is the ability to recognize and understand one's own moods, emotions, drives as well as their effect on others. People who have high degree of self-awareness easily recognize how their feelings affect them and their job performance as well as how it affects others.

Training and activities were given to the participants on the components such as emotional awareness, accurate self-assessment and self-confidence.

Session 2: Self-regulation: It is the ability to manage one's own impulses and moods. In simple words, it is to think calmly before acting. This requires lot of tolerance.

The investigator tuned the participants to acquire the abilities such as self-control, trustworthiness, consciousness, adaptability and innovation in order to develop self-regulation.

Session 3: Motivation: It refers to a stimulus which satisfies need. It is the ability to pursue goals with energy and persistence which in turn guide or facilitate in reaching goals. Here the participants underwent practices in the components such as commitment, initiative and optimism.

Session 4: Empathy: Empathy means reading others feelings, needs and concern. That is, to put one self into other's shoes.

The participants acquired the abilities such as understanding others, service orientation and political awareness.

Session 5: Social skills: It is the ability to manage and build upon relationship and building rapport with various section of society and creating network of people.

The investigator oriented the participants to develop the following aspects influence, conflict management, collaboration, cooperation and team building throughout the training programme.

Data analysis and interpretation

Data were analyzed using descriptive statistics, paired and independent sample 't' tests and the results are given in the following tables.

Table 1

Test of significance difference between the pre test and post test scores of the experimental group on teaching competencies

Experimental Group	N	Mean	S.D	CR	Significance
Pre test	96	22.07	21.67	0.01	
Post test	96	31.64			

From table 1, the critical ratio 21.67 is significant at 0.0I level of significance. It reveals that the difference between the mean pre test and post test scores of the experimental group is

statistically significant. Hence it can be concluded that the emotional intelligence training has a significant effect on enhancing teaching competencies of student teachers.

Table 2

Test of significance difference of post test scores with regard to the subsamples

Subsample	Category	N	Mean	S.D	CR	Significance
Gender	Male	46	31.02	3.813	1.77	NS
	Female	50	32.22	2.777		
Locality	Rural	44	31.15	3,784	1.31	NS
	Urban	52	32.05	2.910		
Subject of Specialisation	Science	48	32.36	2.965	2.15	0.05
	Arts	48	30.92	3.584		
Educational Status	PG	40	32.79	3.087	2.94	0.01
	UG	56	30.82	3.317		

From Table 2, it is clear that for the subsample based on gender, the critical ratio obtained is 1.77. It shows that there is no significant difference between the scores of teaching competencies of male and female student teachers due to emotional intelligence training. Similarly in the case of locality, there is no significant difference (CR=1.31) between the student teachers belong to rural and urban areas in the scores of teaching competencies.

From table 2, it is also observed that for the subsample based on subject of specialization the obtained critical ratio (CR=2.15) is significant at 0.05 level of significance. That is, there is significant difference between the scores of teaching competencies of science and arts stream student teachers and it is revealed that science stream student teachers (m=32.36) are highly competent than those of arts stream (m=30.92). Similarly for the subsample based on educational status, there is significant difference (CR=2.94) between graduate and post graduate student teachers with regard to their teaching competencies. From the mean scores it is inferred that post graduate student teachers are highly competent than graduate student teachers.

This may be due to the fact that student teachers who completed PG have more practical experience, exposure to various social situations and self-confidence than the UG group.

Major Findings

- Emotional intelligence training has a significant effect on enhancing the teaching competencies among student teachers
- The subsamples based on gender and locality have no significant effect on teaching competencies of student teachers due to emotional intelligence training
- The subsamples based on subject of specialisation and educational status have significant effect on teaching competencies of student teachers due to emotional intelligence training.

Conclusion

The results of this study presented a sensible model for enhancing the teaching competencies of student teachers. It briefly explains the relevance of emotional intelligence oriented training in improving the self-confidence and promoting social adjustment of student teachers. Hence the teacher educators need to move beyond lecturing to create a stimulating learning environment, as emotional intelligence· training cannot be facilitated on the basis of information or discussion alone. Moreover, teaching learning resources need to be designed creatively to facilitate emotional intelligence training based on different teaching skills and hence the process of teaching learning effective. Much research work remains to be done to verify these initial findings and to uncover how training increases emotional intelligence, what specific training works best and what important outcomes can be produced.

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Research Article

Problems Faced by Postgraduate Biology Teachers and their Job Satisfaction

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Abstract

For teachers to achieve their professional goals effectively, they must experience satisfaction in various aspects of their work. It is essential for teachers to recognize that the objectives they set will remain mere intentions unless they make conscious efforts to accomplish them through their teaching. For those who teach science in schools, it is an appropriate time to conduct a survey-based research study to identify the challenges faced by biology teachers and to assess their level of job satisfaction. In the present study the investigator selected 120 postgraduate biology teachers by using simple random sampling technique. After framing necessary objectives and hypotheses appropriate analysis was carried out for the collected data. From the analysis it was found that, (1) the male and female postgraduate biology teachers do not differ significantly in their problems in teaching. (2) No significant difference is found between the postgraduate biology teachers from rural and urban areas in their problems in teaching. (3) There is significant difference among the postgraduate biology teachers working in government schools, aided schools and unaided schools in their problems in teaching related to methods of teaching.

