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**COLLEGE OF EDUCATION (AUTONOMOUS)**  
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## ENVIRONMENTAL ETHICS AMONG B.ED. TEACHER TRAINEES IN CHENNAI DISTRICT

1

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### INTRODUCTION

“The most important environmental issue is one that is rarely mentioned, and that is the lack of a conservation ethics in our culture”

- **Gaylord Nelson**

Educating Environmental ethics to teacher trainees is a key ingredient in the recipe to “**Save the Earth**”.

Environmental Ethics is something that every person should be well versed with. The principles of ecology and fundamentals of environment can really help create a sense of earth-citizenship and a sense of duty of care for the earth and its resources and to manage them in a sustainable way so that teacher trainees inherit a safe and clean planet to live on.

### STATEMENT OF THE PROBLEM

Environmental Ethics among B.Ed. Teacher Trainees in Chennai.

### OPERATIONAL DEFINITIONS OF KEY TERMS

#### Environmental ethics

Ethics attempts to establish a basis for judging good or bad and right or wrong. Environmental ethics is the branch of ethics that examines questions of moral right and wrong relating to the natural environment.

In the present study, Environmental ethics refers to the moral values and behavioural action that an individual follows to conserve, preserve and manage the natural environment.

Environmental Ethics Scale (EES) developed by Haseen Taj (2001) is used in the study not only to assess the existing social responsibility and environmental ethics of individuals but also to modify and develop the ethics in case of lack of concern and ethics towards environment among individuals and society collectively.

## **B.Ed. Teacher Trainees**

Mehndiratta's Dictionary of education refers, 'Student teacher is a student in professional teacher education course'. In this study, it refers to the sample taken from B.Ed., Teacher Trainees studying in different Teacher Education Institution in Chennai District in the Academic year of 2018-2020.

## **OBJECTIVES OF THE STUDY**

- To examine the difference in Environmental ethics of Teacher Trainees owing to difference in Gender, Marital Status and Region.

## **DELIMITATIONS OF THE STUDY**

The present investigation has the following delimitations

- The study was limited to B.Ed. College in Chennai district only.
- The study included two-government colleges, two government aided colleges and two private colleges.
- The sample was limited to 300 colleges students
- Standardized test materials alone were used.
- The study was restricted only to Tamil medium and English Medium students

## **HYPOTHESIS – WISE ANALYSIS**

### **Hypothesis 1**

There is no significant difference in Environmental Ethics of Teacher Trainees owing to difference in Gender.

## **DESIGN OF THE STUDY**

The present study has been designed as a descriptive study.

## **TOOLS USED FOR THE STUDY**

- Environmental ethics scale (EES) developed by **Haseen Taj** (2001)
- Personal data sheet prepared by the researcher

## **SELECTION OF THE SAMPLE**

The sample consisted of 300 students teachers drawn from Government, Government-aided and Private Colleges in and around Chennai at random.

## **STATISTICAL TREATMENT OF DATA**

After the data was collected, it was subjected to statistical test of significance using SPSS package for testing the hypothesis formulated by the investigator. The major functional variable for analysis and interpretation of the data include Spiritual Intelligence of Teacher Trainees and the personal variables include Gender, Marital Status and Region. The following statistical technique was used for analysis and interpretation of data.

## **CRITICAL RATIO**

Critical ratio was computed to test the difference in Environment ethics with respect to Gender, Marital Status and Region.



**Table 1: Difference in Environmental Ethics of Teacher Trainees owing to difference in Gender.**

Variable	Category	N	Mean	S. D	Std. Error	t-value	Df	p-value and significant level
Gender	Male	150	113.28	14.655	1.197	0.625	298	0.533 P > 0.05 NS
	Female	150	112.16	16.866	1.377			

From the above Table 1, the  $p$ -value is **0.533** which is greater than  $p$ -value (0.05) at 95% level of confidence and the hypothesis which assumed that there is no significant difference in Environmental Ethics of Teacher Trainees due to gender is accepted. Hence we infer that there is no significant difference in Environmental ethics owing to Gender among teacher trainees.

### Hypothesis 2

There is no significant difference in Environmental Ethics of Teacher Trainees owing to difference in Marital Status.

**Table 2: Difference in Environmental Ethics of Teacher Trainees owing to difference in Marital Status.**

Variable	Category	N	Mean	S. D	Std. Error	t-value	df	p-value and significant level
Marital Status	Married	45	115.69	15.604	2.326	1.375	298	0.170 P > 0.05 NS
	Unmarried	255	112.16	15.787	0.989			

From the above Table 2, the  $p$ -value is 0.170 which is greater than the  $p$ -value (0.05) at 95% level of confidence and the hypothesis which assumed that there is no significant difference in Environmental Ethics of Teacher Trainees due to Marital Status is accepted. Hence we infer that there is no significant difference in Environmental Ethics owing to Marital Status among Teacher trainees.

### Hypothesis 3

There is no significant difference in Environmental Ethics of Teacher Trainees owing to difference in Region.

**Table 3: Difference in Environmental Ethics of Teacher Trainees owing to difference in Region**

Variable	Category	N	Mean	S. D	Std. Error	t-value	df	p-value and significant level
Region	Urban	198	113.70	15.797	1.123	1.520	298	0.130 P > 0.05 NS
	Rural	102	110.78	15.654	1.550			

From the above Table 3, the *p*-value is 0.130 which is greater than the *p*-value (0.05) at 95% level of confidence and the hypothesis which assumed that there is no significant difference in Environmental Ethics of Teacher trainees due to region is accepted. Hence we infer that there is no significant difference in Environmental Ethics Owing to Region among teacher Trainees.

#### MAJOR FINDINGS OF THE STUDY

- There is no significant difference in Environmental Ethics of Teacher Trainees owing to difference in Gender.
- There is no significant difference in Environmental Ethics of Teacher Trainees owing to difference in Marital Status.
- There is no significant difference in Environmental Ethics of Teacher Trainees owing to difference in Region.
- **Social Values-** Love, Compassion, Tolerance and Justice which are the basic teachings of most of religions need to be women into environmental education. These are the values to be nurtured so that all forms of life and the biodiversity on this earth are protected.
- **Cultural and religious values-** These are the values enshrined in Vedas like (Yajur Veda) i.e. **“You give me and I give you”** which emphasizes that man should not exploit nature without nurturing her, cultural customs and rituals in many ways teach to perform such functions as would protect and nurture nature and respect every aspect of nature, treating them as sacred be it rivers, earth, mountains or forests.

#### EDUCATIONAL IMPLICATIONS OF THE STUDY

- **Human Values** - Preparing curriculum and textbook for Environmental Ethics in education can play an important role in building positive attitudes towards teacher trainees. The basic human value ‘Man in Nature’ needs to be infused through the same.
- **Ethical values** - Environmental Education should encompass the ethical values of earth centric rather than human-centric world view. The educational system should promote

the earth citizenship thinking. Instead of considering human being as the supreme creation one must also think of the welfare of the earth.

- The above mentioned human values, socio-cultural, ethical, and religious values incorporated into environmental education can go a long way in attaining the goals of sustainable development and environmental conservation value based environmental education can bring a total transformation of

students' mind-set attitudes and lifestyles.

## CONCLUSION

The purpose of the present investigation was to study the Environmental Ethics among B.Ed. Teacher Trainees with reference to some selected personal variables and the study indicated significant relationship among the variables. The study may find some useful in the field of education and the findings of this study may serve as a data base for the future research.

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## **AWARENESS ON MOOCs - SWAYAM AMONG STUDENT TEACHERS WITH RESPECT TO SELECTED VARIABLES**

**2**

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### **INTRODUCTION**

SWAYAM is India's own MOOCs (Massive Open Online Course) platform, which offers free online courses on most, the discipline to students/learners. SWAYAM presents a novel educational opportunity to expand the horizons of information. These courses are developed by reputed teachers within the country and are available free of cost. By integrating SWAYAM MOOCs with conventional education, the learning outcomes of the scholars are expected to enhance in coming days. Courses delivered through SWAYAM are available for free to the learners; however learners wanting a SWAYAM certificate should register for the proctored exams that come at an appropriate fee.

### **NEED AND SIGNIFICANCE OF THE STUDY**

Self-paced learning and technology-based learning is the way forward for education. By MOOCs-SWAYAM

courses, student-teachers can enhance their teaching learning skills. The attainment of the objectives of SWAYAM portal depends on awareness about this portal among the possible users and its scope in enhancing lifelong learning skills. Although Government of India, Ministry of Human Resource Development (MHRD) is making all efforts to popularize the SWAYAM portal, there's a necessity to measure the degree of 'SWAYAM MOOC's' awareness among the target group and also the flexibility of the target users to use the portal.

### **OBJECTIVES OF THE STUDY**

1. To ascertain the level of MOOCs-SWAYAM awareness among the student-teachers.
2. To find out the significant mean difference among the student-teachers regarding awareness on MOOCs-SWAYAM with respect to gender, locality, age group and discipline of degree.

## **HYPOTHESES OF THE STUDY**

1. There is an inadequate awareness on MOOCs-SWAYAM among student-teachers.
2. There is no significant mean difference in awareness on MOOCs-SWAYAM among student-teachers with respect to gender.
3. There is no significant mean difference in awareness on MOOCs-SWAYAM among student-teachers with respect to locality.
4. There is no significant mean difference in awareness on MOOCs-SWAYAM among student-teachers with respect to age group.
5. There is no significant mean difference in awareness on MOOCs-SWAYAM among student-teachers with respect to discipline of degree.

## **METHODOLOGY**

### **Population and Sample of the Study**

The area chosen for the study is Coimbatore district, Tamil Nadu. The population is first and second year student-teachers of various Colleges of Education across Coimbatore. The sample taken is 198 first and second year student-teachers.

### **Sampling Technique**

The research investigator adopted convenience sampling technique to pick the sample from total population.

A convenience sample is a sort of non-probability sampling method where the sample is taken from a group of individuals easy to contact or to achieve.

### **Data collection procedure**

A MOOCs-SWAYAM Awareness Scale was constructed by the researcher which consisted of two parts. First part comprised the demographic variables like gender, locality, age group, discipline of degree, study preference. Second part comprised 32 items relating to the MOOCs-SWAYAM awareness level items.

### **STATISTICAL ANALYSIS**

The responses were coded and entered using Microsoft Excel and statistical analyses were done with the help of SPSS (Statistical Package for Social Sciences) 20.0 Version. Mean and Standard Deviation were calculated for all the variables and then t-test was calculated. The one way ANOVA procedure was employed to find out the significant difference with respect to locality, age group, discipline of degree, family annual income and study preference.

## **FINDINGS OF THE STUDY**

### **HYPOTHESIS - 1**

There is an inadequate awareness on MOOCs-SWAYAM among Student-Teachers.

**Table 1: Analysis of level of MOOCs-SWAYAM awareness among the Student-Teachers**

S. No.	Level of MOOCs-SWAYAM Awareness	Interval Value	Frequency	Percentage
1	High	160-105	90	45.46
3	Average	104-77	59	29.80
4	Low	76-32	49	24.74

The data given in the Table 1 reveals that the Student-Teachers of Coimbatore District have high level of Awareness on MOOCs-SWAYAM. The above table shows that 45.46% of the student teachers have high level, 29.80 percent of them have moderate level and 24.75 % of them have low level of awareness on MOOCs-SWAYAM. From the observation, 45.46% of student-teachers have high level of

awareness on SWAYAM due to immense efforts taken by the Government of India.

### HYPOTHESIS – 2

#### Testing Null Hypothesis: 1

$H_0^1$ : There is no significant mean difference in MOOCs-SWAYAM awareness among the student-teachers with respect to Gender.

**Table 2: Analysis of significant mean difference between male and female student-teachers**

Variable	Category	N	Mean	S.D	t-value	Result
Gender	Female	143	93.83	28.207	4.001	Significant
	Male	55	110.18	17.810		

(\*Significant level at 0.05)

From the above Table 2, it is noted that the calculated *t*-value (4.001) is greater than the table value of 1.96 at 0.05 significant level and the null hypothesis is rejected. Hence, there is a significant mean difference between the male and female student-teachers in MOOCs-SWAYAM awareness. From the observed mean scores, it is interpreted that male students (110.18) have high MOOCs-

SWAYAM awareness than the female students (93.83).

### HYPOTHESIS – 3

#### Testing Null Hypothesis: 2

$H_0^2$ : There is no significant mean difference in MOOCs-SWAYAM awareness among the student-teachers with respect to Locality.

**Table 3: One way ANOVA for analyzing MOOCs-SWAYAM awareness among the student-teachers in terms of locality**

Variable	Source	Sum of squares	df	Mean square	F	Result
Locality	Between groups	2251.394	2	1125.697	1.585	Not Significant
	Within groups	2251.394	195	710.157		
	Total	140732.086	197			

(\*Significant level at 0.05)

The data given in the above table shows that the calculated 'F' value (1.585) in MOOCs-SWAYAM awareness is lesser than the table value (2.99) at 0.05 significant level and the null hypothesis is accepted. Therefore, it is identified that there is no significant mean difference among the student-teachers with respect to Locality.

**HYPOTHESIS - 4**

**Testing Null Hypothesis: 3**

$H_o^3$ : There is no significant mean difference in MOOCs-SWAYAM awareness among the student-teachers with respect to age group.

**Table 4: One way ANOVA for analyzing MOOCs-SWAYAM awareness among the student-teachers in terms of age group.**

Variable	Source	Sum of squares	df	Mean square	F	Result
Age Group	Between groups	15728.425	2	7864.212	12.268	Significant
	Within groups	125003.661	195	641.044		
	Total	140732.086	197			

(\*Significant level at 0.05)

The data given in the above table shows that the calculated 'F' value (12.268) in MOOCs-SWAYAM awareness is greater than the table value (2.99) at 0.05 significant level and the null hypothesis

is rejected. Therefore, it is identified that there is a significant mean difference among the student-teachers with respect to Age Group.

**Table 5: Scheffe's Post-hoc Analysis for analyzing MOOCs-SWAYAM awareness among the student-teachers in terms of age group.**

Age Group (in years)	N	Subset for alpha=0.05	
		1	2
20-30	94		104.83
30-40	64	85.48	
40-50	40		103.80



The table shows that the mean score of age group 30-40 (85.48) is located in the subset 1 and the mean scores of Age Group 20-30 (104.83) and age group 40-50 (103.80) are located in the subset 2 at 0.05 level. It is understood that there is no significant difference between the mean scores of age group of 20-30 and 40-50.