Keywords: Postgraduate Biology Teachers, Job Satisfaction, Teaching Problems, Gender Differences, Urban-Rural Differences, School Management, Teaching Methods, Educational Research, Survey Study, Teacher Challenges

INTRODUCTION

At the higher secondary schools, the science teachers met so many problems. For successful teaching, co-operation of the school management, government, society and the students are essential.

Schools with indiscipline pupils and unhealthy organizational climate are hardly conducive to science teaching. Secondary Education Commission also recommended that every school must have an experimental laboratory where new apparatuses and chemicals should be kept aside for the pupils' experiment relating to their science subject. For the success of science teaching, good method of teaching is very important. But unfortunately, the traditional teaching methods suffer greatly because of the defective supervision, feedback and evaluation. And this great defect renders the entire subject teaching ineffective. As the syllabus given at high school level varies from school (government and aided) to school (state board and CBSE), the teaching may also vary. One may assume that the teachers are bound to bring about some change in their attitude towards the type of work to be undertaken by them in future. It is universally accepted that the practical experience of a student plays a role in his preparation for examination in future.

NEED AND SIGNIFICANCE OFTHE STUDY

The biology teachers have to do a number of teaching related activities in their classrooms. As if this was not enough, they should pay their attention to the messages they conveyed explicitly or implicitly about the subject. It is a masculine domain and is a hard subject where their disciples should work more and more to develop deeper understanding on the subject. Since the students become the centre of the educational system, the traditional method of teaching may create so many problems for the teachers. These problems may cause the unnecessary stress and poor job satisfaction among themselves. So, it is the right time to conduct a survey type research for finding out the problems faced by biology teachers and the level of job satisfaction. It will also help to identify the remedial measures to solve the problems of the biology teachers and to improve their job satisfaction. Hence, the problem is the need of the hour. In the present study, the investigator intended to measure the "Problems faced by Postgraduate Biology Teachers in Cuddalore District and their Job Satisfaction".

OPERATIONAL DEFINITION OFTHE KEY TERMS

The following are the definition of the key terms.

Problems: By this, the investigator means a hindrance that disrupts the continuity of teaching process among the biology teachers.

Operationally, it is the score obtained by the postgraduate biology teachers on the Problem Scale to be prepared and validated by the investigator.

Postgraduate Biology Teachers: By 'Postgraduate Biology Teachers', the investigator means the teachers handling botany and zoology subjects at the higher secondary level.

Job Satisfaction: By 'Job Satisfaction', the investigator means the level of satisfaction expressed by the postgraduate biology teachers on their teaching profession. Operationally, it is the score obtained by the postgraduate biology teachers on the Job Satisfaction Inventory prepared by Saxena(1990).

OBJECTIVES

- To find the level of problems faced by postgraduate biology teachers in teaching.
- To find the level of job satisfaction by postgraduate biology teachers.
- To find the significance of difference between male and female postgraduate biology teachers in their problems in teaching and job satisfaction.
- To find the significance of difference between the postgraduate biology teachers from rural and urban areas in their problems in teaching and job satisfaction.
- To find the significance of difference among the postgraduate biology teachers working in government schools, aided schools and unaided schools in their problems in teaching and job satisfaction.
- To find the significance of relationship between the problems faced by postgraduate biology teachers in teaching and their job satisfaction.

NULL HYPOTHESES

1. There is no significant difference between male and female postgraduate biology teachers in their problems in teaching.
2. There is no significant difference between the postgraduate biology teachers from rural and urban areas in their problems in teaching.
3. There is no significant difference among the postgraduate biology teachers working in government schools, aided schools and unaided schools in their problems in teaching.
4. There is no significant difference between male and female postgraduate biology teachers in their job satisfaction.
5. There is no significant difference between the postgraduate biology teachers from rural and urban areas in their job satisfaction.
6. There is no significant difference among the postgraduate biology teachers working in government schools, aided schools and unaided schools in their job satisfaction.
7. There is no significant relationship between the problems faced by postgraduate biology teachers in teaching and their job satisfaction.

METHODS ADOPTED IN THE PRESENT STUDY

In the ,present study, the investigator intended to measure the "Problems faced by Postgraduate Biology Teachers in Cuddalore District and their Job Satisfaction". So this study aims at finding the problems faced by postgraduate biology teachers and the level of job satisfaction. The investigator has to gather data from a relatively large number of sample. Hence, the survey method is the suitable as well as best method.

POPULATION AND SAMPLE

The population of the present study consists of all the postgraduate biology teachers working in higher secondary schools located in Cuddalore.