There exists significant difference in the mean scores of the age group 30-40 and the age group 20-30. It is also showing that there is a significant

difference between the age group 30-40 and the age group 40-50.

It is concluded that the student-teachers whose age group is 20-30 have high MOOCs-SWAYAM awareness than their counter parts.

#### HYPOTHESIS – 5

##### Testing Null Hypothesis: 4

$H_0^4$ : There is no significant mean difference in MOOCs-SWAYAM awareness among the student-teachers with respect to discipline of degree.

**Table 6: One way ANOVA for analyzing MOOCs-SWAYAM awareness among the student-teachers in terms of Discipline of Degree**

Variable	Source	Sum of squares	Df	Mean square	F	Result
Discipline of Degree	Between groups	2367.120	2	1183.560	1.668	Not Significant
	Within groups	138364.966	195	709.564		
	Total	140732.086	197			

(\*Significant level at 0.05)

The data given in the above table shows that the calculated 'F' value (1.668) in MOOCs-SWAYAM awareness is lower than the table value (2.99) at 0.05 significant level and the null hypothesis is accepted. Therefore, it is identified that there is no significant mean difference on MOOCs-SWAYAM awareness among the student-teachers with respect to discipline of degree.

#### CONCLUSION

The findings of the present study revealed that 45.46 percentages of student-teachers have high level of MOOCs-SWAYAM awareness due to their personal involvement in e-learning. 24.74 percentage of student-teachers have low level of MOOCs-SWAYAM

awareness due to the inadequate exposure of MOOCs-SWAYAM. It denotes that the timely need of the making awareness on SWAYAM and its facilities and benefits to the student-teachers of Coimbatore district. The study also demonstrates that female student-teachers had inadequate awareness on MOOCs-SWAYAM. So there need to be strong motivation and awareness given from educational institutions to female student-teachers about importance of MOOCs-SWAYAM. Fast and uninterrupted internet connection should be ensured in the campus for the implementation of MOOCs-SWAYAM effectively. Dissemination of awareness on various social media, blogs, sites and other platforms can be made use of.

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## A STUDY OF EMOTIONAL INTELLIGENCE OF NOVICE TEACHERS DURING 16 WEEK INTERNSHIP

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### INTRODUCTION

Effective education makes a difference in improvement of learning. There's nothing new or especially controversial about that idea. What's far less clear, even after several decades of school renewal efforts, is just how leadership matters, how important those effects are in promoting the learning of all children, and what the essential ingredients of successful leadership are. Lacking solid evidence to answer these questions, those who have sought to make the case for greater attention and investment in leadership as a pathway for large-scale education improvement have had to rely more on faith than fact.

By setting directions – charting a clear course that everyone understands, establishing high expectations and using data to track progress and performance. By developing people – providing teachers and others in the system with the necessary support and training to

succeed. And by making the organization work – ensuring that the entire range of conditions and incentives in districts and schools fully supports rather than inhibits teaching and learning. There is still much more to learn about the essentials of quality leadership, how to harness its benefits, and how to ensure that we don't continue to throw good leaders into bad systems that will grind down even the best of them. I'm confident that the knowledge in this report, and subsequent publications by this team of researchers, will help lead to more effective policy and practice at a time of fully justified public impatience for school improvement. All current school reform efforts aim to improve teaching and learning. But there are huge differences in how they go about it. Some reforms, for example, attempt to improve all schools in a district, state or country at the same time. Other reforms attempt to influence the overall approach to teaching and learning within a school, but do so one school at a time. Still

others, focused on innovative curricula (in science and mathematics, for example), typically address one part of a school's program and aim for widespread implementation, while innovative approaches to instruction, such as cooperative learning, hope to change teachers' practices one teacher at a time. As different as these approaches to school reform are, however, they all depend for their success on the motivations and capacities of local leadership. The phrase "emotional intelligence" was coined by Yale psychologist Peter Salovey and the University of New Hampshire's John Mayer to describe qualities like understanding one's own feelings, empathy for the feelings of others and "the regulation of emotion in a way that enhances living." Their notion is about to bound into the national conversation, handily shortened to EQ, thanks to a new book, Emotional Intelligence by Daniel Goleman. He has brought together a decade's worth of behavioural research into how the mind processes feelings. His goal is to redefine what it means to be smart. His thesis: when it comes to predicting people's success, brain power as measured by IQ and standardized achievement tests may actually matter less than the qualities of mind once thought of as "character" before the word began to sound quaint. Both authors investigated the emotional intelligence of novice teachers and discussed in this research paper.

## **STATEMENT OF THE PROBLEM**

A Study of Emotional Intelligence of Novice Teachers placed at different levels of schools.

## **OBJECTIVES OF THE STUDY**

1. To study the Emotional Intelligence of novice teachers working at different levels.
2. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to gender.
3. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to educational qualification.
4. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to years of experience.
5. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to management of school.
6. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to subject taught.
7. To study whether there is any significant difference in the Emotional Intelligence among novice

- teachers with respect to Medium of Teaching.
8. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to Level of working.
  9. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to Locality of the school.
  10. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to Type of Family.
  11. To study whether there is any significant difference in the Emotional Intelligence among novice teachers with respect to Income per month.

## **HYPOTHESES**

1. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Gender.
2. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Educational Qualification.
3. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Subject Teaching.

4. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Medium of Teaching.
5. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Level of Teaching.
6. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Locality
7. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Management of school.
8. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Type of Family.
9. In the Emotional Intelligence, there is no significant difference between the novice teachers belonging to Family Income.

## **METHOD OF STUDY**

In the present study, Survey method is adopted. The study has focused on the data collected through rating scales.

## **TOOLS USED IN THE STUDY**

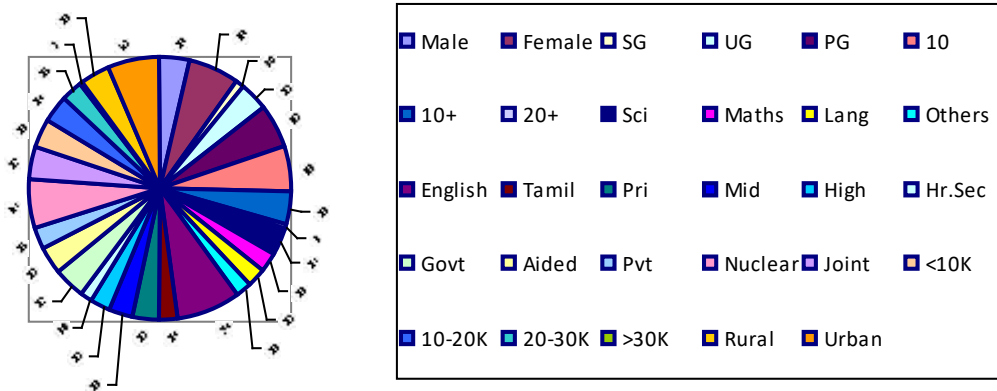
Standardized EIS-40 questionnaire

## **SAMPLE AND SAMPLING**

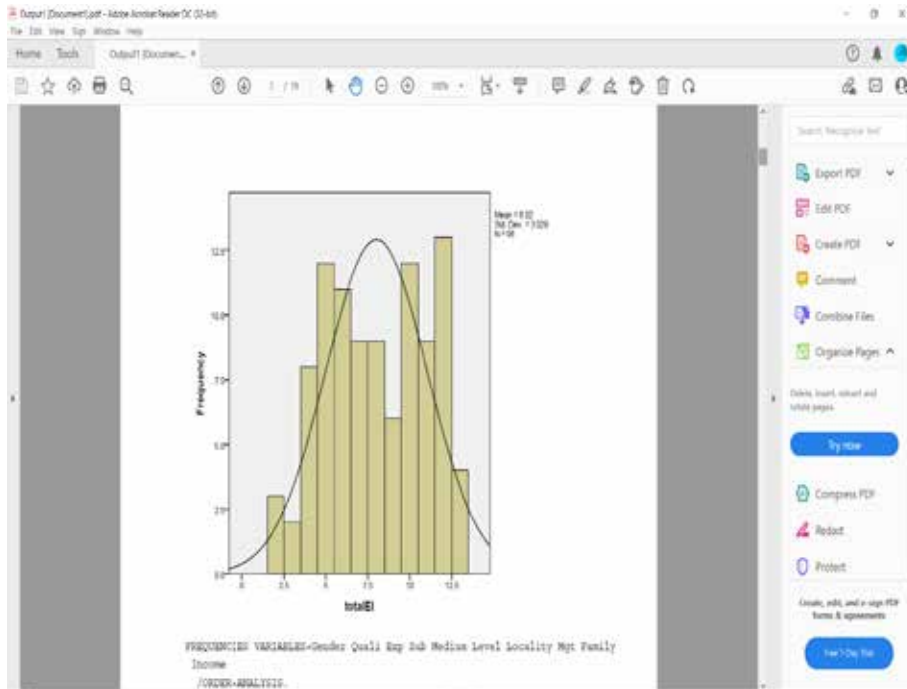
### **TECHNIQUE**

In the present study, the population selections were various school teachers (novice) at Thiruvallur district. The

data were collected from 98 Teachers at random. Distribution of sample is in which 39 male and 59 female from the schools in and around of Avadi illustrated below.



## Reliability and Validity



The reliability of this questionnaire EIQ-40 is found to be 0.633 by using Cronbach's Alpha test the validity is 0.796 hence it is said to be valid and reliable.

### Summary of Mean and Standard Deviation of Emotional Intelligence with respect to Educational Qualification

**Hypothesis:** In the Emotional Intelligence there is no significant difference between the novice teachers belongs to Educational Qualification

**Table 1: Mean, Standard Deviation and F-ratios of Emotional Intelligence with respect to Educational Qualification.**

Variables	Diploma+(1)		UG+ (2)		PG + (3)		F	Level of Signi.	Group Diff Significance
	Mean	S.D	Mean	S.D	Mean	S.D			
Emotional Intelligence	9.42	3.450	9.00	2.449	7.09	2.995	6.048	P < 0.01	(1&3) (2&3)

df=95,2

*The mean difference is significant at the 0.05 level*

From Table 1, it is found that the Emotional Intelligence mean score was higher for Diploma Grade Teachers (9.42) than UG teachers (9.00) and PG teachers (7.09)

The F-ratio calculated for the Emotional Intelligence with respect to Educational Qualification revealed that, in the Emotional Intelligence Novice Teachers having various educational qualifications differed significantly at 0.01 level where Diploma Grade Teachers are better than other two groups.

Further analysis of differences between the individual groups based on Educational Qualification tested through Tukey-HSD revealed that Novice Teachers having qualification are grouped namely, SG, UG and PG. In Emotional Intelligence SG and PG group differed significantly where SG Teachers are better than PG Teachers. In Emotional Intelligence UG and PG Teachers differed significantly where UG Teachers are better than PG teachers.

### Summary of Mean and Standard Deviation of Emotional Intelligence with respect to Family income per month.

**Hypothesis:** In the Emotional Intelligence there is no significant difference between the novice teachers belong to Family Income per month

**Table 2: Mean, Standard Deviation and F-ratios of Emotional Intelligence with respect to Family Income per month**

Variables	<10K (1)		10 -20 K (2)		20-30 K (3)		> 30 K (4)		F	Level of Signi.	Group Diff Significance
	M	S.D	M	S.D	M	S.D	M	S.D			
Emotional Intelligence	9.23	2.951	7.56	3.077	7.15	2.810	6.67	0.577	3.238	P < 0.05	(1&2)

df=94,3

From Table 2, it is found that the mean score was lower for novice teachers having family income more than 30K (6.67) than whose family income is below 10K (9.23). The F-ratio calculated for the Emotional Intelligence of novice teachers with respect to family income per month differed significantly at 0.05 level.

Further analysis of differences between the individual groups based on Emotional Intelligence related to Family income, in Emotional Intelligence of novice teachers related to various types of family income differed significantly in the group between below 10K and between 10-20K at 0.05 level.

## **FINDINGS OF THE STUDY**

### **Findings based on Descriptive and Differential analysis of the data related to Emotional Intelligence.**

The Mean and Standard Deviation of entire sample were 8.02 and 3.029 respectively.

1. Male and Female differed significantly in Emotional Intelligence.
2. Diploma, Graduate and Post Graduate novice teachers differed significantly in Emotional Intelligence.
3. The Tamil medium Teachers and the English medium Novice Teachers did not differ significantly in Emotional Intelligence.
4. The Novice Teachers from Nuclear family and Novice Teachers from Joint family did not differ significantly in Emotional Intelligence.

5. The Novice Teachers teaching Science, Mathematics, Language and Others not differed significantly in Emotional Intelligence.
6. The Novice Teachers of following management school namely Government, Government Aided and Private not differed significantly in Emotional Intelligence.
7. The Novice Teachers working at different level namely Primary, Middle, High and Higher Secondary did not differ significantly in Emotional Intelligence.
8. The Novice Teachers come from Rural area and teachers from Urban area not differed significantly in Emotional Intelligence.
9. The Novice Teachers whose family income below 10,000 per month and those between 10-20,000 per month differed significantly in Emotional Intelligence

## **EDUCATIONAL IMPLICATIONS OF THE STUDY**

Only through education, a person attains holistic including professional development. The research has focused on the importance of Emotional Intelligence in teaching profession related with their academic performance. Findings of the present investigation are important for improving the standard of teaching as well as the holistic development. In recent years, however, more research has been conducted with normal school teachers and their families. This research shows



that Emotional Intelligence remains very beneficial in promoting positive performance and effective outcomes.

## CONCLUSION

It may be concluded that on the basis of findings Gender, Educational Qualification and Family Income

brought slight differences in Emotional Intelligence and Female Novice Teachers those who pursue Diploma or Trained Graduate privileged with family income of Rupees 10 – 20 thousand per month had significant influence in bringing better Emotional Intelligence.