In the present investigation, the investigator prepared and validated a scale on problems in teaching biology. To find out the level of job satisfaction, the investigator used 'Job Satisfaction Scale' standardized by Saxena (1990). The investigator discussed with postgraduate biology teachers regarding their problems faced during biology teaching. The

investigator prepared a scale consisting of 70 items after consulting the guide. The investigator included seven dimensions such as (1) Problems related to School, (2) Problem related to Lesson Plan Writing, (3) Problems related to Methods of Teaching, (4) Problems related to Nature of Teaching, (5) Problems related to Pupil's Response, (6) Problems related to Teaching Aid and Textbook, and (7) Problems related to Classroom Management and Discipline in the questionnaire.

VALIDITY & RELIABILITY OF THE TOOL

The draft tool was given to the professors of Annamalai University, Department of education for scrutiny. They studied the tool thoroughly and suggested some modifications on the content. Hence, content validity of the tool was established. For establishing reliability, the investigator used test-retest method. Both the scales were given to 20 postgraduate biology teachers. The Pearson Product Moment Correlation was used to find the reliability coefficient between the two sets of scores. It was found to be 0.84 for Scale on Problems in Teaching Biology. and 0.77 for Job Satisfaction Scale. Thus, the reliability of the tools was established.

STATISTICAL TECHNIQUES USED

The investigator for analyzing the data used following major statistical techniques. Percentage analysis; Mean; Standard Deviation; Test of significance (t-test) and co-efficient of correlation.

ANALYSIS AND FINDING OF THE STUDY

OBJECTIVE TESTING

1. To find the level of problems faced by postgraduate biology teachers in teaching.

Table 1

Level of Problems Faced by Postgraduate Biology Teachers in Teaching

Problems	Less		More	
	N	%	N	%
School	85	70.83	35	29.17
Lesson Plan Writing	75	62.50	45	37.50
Methods of Teaching	104	86.67	16	13.33
Nature of Teaching	103	85.83	17	14.17

--	95	79.17	25	20.83
Teaching Aid and Textbook	97	80.83	23	19.17
Classroom Management and Discipline	118	98.33	2	1.67
Total	73	60.83	47	39.17

It is revealed from the above table that 60.83% of postgraduate biology teachers faced less problems in teaching.

Moreover, they faced less problems in school (70.83%), lesson plan writing (62.50%), methods of teaching (86.67%), nature of teaching (85.83%), pupil's response (79.17%), teaching aid and textbook (80.83%), and classroom management and discipline (98.33%).

2. To find the level of job satisfaction of postgraduate biology teachers.

Table 2.

Level of Job Satisfaction of Postgraduate Biology Teachers

Variable	Low		High	
	N	%	N	%
Job Satisfaction	35	29.17	85	70.83

From the above table, it is found that the 70.83% of postgraduate biology teachers have high level job satisfaction.

HYPOTHESIS TESTING

Null Hypothesis 1

There is no significant difference between male and female postgraduate biology teachers in their problems in teaching.

Table 3

Difference in Problems Faced by Postgraduate Biology Teachers in Teaching with regard to Gender

Problems	Gender	N	Mean	SD	Calculated	Table Value	Remark
School	Male	63	0.79	1.45	1.48	1.98	NS
	Female	57	1.23	1.74			
	Male	63	2.56	0.88			

Lesson Plan Writing	Female	57	2.42	0.89	0.84	1.98	NS
Methods of Teaching	Male	63	2.87	0.73	0.03	1.98	**NS**
	Female	57	2.88	0.68			
Nature of Teaching	Male	63	0.37	0.97	0.13	1.98	NS
	Female	57	0.39	0.84			
Pupils Response	Male	63	0.73	1.07	0.24	1.98	NS
	Female	57	0.68	1.00			
Teaching Aid and Textbook	Male	63	2.46	1.43	1.52	1.98	NS
	Female	57	2.93	1.90			
Classroom Management and Discipline	Male	63	0.06	0.30	1.41	1.98	**NS**
	Female	57	0.16	0.41			
Total	Male	63	9.84	3.84	1.15	1.98	**NS**
	Female	57	10.68	4.17			

From the above table, it is found that the calculated 't' values are less than the table value at 0.05 level of significance, the null hypothesis is accepted.

Null Hypothesis 2

There is no significant difference between the postgraduate biology teachers from rural and urban areas in their problems in teaching.

Table4

Difference in Problems Faced by Postgraduate Biology Teachers in Teaching with regard to Locality of Residence

Problems	Locality of Residence	N	Mean	SD	Calculated t Value	Table Value	Remark
School	Rural	98	0.97	1.58	0.41	1.98	NS
	Urban	22	1.14	1.75			
Lesson Plan Writing	Rural	98	2.50	0.90	0.24	1.98	NS
	Urban	22	2.45	0.80			
Methods of Teaching	Rural	98	2.89	0.73	0.48	1.98	NS
	Urban	22	2.82	0.59			
Nature of Teaching	Rural	98	0.43	0.95	1.75	1.98	NS
	Urban	22	0.14	0.64			
Pupils Response	Rural	98	0.76	1.08	1.26	1.98	NS
	Urban	22	0.50	0.80			
Teaching Aid and Textbook	Rural	98	2.63	1.65	0.65	1.98	NS

	Urban	22	2.91	1.82			
Classroom Management and Discipline	Rural	98	0.12	0.39	1.28	1.98	NS
	Urban	22	0.05	0.21			
Total	Rural	98	10.30	4.04	0.32	1.98	NS

From the above table, it is found that the calculated 't' values are less than the table value at 0.05 level of significance, the null hypothesis is accepted.