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## GROUNDING TECHNIQUES OF EMOTION REGULATION FOR TEACHERS

4

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### INTRODUCTION

Emotions are part of human biology and we sense them based on situations. Our emotions are unpredictable and explosive and fluctuate in our day-to-day life. The expression of our feelings to others may be passive, assertive, aggressive and sometimes overwhelming. According to Plutchik wheel of emotion, there are eight basic emotions having opposites, intensify if not properly acknowledged and they combine to form a new emotion. Regulation means control. Emotional Regulation is the ability to exert control over one's own emotional state. It may involve behaviours such as rethinking a challenging situation to reduce anger or anxiety, hiding visible signs of sadness or fear, or focusing on reasons to feel happy or calm.

### NEED FOR THE STUDY

Emotional Regulation can be aimed at reducing, strengthening, or maintaining the experience of either positive or negative emotions depending of the current needs or goals

of an individual (Gross, 1988). Emotion regulatory processes may be automatic or controlled, conscious or unconscious, and may have their effects at one or more points in the emotion generative process. Both positive and negative emotions may be “up-graded” through increasing the intensity or the duration or “down-regulated” in order to reduce emotion experience. This article tries to explain the importance of emotion regulation for teachers.

### OBJECTIVES OF THE STUDY

- To reveal the meaning and importance of Emotion Regulation of teachers
- To explain the significance of using various techniques to regulate emotions of teachers.

### EMOTION REGULATION

Emotion Regulation is the process of initiating, maintaining, modulating, or changing the occurrence, intensity, or duration of internal feeling states i.e., emotions or moods (Eisenberg et al.

2000), which is increasingly recognized as an important part of everyday life. Our thoughts (assumed vs. real), emotions (positive vs. negative) and behaviours (adaptive vs. maladaptive) are interrelated. The processes by which individuals influence emotions they have, when they have them, and how they experience and express their own emotions (Gross, 1989, p.275) means emotion regulation. It is the ability to exert control over one's own emotional state. It may involve behaviours such as rethinking a challenging situation to reduce anger or anxiety, hiding visible signs of sadness or fear, or focusing on reasons to feel happy or calm.

**The concept of Emotion Regulation can be perceived as two ways:**

- “Regulation by emotions” (how emotions regulate thoughts or behaviours)
- “Regulation of emotions” (how emotions are themselves regulated).

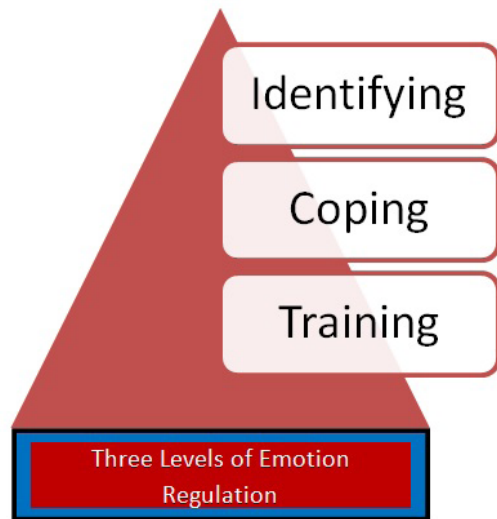
**Uses of Emotional Regulation for teachers**

- To avoid negative emotions
- To evade anxiety disorders
- To have better coping strategies
- To rethink about a challenging situation
- To reduce anger
- To protect from dreary signs

Teachers develop self-regulation through warm and responsive relationships among students, parents, colleagues and management.

**Three levels of Emotional Regulation**

The consistent changes to think or behave will result in regulating emotions well and maintaining balanced interior classroom situations by way of Identifying, coping and training. These three levels like stages in sophistication for how teachers approach emotion regulation.



**1. Identifying**

Identifying and understanding the healthy and unhealthy emotions is the first level of Emotional Regulation. Identification could be done based on Journaling, Introspection, Rational Thinking and Feedback.

- a. *Journaling* - Journaling is the practice of keeping a diary or journal that explores thoughts and feelings surrounding the events of life. Teachers should journalize the classroom experiences regularly to regulate their emotions.

- b. *Introspection*- Introspection is the examination of one's own conscious thoughts and feelings. Teachers should introspect themselves to understand about their strength and weakness of handling classroom situations.
  - c. *Rational Thinking* - Rational Thinking is the ability to consider the relevant variables of a situation and to access, organize, and analyze relevant information to arrive at a better solution. Teachers should think rationally depending upon the classroom circumstances.
  - d. *Feedback* - Feedback is a return of information about a result or the returned portion of a process. Getting a feedback from students will be useful to realize the manageable states of emotions.
- b. *Attention shifting strategies* - Attention shifting is a strategy to temper the emotion to provide temporary relief. The teachers should change the approaches depends on the conditions of the pupils.
  - c. *Forward-Looking strategies*-Forward-looking strategies entail teachers' anticipating a specific situation and devising a plan to alter the emotional impact. The most useful forward looking strategies are Avoidance, Addressing the underlying issue and planning accordingly.
  - d. *Positive self-talk (Reframing)*- Positive self-talk is necessary to counterbalance the mostly negative self-talk that likely goes on inside mind every day. Reframing is a powerful way for teachers to flip negative feelings around for the multi-faceted locations.

## 2. Coping

Coping mechanisms are important to invest one's own conscious effort, to solve personal and interpersonal problems, in order to master, minimize or tolerate stress and conflict. Coping strategies such as mindfulness, attention shifting strategies, forward-thinking strategies and positive self-talk are helpful to control the emotions of teachers.

- a. *Mindfulness* - Mindfulness is a mental state achieved by focusing one's awareness on the present moment, while calmly acknowledging and accepting one's feelings, thoughts, and bodily sensations, used as a therapeutic technique. This will

be used to recognize the current position of handling emotions for teachers.



## 3. Training

Training is important because it represents to a good opportunity for teachers after knowing about the coping techniques. There are three major training strategies namely, self-relaxing, develop a support system and to develop an attitude of acceptance.

- a. *Self-relaxing* - Relaxation is a process that decreases the effects of stress in our mind and body. It helps teachers to have a calmer and clearer

mind which aids positive thinking, concentration, memory and decision making.

- b. *Develop a support system* - Support system is a network of people who provide an individual with practical or emotional support. A support system is made up of individual people who provide support, respect and care and who do not judge or ridicule us for teachers.
- c. *Develop an attitude of acceptance* - An attitude of acceptance can neutralize unpleasant and irritating experiences

for teachers and even sometimes transform them into pleasant ones.

## CONCLUSION

Emotion regulation strategies have numerous benefits for teachers to cope better with classroom handling stressors and are more resilient. The benefits of emotion regulation ripple effect leading to increased confidence, emotional well-being, and overall happiness. Teachers handling any class can practice emotion regulation skills to overcome their emotional deregulation issues.