NulI Hypothesis 3

There is no significant difference among the postgraduate biology teachers working in government schools, aided schools and unaided schools in their problems in teaching.

Table 5

Difference in Problems Faced by Postgraduate Biology Teachers in Teaching with regard to Type of School

Problems	Type of School	Mean	SSb	SSw	df	Calculated FValue	Table Value	Remark
School	Government	0.90	0.87	305.13	2, 117	0.17	3.07	NS
	Aided	1.07						
	Unaided	1.00						
Lesson Plan Writing	Government	2.58	1.34	90.65	2, 117	0.87	3.07	NS
	Aided	2.41						
	Unaided	3.00						
Methods of Teaching	Government	3.04	3.47	55.66	2, 117	3.65	3.07	S
	Aided	2.74						
	Unaided	3.50						
Nature of Teaching	Government	0.44	0.58	97.54	2, 117	0.35	3.07	NS
	Aided	0.34						
	Unaided	0.00						
Pupils Response	Government	0.80	2.23	124.56	2, 117	1.05	3.07	NS
	Aided	0.62						
	Unaided	1.50						
Teaching Aid and Textbook	Government	2.52	3.60	332.36	2, 117	0.63	3.07	NS
	Aided	2.82						
	Unaided	2.00						

Classroom Management and Discipline	Government	0.20	0.72	14.87	2, 117	2.85	3.07	NS
	Aided	0.04						
	Unaided	0.00						
Total	Government	10.48	6.64	1903.35	2, 117	0.20	3.07	NS
	Aided	10.04						
	Unaided	11.00						

From the above table, it is found that the calculated 'F' values are less than the table value at 0.05 level of significance, the null hypothesis is accepted in the case of total and in the school, lesson plan writing, nature of teaching, pupils' response, teaching aid and textbook, and classroom management and discipline.

But, the calculated 'F' values are greater than the table value at 0.05 level of significance, the null hypothesis is rejected in the case of the dimension - methods of teaching. The unaided school teachers have more problems in methods of teaching.

Null Hypothesis 4

There is no significant difference between male and female postgraduate biology teachers in their job satisfaction.

Table 6

Difference in Job Satisfaction of Postgraduate Biology Teachers with regard to Gender

Gender	N	Mean	SD	Calculated tValue	Table Value	Remark
Male	63	24.41	0.93	1.49	1.98	NS
Female	57	24.16	0.94			

From the above table, it is found that the calculated 't' value is less than the table value at 0.05 level of significance, the null hypothesis is accepted.

Null Hypothesis 5

There is no significant difference between the postgraduate biology teachers from rural and urban areas in their job satisfaction.

Table 7

Difference in Job Satisfaction of Postgraduate Biology Teachers with regard to Locality of Residence

Locality of Residence	N	Mean	SD	Calculated tValue	Table Value	Remark
Rural	98	24.28	0.95	0.41	1.98	NS
Urban	22	24.36	0.90			

From the above table, it is found that the calculated 't' value is less than the table value at 0.05 level of significance, the null hypothesis is accepted.

Null Hypothesis 6

There is no significant difference among the postgraduate biology teachers working in government schools, aided schools and unaided schools in their job satisfaction.

Table 8

Difference in .Job Satisfaction of Postgraduate Biology Teachers with regard to Type of School

Type of School	Mean	SSb	SSw	df	Calculated FValue	Table Value	Remark
Government	24.18	1.10	103.69	2,117	0.62	3.07	NS
Aided	24.37						
Unaided	24.50						

From the above table, it is found that the calculated 'F' value is less than the table value at 0.05 level of significance, the null hypothesis is accepted.

Null Hypothesis 7

There is no significant relationship between the problems faced by postgraduate biology teachers in teaching and their job satisfaction.

Table 9

Relationship between Problems Faced by Postgraduate Biology Teachers in Teaching and their Job Satisfaction

Problems	N	Calculated rValue	Table Value	Remark

School	120	-0.676	0.180	S
Lesson Plan Writing	120	-0.613	0.180	S
Methods of Teaching	120	0.221	0.180	S
Nature of Teaching	120	-0.317	0.180	S
Pupils Response	120	-0.623	0.180	S
Teaching Aid and Textbook	120	-0.548	0.180	S
Classroom Management and Discipline	120	-0.218	0.180	S
Total	120	-0.848	0.180	S

From the above table, it is found that the calculated 'r' values are greater than the table value at O.05 level of significance, the null hypothesis is rejected.

INTERPRETATIONS

Significant difference is found among the postgraduate biology teachers working in government schools, aided schools and unaided schools in their problems in teaching related to methods of teaching.

The unaided school teachers have more problems in methods of teaching. This may be due to the fact that majority of the private school managements do not bother about the qualifications of their teachers. They do not pay enough for the qualified teachers. So, they appoint some unqualified teachers and they do not know about the different methods of teaching. Hence, they differ significantly.

The problems faced by postgraduate biology teachers in teaching are significantly correlated with their job satisfaction. The reason behind this finding is that the teachers with more problems in teaching profession are not much involved in their profession. When they are not involved wholeheartedly, their level of job satisfaction is somewhat low or even poor. Hence, the variable -problems in teaching, is the influencing factor for the variable - job satisfaction.

SUGGESTIONS FOR FURTHER INVESTIGATION

The investigator would like to suggest the following research topics for further investigation:

- The same study can be carried out in all the districts of Tamilnadu.
- The same study can be carried out on the other subject teachers.

- A study on the problems in using modern teaching methods faced by PG teachers and their teaching competence.
- A critical study on the job oriented problems faced by UG and PG teachers in related to their professional commitment.
- A study on the selected teacher characteristics hold by BT Assistants in terms of their personality traits.

CONCLUSION

The investigator would like to recommend the following for improving their job satisfaction and solving the problems of postgraduate biology teachers: The government should announce the travelling allowance for the teachers who are extensively travelling for their teaching profession.

Otherwise, the government should arrange quarter facilities for these teachers to reduce their traveling time, which in turn, their job satisfaction may also improve. The teachers working in the higher secondary schools should support the fresher's or newly appointed teachers by all means.

This moral as well as technical support may develop good rapport among the teacher community. This may also improve their job satisfaction. The government should provide more financial assistance for improving the infrastructural facilities like well-equipped laboratories, lavatories, library, refreshment rooms for the shake of the teachers. This will reduce the job related stress among the teachers. The government may implement techno-based classrooms at the higher secondary level. In these classrooms, multimedia projectors, speakers, white boards with markers, highlighting pens, optical lights for pointing the matters in the boards etc. By using these things, the teacher can make the classrooms in a lively manner and the taught also feel more convenient in the learning of subject matter. CDs, working and non-working models for explaining the biological concepts, encyclopedia of science and technology should be purchased and handed over the biology teachers. While using these innovative educational resources, the teacher's teaching method may more effective. The students also learn the matter with enthusiasm. Since the teachers are social reformers and shouldering the responsibilities of making the future citizens, they have to play a vital role in educating the younger generation.

Realizing this fact, the teachers should involve themselves and work more and more for the benefit of the younger generation.

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Research Article

Creativity of Eleventh Standard Students in Chennai

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Abstract

The purpose of the study is to find out the level of creativity and to fried whether there exists any significant difference between the boys and girls of the eleventh standard students at saidapet, Chennai. The sample consists of350 students of which 159 boys and 191 girls selected by random sampling technique. The tool creativity inventory by Robert Epstein was adopted. Mean, standard deviation, t-test and F-test were the statistical techniques employed. The findings of the study show that there is no significant difference between the mean scores of boys and girls based on their creativity.

Keywords: Creativity, Eleventh Standard Students, Gender Differences, Chennai, Creativity Inventory, Educational Research.

INTRODUCTION

Creativity is a concept closely related with talent. It has been considered in terms of process, products and person. Prosperity of a nation and human resource development are largely dependent on development of talent and creativity among individuals. It involves adaptability and flexibility of thought. It is mankind's greatest asset. In educational system creativity in students is mostly neglected. Teachers in the school are so busy in their academic routine. Hence they find little time to think of Cognitive area of creativity and the means to foster it. In dealing with young children, especially at the higher secondary level, the focus should be on the process of developing and generating original ideas, which are seen as the basis of creativity.

NEED AND SIGNIFICANCE OFTHE STUDY

Creativity is a function of knowledge, imagination and evaluation which comes into play in different ways in different situation. It sensitizes our problem deficiencies, gaps in knowledge, besides identifying difficulties, and finding solutions. During this period students have greater curiosity to search for new things. So, it is very essential to investigate the creativity of the students studying at higher secondary level. Through education one develops a right attitude and the ability to innovate. True education lies to the extent in which students are trained to evolve the originals in them. Children tend to be naturally creative, but their creativity is dampened as a result of our authoritarian system of education. Hence the present study captioned as "CREATIVITY OF ELEVENTH STANDARD STUDENTS IN CHENNAI"

OBJECTIVES OF THE STUDY

The objectives of the studies are as follows:

1. To measure the levels of creativity of eleventh standard students.
2. To find out the difference on creativity of eleventh standard students based on
   - Gender
   - Medium of instruction
   - Location of the school
   - Type of school and
   - Order of birth

HYPOTHESES

1. The level of creativity of the eleventh standard students is average.
2. There is no significant difference between the mean scores of eleventh standard students' creativity based on
   - Gender
   - Medium of instruction
   - Location of the school
   - Type of school and
   - Order of birth

METHODOLOGY OF THE STUDY

The study involves descriptive research. The sample consists of350 students of which 110 from government schools, 115 from government aided schools and remaining 125 from matriculation schools. The sample includes 191 girls and 159 boys. They were selected by adopting random sampling technique.