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## IMPORTANCE OF HOLISTIC DEVELOPMENT IN ENVIRONMENTAL LITERACY IN PRESENT SCENARIO IN TEACHER EDUCATION

5

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## INTRODUCTION

“The earth does not belong to us: we belong to the Earth” – **Marlee Matlin.**

Throughout a lifetime, an individual will collect natural information from a blend of school, the media, individual perusing, relatives and companions, open air exercises, amusement outlets, and a wide scope of other expert and individual encounters. For a couple of roused people, this can ultimately amount to a refined ecological education. Natural Literacy turns into a necessary piece of the system for biological turn of events, ecological turn of events and security just as avoidance of natural debasement. Such a way to deal with training turns into a medium and cycle of making mindfulness about man’s relationship

with his normal just as friendly and synthetic climate. These days because of mechanical turn of events, more natural issues emerge absence of information about ecological mindfulness. It should target empowering people and networks to comprehend the intricate arrangement of a climate that outcomes from the collaboration of their organic, physical, social, monetary, and social perspectives alongside information, qualities, mentalities, and abilities gained throughout the long term. To secure our earth each individual dismantles and regards the climate. Along these lines, as an instructor teacher have a chance to spread with regards to the significance of Environmental proficiency abilities and the advancement of natural conduct through our educational program.

## ENVIRONMENTAL LITERACY SKILL

Wolfe (2001) defined Environmental literacy as “A basic understanding of the concepts and knowledge of the issues and information relevant to the health and sustainability of the environment”

Considering this, Disinger and Roth (2003) gave a generally accepted definition of environmental literacy as “Environmental literacy (EL) is essentially the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore or improve the health of those systems”.

These scholars also explained environmental literacy components as environmental sensitivity, knowledge, skills, attitudes and values, personal investment and responsibility, and active involvement.

Environmental literacy is defined as ‘A person’s ability and motivation to use critical thinking, problem solving, and decision-making skills to assess, make informed decisions about, and take responsible action toward resolving, an environmental issue (Marian Ahn Thorpe, 2004).

Environmental literacy skills are the skills needed for protecting the environment they includes such things as, Knowledge of environment, Awareness to the environment and its relationship with human beings. Attitude towards environment and Pro – environmental behaviour.



Environmental literacy skills are given to the society through Environmental education as a part of our Curriculum. The goals and objectives of environmental education of the Tbilisi Declarations (1977) were:

- **Awareness:** to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.
- **Knowledge:** to help social groups and individuals gain a variety of experiences in and acquire a basic understanding of the environment and its associated problems.
- **Attitudes:** to help social groups and individuals acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection.
- **Skills:** to help social groups and individuals acquire the skills for identifying and solving environmental problems.
- **Action:** to help provide social groups and individuals with an opportunity to be actively involved at all levels

in working toward resolution of environmental problems. These five items were known as “AKASA model”, which is still being used by many educators today.

### **SIGNIFICANCE OF ENVIRONMENTAL LITERACY SKILL**

The job of instructors is ceaselessly evolving. As responsibility for execution on government sanctioned tests builds, there is less an ideal opportunity for guidance in technical disciplines, especially ecological sciences in the rudimentary years. A model that joins information building, dynamic support, and critical thinking in fostering a school culture of regard and obligation regarding the climate might be the most encouraging and sensible. Science and innovation quickly make new creations for society.

As a financial backer, pondering their creations arrive at the general public just not bather about issues of that development. Proficient course concentrating on people like Engineers, Doctors, Teachers, and who are generally learning-related proficient courses have own mindfulness and ability about the security of the climate. Anticipation is superior to fix, any innovation doesn't create unadulterated nourishment for the general public without utilizing Earth. All through the world part of Environmental issues, we recorded like Pollution, Global Warming, Overpopulation, Natural Resource Depletion, Waste Disposal, Climate Change, Loss of Biodiversity,

Deforestation, Ocean Acidification, Ozone Layer Depletion, Acid Rain, Urban Sprawl, Public Health Issues, Genetic Engineering (GMF-Genetically adjusted food sources), debasement, barrenness (because of the composts and GMF food sources) etc. These issues are significant issues identified with the shortfall of mindfulness and expertise about the Environment. So give significance to the educational plan from essential level to higher training (Particularly Professional courses).

The ecological laws and government hardware for its execution assume a critical part in securing a solid climate as an essential common liberty. Different components answerable for a climate insurance system are: winning ecological laws, especially in the Indian setting reflecting striking society bound practices, the offices liable for their execution comprehensive of legal patterns, to survey and examine the exhibition and the difficulties before of the Pollution Control Boards and National Environment Policy of India in correlation with worldwide natural principles, to make an appraisal of general assessment as respects the authorization of climate and Human Rights, and endeavours to instruct individuals to instill the mindfulness about the worries of climate through government establishments uniquely established for climate conservation; positive job and the commitment of scholastic foundations like schools, universities and colleges; issues of appropriate strong garbage



removals, reusing of reusable materials like paper, plastics are of vital significance and should be considered to secure the solid and safe climate prompting the feasible turn of events.

### **VIEW OF ENVIRONMENTAL LITERACY SKILL IN TEACHER EDUCATION IN THE WORLD**

The significance of Environmental education abilities is recognized all around the world and given more significance to secure Environmental issues. In America, Building a strong establishment for natural proficiency, to advance ecological education, we support thorough logical substance; sound instructive conventions; different and exceptionally successful associations; and current answers for complex ecological issues. Throughout the most recent three years, they created inventive new ways to deal with address natural difficulties in six regions: 'Homeroom Earth' Campaign, The Environ-Mentors Project, Field and Resource Education, Green Business Network, Health and the Environment, Weather and the Environment.

In Finland, it has been considered in Finnish nature schools. Nature school activity can be a piece of formal instruction on all levels from nursery school to secondary school, or it tends to be an after-school action. The activity isn't limited by spot, and it tends to be masterminded by social orders, districts, or private areas in "Nature Schools" or "in ecological schools" Furthermore, a significant point is to cultivate ecological

affectability and interest in nature and to advance a dependable way of life. The fundamental thoughts of educating and learning techniques are likewise comparative. The understudies are dynamic members and learn by doing. They secure data through their own faculties by means of examination, voyaging and playing, and tackling issues dependent on their own age level. The instructive accentuation for educators is on fortifying natural qualities and expanding ecological information.

In Japan, since the 2000s, schools in Japan have created different ways to deal with ecological training, mirroring the qualities of every area. As a general rule, natural instruction has been directed by the core values of the Teacher's Guide for Environmental Education and is accounted for to have been carried out fundamentally in the classes of Life-Environmental Studies and during Period for Integrated Studies. The National Curriculum Standards which will be established from 2020 fuse the perspectives of ESD, and therefore, regular natural training is relied upon to extend its extension and substance. In view of these public strategies, albeit a few schools are completing progressed instructive exercises, many schools are not gaining adequate headway with respect to ecological training, and are in the circumstance where they are trying to by one way or another carry out exercises dependent on recent concerns like catastrophic events or radioactive tainting.

As Inoue and Imamura bring up, schools frequently stress what are designated “eco-accommodating exercises,” however these are just homegrown undertakings or unremarkable errands in day to day existence, like reusing, reusing, decreasing, and energy and water preservation (Inoue and Imamura, 2012). “Eco-accommodating exercises” may have some beneficial outcomes on ecological issues, yet they additionally redirect understudy (and resident) interest from the financial quintessence of natural issues. Further, consider the “simply remember methodology.” This procedure is indeed even less reliable than Beyond the Limitations of Environmental Education in Japan “eco-accommodating exercises,” in light of the fact that there are no genuine activities joined to it. It very well may be helpful to energize a slight interest in natural issues, however it can’t be viewed as the fundamental arrangement and is a long way from a total arrangement. On the off chance that EE in Japan stays on a shallow level, it can never become disparaging of the general public which has produced the ecological issues; hence, we really wanted to reexamine the adequacy of both “eco-accommodating exercises” and the “simply remember technique.”

### **View of Environmental literacy skill in India**

India is one of the not many nations on the planet where an affirmation to ecological assurance and improvement is cherished in the foundation. Ecological

Education has been a significant pushed of both the Ministry of Environment and Forests (MoEF) and the Ministry of Human Resource Development (MHRD) of the Government of India. While the MHRD pursues the environmentalization of the conventional educational program, the MoEF centers around non-formal instructive projects and procedures to show up at the bigger local area that incorporates kids, youth, metropolitan and rustic networks, industry, chiefs and so forth Notwithstanding the endeavours of the public authority, countless magnanimous associations are engaged with advancing EE in both conventional foundations and non-formal settings. The primary wellsprings of assets for instructive establishments and NGOs for EE exercises are the public authority (Central and States), self-administering trust, benefactor offices, and so forth

### **NATIONAL ENVIRONMENT POLICY (NEP)**

A different creating society, for example, our own gives various difficulties in the monetary, social, political, social, and ecological fields. These blend in the predominant basic of mitigation of mass destitution, figured in the various components of vocation security, medical care, instruction, strengthening of the impeded, and end of sex differences. The current public arrangements for natural administration are contained in the National backwoods strategy, 1988, the public protection procedure and strategy proclamation on Environment and advancement

1992; and the approach articulation on reduction of contamination 1992, Some area strategies, for example, the National agrarian strategy 2000, National Population strategy 2000, and National Water strategy 2002; have likewise contributed towards ecological administration. These arrangements have perceived the requirement for supportable improvement in their particular settings and formed essential techniques to give impact to such acknowledgment. The National Environment Policy tries to broaden the inclusion and fill in holes that actually exist, considering present information and aggregated insight. It doesn't dislodge, however expands on the previous arrangements. The National Environment Policy 2006 looks to expand the inclusion, and fill in holes that actually exist, considering present information and gathered insight. It doesn't dislodge, yet expands on the previous approaches.

### **RECOMMENDATIONS IN CURRICULUM**

According to New Education Policy 2019, to guarantee that generous examination happens in interdisciplinary regions and application fields, explicit joint Subject Committees that length at least two divisions will likewise be comprised, remembering for regions like wellbeing, natural protection, instruction, horticulture. At the Middle and Secondary stages, understudies will likewise officially figure out how to discuss social, logical, innovative, agrarian, clinical, and natural issues confronting India and the world. So it should carry

out in our educational plan. Through between disciplinary investigates are energized and given significance for a sound climate an innocuous society.

### **TEACHER EDUCATION AND ENVIRONMENTAL LITERACY**

To assist understudies with filling in information, expertise, and worth, mentalities, and mindfulness pertinent to the climate educator is relied upon to be gadget of data and information as well as administrators to instructing learning circumstances. The methods of study hall association have additionally to be definitely changed. Instructor arrangement expects more prominent importance as educators, with the right mentality and will to prepare the group of people yet to come formed during this period. In the current review, the agents feature the need to comprehend one's quick environmental factors and the right mentality to save our neighbourhood natural assets no matter what. The viability of Environmental proficiency abilities depends vigorously on the information, abilities, and perspectives of the teacher.

The way in to any adjustment of the formal instructive framework is the educator, and except if the instructor is persuaded about and feels able to deal with this, tiny will change. The educator needs to disguise an adjustment of his/her job from one of 'provider of information' to one of 'facilitator in the learning system. In case instructors are to be compelling facilitators in bringing Environmental proficiency abilities into

educating and acquiring their abilities in comprehension and disguising the qualities of Environmental proficiency abilities and abilities in executing these should be constructed and fortified. One way of doing this is through pre-administration and in-administration direction and preparing.

In Tamil Nadu, general schooling and professional instruction courses offering colleges remembered mandatory or elective papers for their educational plan. At similar Tamil Nadu Teachers Education University additionally added natural instruction as a piece of B.Ed. Educational program

## CONCLUSION

Building environmental literacy skill (ELS) in kids and teenagers is basic to meeting current and arising ecological difficulties around the world. Albeit natural training (EE) endeavours have started to address this need, observational exploration comprehensively assessing drivers of ELS is basic. Natural training is the chief method for upgrading mindfulness, both among people in general everywhere, and among centered

gatherings. Such instruction might depend on instructive foundations at various levels; the print-electronic or live media; and different other formal and relaxed environments. The Supreme Court has likewise commanded that natural instruction should be conferred at all levels, remembering advanced education for the conventional framework. Be that as it may, there is a requirement for additional reinforcing the current projects and making them more comprehensive and participatory. Because of mechanical advancement regular assets are by implication influenced and going to lose their genuine position. Web use, web-based media, and social change likewise redirecting the general public and changing the learned assets redirected in to squander way. So Education is the fundamental instrument for rebuilding society and protecting the earth. Assuming we need to give a solid climate for a cheerful living method we make mindful and essential Environmental proficiency abilities are expected to the current students from the Primary level to Higher Education level.

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## MULTIPLE INTELLIGENCE AND ACADEMIC ACHIEVEMENT OF PROSPECTIVE TEACHERS

6

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### INTRODUCTION

Human intelligence, mental quality that consists of the abilities to learn from experience, adapt to new situations, understand and handle abstract concepts, and use knowledge to manipulate one's environment (Sternberg, 1985). Many psychologists have proposed theories on intelligence among which Multiple Intelligence holds an important position.

The theory of multiple intelligences was first proposed by Howard Gardner in his 1983 book "Frames of Mind", where he broadens the definition of intelligence and outlines several distinct types of intellectual competencies. Gardner developed a series of eight inclusion criteria while evaluating each "candidate" intelligence that was based on a variety of scientific disciplines. He writes that we may all have these intelligences, but our profile of this intelligence may

differ individually based on genetics or experience.

Howard Gardner defined intelligence as "The capacity to solve problems or to make new trend products that are evaluated in one or more cultural setting". He reviewed the theory of intelligence using eight criteria.

#### 1. Linguistic Intelligence

Linguistic Intelligence is a part of Howard Gardner's multiple intelligence theory that deals with sensitivity to the spoken and written language, ability to learn languages, and capacity to use language to accomplish certain goals. People with linguistic intelligence, have an ability to analyze information and create products involving oral and written language such as speeches, books, and memos.

## **2. Logical-Mathematical Intelligence**

Logical-mathematical intelligence refers to the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically. People with logical-mathematical intelligence, have an ability to develop equations and proofs, make calculations, and solve abstract problems.

## **3. Spatial Intelligence**

Spatial intelligence features the potential to recognize and manipulate the patterns of wide space (those used, for instance, by navigators and pilots) as well as the patterns of more confined areas, such as those of importance to sculptors, surgeons, chess players, graphic artists, or architects. People with spatial intelligence, have an ability to recognize and manipulate large-scale and fine-grained spatial images.

## **4. Bodily-Kinesthetic Intelligence**

Bodily kinesthetic intelligence is the potential of using one's whole body or parts of the body (like the hand or the mouth) to solve problems or to fashion products. People with bodily-kinesthetic intelligence, have an ability to use one's own body to create products, perform skills, or solve problems through mind-body union.