To test the hypotheses "creativity inventory" (Robert Epstein, 2007) was adopted. Creativity inventory consists of 40 items of which 31 positive and 9 negative items scoring from 5 to 1. The reliability of the tool was computed to be 0.76, through split-half method.

ANALYSIS AND INTERPRETATION OF DATA

The levels of creativity of the eleventh standard students were given below.

TABLE:1.1

THELEVELOFCREATIVITYOFELEVENTHSTANDARDSTUDENTS

Level	Frequency	Percentage
High (Above 148)	82	23.24
Average Between 147 & 148)	183	52.28
Low (Below 147)	85	24.28

From the table 1.1, it can be derived that 23.24% of the eleventh standard students have high level of creativity, 52.28% of them have average level of creativity and the rest 24.28% belong to the low level of creativity. The overall level of creativity of eleventh standard students is 148.05 and it falls under average level.

To test the hypothses, t-test and F-testwere calculated.

Hypothesis:1

There is no significant difference between the mean scores on creativity of eleventh standard students with regard to their gender..

TABLE:1.2

DIFFERENCE BETWEEN CREATIVITY OF ELEVENTH STANDARD STUDENTS BASED ON THEIR GENDER

Variable	Boys (N=l59)		Girls (N=l91)		't' Value	LOS
	Mean	S.D	Mean	S.D		
Creativity	148.13	6.6	147.43	5.02	1.34	NS

(At 5% level of significance the table value of 't' is 1.96)

From the above table (1.2) it is cleared that the mean scores of creativity of eleventh standard boys (148.13) are higher than girls (147.43). Based on the 't'values (1.34) calculated for creativity between boys and girls there is no significant difference between them even at 0.05 level. Hence, the hypothesis is accepted.

Hypothesis: 2

There is no significant difference between the mean scores on creativity of eleventh standard students with regard to the medium of instruction.

TABLE: 1.3

DIFFERENCE BETWEEN CREATMTY OF ELEVENTH STANDARD STUDENTS BASED ON HE MEDIUM OF INSTRUCTION

Variable	Tamil medium (N=200)		English medium (N=150)		't' Value	LOS
	Mean	S.D	Mean	S.D		
Creativity	148.14	82	147.23	89	1.73	NS

From the above table (1.3) it is cleared that the mean scores of creativity of eleventh standard students studying in Tamil medium (148.14) schools is higher than the students studying in English medium (147.23) schools. Based on the 't' values (1.73) calculated for creativity of eleventh standard students between Tamil and English medium schools, there is no significant difference between them even at 0.05 level. Hence, the hypothesis is accepted.

Hypothesis: 3

There is no significant difference between the mean scores on creativity of eleventh standard students with respect to the locality of school.

TABLE: 1.4

DIFFERENCE BETWEEN CREATIVITY OF ELEVENTH STANDARD STUDENTS BASED ON THE LOCATION OF THE SCHOOL

Variable	RURAL (N:100)		URBAN (N:250)		't' Value	LOS
	Mean	S.D	Mean	S.D		
Creativity	148.33	4.6	147.52	5.04	1.41	NS

From the above table (1.4) it is cleared that the mean scores of creativity of eleventh standard students studying at rural schools (148.33) is higher than urban (147.52) schools. Based on the 't' values (1.41) calculated for creativity of eleventh standard students studying in rural and urban schools, there is no significant difference between them even at0.05level. Hence, the hypothesis is accepted.

Hypothesis: 4

There is no significant difference between the mean scores on creativity of eleventh standard students based on the type of school.

TABLE: 1.5

DIFFERENCE AMONG CREATIVITY OF ELEVENTH STANDARD STUDENTS BASED ON THER TYPE OF SCHOOL

Variable	Govt.(N=200)		Aided (N=50)		Private(N=lO0)		'F' Value	LOS
	Mean	S.D	Mean	S.D	Mean	S.D		
Creativity	148.14	8.2	147.64	.9.4	147.03	8.8	1.76	NS

From the above table (1.5) it is observed that the mean scores of creativity of eleventh standard students studying under government schools (148.14) is higher than government aided (147.64) and private (147.03). Based on the 'F' values (1.76) calculated for creativity among eleventh standard students of government, government aided and private schools, there is no significant difference among them even at 0.05 level. Hence, the hypothesis is accepted.

Hypothesis: 5

There is no significant difference between the mean scores on creativity of eleventh standard students with regard to their order of birth.

TABLE: 1.6

DIFFERENCE AMONG CREATIVITY OF ELEVENTH STANDARD STUDENTS BASED ON THE ORDER OF BIRTH

Variable	1 (N:151)		2(N=l60)		3 and above (N=39)		'F' Value	LOS
	Mean	S.D	Mean	S.D	Mean	S.D		
Creativity	147.99	6.1	147.66	5.02	147.21	5.23	0.45	NS

From the above table (1.6) it is noted that the mean scores of creativity of eleventh standard students whose birth order one (147.99) is higher than birth order two (147.66) and birth order three and above (147.21). Based on the 'F' values (1.76) calculated for creativity among eleventh standard students' birth order, there is no significant difference among them even at 0.05 level. Hence, the hypothesis is accepted.

MAJOR FINDINGS

- Out of 350 eleventh standard students, 23.24% of them had high level of creativity, 52.28% of them had moderate level and the remaining 24.28% of them had low level of creativity. More than half of the students had average (148.05) level of creativity in Chennai. It also falls under average level.

- The mean scores of boys and girls of eleventh standard students were 148.13 and 147.43 respectively and they had no significant difference between them. The calculated t-values (1.34) are less than the table value (1.96). Hence, it is found that there is no significant difference on creativity based on the gender.

- The mean scores of eleventh standard students' studying in Tamil medium schools and English medium schools based on creativity were 148.14 and 147.23 respectively and they had no significant difference between them. The calculated t-values (1.73) are less

than the table value (1.96). It was found that there is no significant difference on creativity of the eleventh standard students irrespective of the medium of instruction.

- The mean scores of eleventh standard students' creativity based on the locality of the school, i.e urban and rural were 147.52 and 148.33 respectively and they had no significant difference between them. The calculated t-values (1.41) are less than the table value (1.96). Hence, it is found that there is no significant difference on creativity based on the locality of the school.

- The mean scores of eleventh standard students' studying under different schools namely government, government aided and private were 148.14, 147.64 and 147.03 respectively and they had no significant difference among them. Based on F-values (1.76), creativity of eleventh standard students had no significant difference based on the type of schools.

- The mean scores of eleventh standard students' creativity based on their order of birth viz, 1st order, 2nd order and 3rd and above were 147.99, 147.66 and 147.21 respectively and they had no significant difference among them. Based on the F-values (0.45), it was found that there is no significant difference on creativity of eleventh standard students based on their order of birth.

EDUCATIONAL IMPLICATIONS

The following are some of the major recommendations to improve the creativity of eleventh standard students.

- Teachers should organize science club in schools, there by conducting mathematics seminars and mathematics exhibitions. Teachers should make use of the laboratory and study materials to impart concrete science knowledge in students.

- The teachers should create an environment conducive to full growth and development of the divergent thinking abilities of children.
- Group and team activities may be included in classroom teaching. Students hailing from urban areas excelled in their performance in creativity. This finding should motivate educators in rural schools to engage students in activities that would inculcate creative and critical thinking of students. The goal should be achieved through peer discussions and debates so that their thinking and creative skills could be sharpened.

These are the major points to be considered in the harmonious development of creativity of eleventh standard students.

CONCLUSION

The present study gives the importance of creativity of eleventh standard students. This plays an essential role in creating intellectual minds which will help in promoting the country in future. And this study is sure to find usefulness in the field of education and findings of the study can serve as a data base for further research.

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Research Article

A Study on the Problems Faced by Higher Secondary School Students in Learning Computer Science

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Abstract

Computer Science is a subject have difficult and mysterious science, because of the numerous programs, flowcharts and source codes which it employs. Computer Science provides powerful ways of exploring, investigating and understanding the universe. In the present study, the researcher tries to analyze the problems faced by the Higher Secondary School students in learning Computer Science. The present study proves there are positive correlation between the way of Computer science learning and its variables.

Keywords: Computer Science, Higher Secondary Students, Learning Problems, Correlation Study, Programming, Flowcharts, Source Codes, Educational Challenges, Student Learning, Educational Research

INTRODUCTION

Computer Science is not a subject that is to be taught but it helps in carrying day-to-day activities successfully. A person who studies Computer Science not only achieves training and perfection but also a general professional intelligence. Usually the average score of Computer Science in a school or a state is low. It is a well-established fact that there is no other subject matter area the Higher Secondary School students suffered from erratic and unwise guidance than in the field of Computer Science. Computer Science is considered as a difficult and mysterious science, because of the numerous programs, flowcharts and source codes which it employs.

Problems with Computer Science differ from pupil to pupil. Teachers should study the difficulties of pupils and change the mode of instruction. In addition, teachers should adopt different techniques to solve the problems of pupils in Computer Science. Computer Science can provide pupils with powerful ways of exploring, investigating and understanding the world. The potential to apply the skills of investigating relationships and establishing connections reflects the importance of the subject across the curriculum during the school years. There are certain variable factors, which are of great importance in learning Computer Science. Only a few attempts have been made by researchers to understand the problems of pupils of Higher Secondary Schools in learning Computer Science. In the present study, the investigator tries to analyze the problems faced by the Higher Secondary School students in learning Computer Science.

STATEMENT OFTHE PROBLEM

The research problem is entitled as **"A STUDY ON THE PROBLEMS FACED BY IDGHER SECONDARY STUDENTS IN LEARNING COMPUTER SCIENCE".**

OBJECTIVES

- To find out the problems faced by Higher Secondary students in learning Computer Science.
- To find the level of problems faced by Higher Secondary students in content, teaching, examination, learning and subject.
- To investigate the problems faced by Higher Secondary students in learning Computer Science with respect to the variables Sex, Locality and Religion.

HYPOTHESES

The major hypotheses of the study are the following:-

- There will be a significant relationship between problems faced by Higher Secondary students in learning Computer Science with respect to the variables sex, locality and religion.

- There will be a significant relationship between problems faced by Higher Secondary students in learning Computer Science with respect to content, teaching and examination.

METHODOLOGY

In the present study, the investigator has selected normative survey method.

TOOLS

The investigator, depending on the nature of study, used the following tools for data collection.

A. General information sheet

B. PICTELS (Problems in Content, Teaching, Examination, Leaming and Subject)

SAMPLE

The sample of the present study consists of 400 Higher Secondary School students of Kanyakumari district. The investigator has adopted simple random sampling method. While selecting the subjects due representations where given to factors such as Sex, Locality and Religion.

ANALYSIS

The investigator collected the data by using the tool PICTELS. The statistical techniques mean, standard deviation and t-test were used for analyzing the data. The details of the test are given in the following tables:-

Table 1:

There is no significant difference between male and female Higher Secondary students faced problems in learning Computer Science with respect to Content, Teaching and Examination

Sl.No	Section	Group	N	Mean	S.D	t value	Level of significance
1	A(Content)	Male Female	180 220	6.80 6.19	2.32 2.26	2.65	Significant at 0.01

2	B(Teaching)	Male Female	180 *220*	5.60 5.52	3.60 3.70	0.22	Not Significant
3	C(Examination)	Male Female	180 220	5.39 5.90	3.41 4.21	1.34	Not Significant

Table 2:

There is no significant difference between Rural and urban areas Higher Secondary students faced problems in learning Computer Science with respect to Content, Teaching and Examination.

Sl.No	Section	Group	N	Mean	S.D	t value	Level of significance
1	A (Content)	Rural Urban	192 208	6.78 6.05	5.17 4.43	1.52	Not Significant
2	B (Teaching)	Rural Urban	192 208	5.51 5.52	3.56 3.70	0.028	Not Significant
3	C (Examination)	Rural Urban	192 208	7.17 6.11	2.03 2.17	2.76	Significant at 0.01

Table 3:

There is no significant difference between Hindu and Christian religions Higher Secondary students faced problems in learning Computer Science with respect to Content, Teaching and Examination .

SI.No	Section	Group	N	Mean	S.D	t value	Level of significance
1	A(Content)	Hindu Christian	160 168	5.62 5.47	3.82 3.37	0.05	Not Significant
2	B(Teaching)	Hindu Christian	160 168	7.92 7.31	2.11 2.07	2.94	Significant at 0.01
3	C(Examination)	Hindu Christian	160 168	5.50 5.67	3.51 3.96	0.41	Not Significant

Table 4:

There is no significant difference between Hindu and Muslim religions Higher Secondary students faced problems in learning Computer Science with respect to Content, Teaching and Examination

SI.No	Section	Group	N	Mean	S.D	t value	Level of significance
1	A(Content)	Hindu Muslim	160 72	7.92 6.94	2.43 2.83	1.80	Not Significant
2	B(Teaching)	Hindu Muslim	160 72	5.64 5.47	3.41 3.37	0.35	Not Significant
3	C(Examination)	Hindu Muslim	160 72	*5.50* 5.42	.3.51 3.69	0.16	Not Significant

Table 5:

There is no significant difference between Christian and Muslim religions Higher Secondary students faced problems in learning Computer Science with respect to Content, Teaching and Examination

SI.No	Section	Group	N	Mean	S.D	t value	Level of significance
1	A(Content)	Hindu Muslim	160 72	6.42 6.06	4.78 7.51	0.56	Not Significant
2	B(Teaching)	Hindu Muslim	160 72	5.62 5.47	3.82 3.37	0.30	Not Significant
3	C(Examination)	Hindu Muslim	160 72	5.67 5.42	3.39 3.69	0.47	Not Significant

RESULTS AND DISCUSSION

The results of this study indicate there is some relationship between learning of computer science and variables such as content and gender. The study also show positive correlation between religion and teaching of Computer science. Some researchers indicated that limited experience with computers might increase the level of students anxiety, which may affect students' academic performance. (Hedi, O'Neil & Hansen, 1973; Johnson & White, 1980; Johnson & Johnson, 1981). The Results of many studies exploring other factors such as age (Loyd & Gressard, 1984) and experience demonstrate similar contradictions. Francies (1988) studied the impact of educational level, gender, age and computer experience on computer

attitude. The sample of the study was 30 students. The results show that only the educational level was not a significant factor in relation to computer anxiety. Dyck and Smither (1995) studies the levels of computer anxiety and computer experience.

Subjects completed a demographic and computer experience questionnaire and two computer anxiety scales. Results indicate a negative relationship between computer anxiety and computer experience, more over males have less anxiety as compared to females.

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