## **5. Musical Intelligence**

Musical intelligence refers to the skill in the performance, composition, and appreciation of musical patterns. People with musical intelligence, have an ability

to recognize and create musical pitch, rhythm, timbre, and tone.

## **6. Interpersonal Intelligence**

Interpersonal intelligence is the capacity to understand the intentions, motivations, and desires of other people and consequently to work effectively with others. People with interpersonal intelligence have an ability to recognize and understand other people's moods, desires, motivations, and intentions.

## **7. Intrapersonal Intelligence**

Intrapersonal intelligence is the capacity to understand oneself, to have an effective working model of oneself—including one's own desires, fears, and capacities—and to use such information effectively in regulating one's own life. People with intrapersonal intelligence, have an ability to recognize and understand his or her own moods, desires, motivations, and intentions. This type of intelligence can help a person to understand which life goals are important and how to achieve them.

## **8. Naturalistic intelligence**

Naturalistic intelligence involves expertise in the recognition and classification of the numerous species—the flora and fauna—of his or her environment. People with naturalistic intelligence have ability to identify and distinguish among different types of plants, animals, and weather formations that are found in the natural world.

## **NEED AND SIGNIFICANCE OF THE STUDY**

Teaching using the multiple intelligence theory is essentially teaching in the way the child learns. It involves giving up long-held traditional beliefs about how to teach and instead puts the child first at the centre of the planning. The teacher's role is extremely important in making sure students get the most out of multiple intelligences theory in the classroom. Teachers should work with the students, rather than for the students, to develop the best activities, projects, and layouts. Teachers should continuously observe students' interests and successes in different areas and continually change the classroom layout and plan accordingly (Ayesha,2013).

Each of us have a range of skills, strengths and weaknesses. Teaching our students about the Multiple Intelligences theory shows them they each have something important to offer in every class or situation, and that our differences can strengthen us as a whole. Multiple intelligence as a whole and its various dimensional play a significant role in the achievement of prospective teachers hence an attempt is made in the present study to find out the relationship between of Multiple Intelligence and academic achievement of prospective teachers.

## **OBJECTIVES OF THE STUDY**

- To find out the level of Multiple Intelligence and its dimensions of prospective teachers.

- To find out whether there is any significant difference in Multiple Intelligence of prospective teachers with respect to background variables
- To find out the relationship between Multiple Intelligence and Academic achievement of prospective teachers.

## **HYPOTHESES**

- There is no significant difference in Multiple Intelligence of prospective teachers with respect to their locality of residence.
- There is no significant difference in Multiple Intelligence of prospective teachers in relation to their education level.
- There no significant relationship between Multiple Intelligence and Academic achievement of prospective teachers.

## **METHODOLOGY**

### **Sample**

The sample of the present study consists of 126 prospective teachers from Government Aided institutions in Coimbatore.

### **Tool Used**

Multiple Intelligence Scale developed and standardized by Antony Raj M. and Philomine Bala (2011) has been used in the present study.

## **STATISTICAL TECHNIQUES USED FOR THE STUDY**

The collected data were consolidated tabulated and analyzed statistically by using the following tests:



- i. Mean, Standard Deviation and Percentage
- ii. Test of Significance (t-test)
- iii. Correlation

**DATA ANALYSIS**

**Multiple Intelligence of prospective teachers**

Table 1 gives the details of Multiple Intelligence of prospective teachers.

**Table 1: Multiple Intelligence of Prospective Teachers**

Level of Multiple Intelligence	N= 126	Percentage
Low	3	2.38
Average	75	59.52
High	48	38.09

From the above Table 1, 59.52% level of Multiple Intelligence. The level of prospective teachers have average Multiple intelligence among prospective Multiple Intelligence, 38% and 2.38 % of teachers is average in nature. prospective teachers have high and low

**Mean scores of Multiple Intelligence of Prospective teachers with its dimensions**

Mean scores of Multiple Intelligence of prospective teachers with its dimensions was presented in Table 2.

**Table 2: Mean scores of Multiple Intelligence of Prospective teachers with its dimensions**

S.No	Dimensions	Mean Scores	Percentage
1	Logical Mathematical Intelligence	31	77.83
2	Visual / Spatial Intelligence	33	82.51
3	Naturalistic Intelligence	35	87.81
4	Bodily-Kinesthetic Intelligence	34	85.95
5	Linguistic Intelligence	32	81.92
6	Interpersonal Intelligence	32	81.58
7	Intrapersonal Intelligence	34	87.2
8	Musical Intelligence	34	86.28

It was found that the status of kinesthetic Intelligence > Musical multiple intelligences among prospective Intelligence > Visual / Spatial Intelligence teachers was ranked in the following > Interpersonal Intelligence > Linguistic order: Naturalistic Intelligence > Intelligence > Logic Mathematical Intra-personal Intelligence > Bodily- Intelligence.

### Multiple Intelligence of prospective teachers in relation to their Stream of study

Table 3 depicts Multiple Intelligence of prospective teachers in relation to their Stream of study.

**Table 3: Multiple Intelligence of Prospective teachers in relation to their Stream of study**

Stream of Study	Multiple Intelligence Level					
	Low		Average		High	
	N	%	N	%	N	%
Mathematics	3	2.38	34	26.98	22	17.46
Science	-	-	22	17.46	14	11.11
Humanities	-	-	19	15.07	12	9.5

From the above Table 3, it is understood that the students of all three streams have average Multiple Intelligence.

### Multiple Intelligence of prospective teachers with respect to Education Level

Table 4 depicts the level of Multiple Intelligence of prospective teachers with respect to Education Level.

**Table 4: Multiple Intelligence of Prospective teachers with respect to Education Level**

Education Level	Multiple Intelligence level					
	Low		Average		High	
	N	%	N	%	N	%
Bachelors	2	1.58	54	42.85	33	26.19
Masters	1	0.79	21	16.66	15	11.90

From the above Table 4, it was found that 42% students having Bachelors degree have average Multiple Intelligence than their counterparts (16.66).

### Multiple Intelligence of prospective teachers with respect to Locality of Residence

Table 5 depicts the level of Multiple Intelligence of prospective teachers with respect to locality of residence.

**Table 5: Multiple Intelligence of prospective teachers with respect to Locality of Residence**

Locality of Residence	Multiple Intelligence level					
	Low		Average		High	
	N	%	N	%	N	%
Rural	2	1.58	51	40.47	30	23.80
Urban	1	0.79	24	19.04	18	14.28

From the above Table 5, 40.47% students of rural have average scores and 23.80 were having high multiple intelligence when compared to urban students.

### **Difference in Multiple Intelligence of B.Ed. students with respect to Locality of Residence**

Table below gives details of difference in Multiple Intelligence of prospective teachers with respect to locality of residence.

**Table 6: Difference in Multiple Intelligence of prospective teachers with respect to Locality of residence**

Locality of Residence	N	Mean	SD	<i>t</i> -value	Remarks
Rural	83	267.21	27.00	0.512	Not Significant
Urban	43	270.83	30.41		

To find out the difference in Multiple Intelligence of prospective teachers from Rural and Urban area, *t* test was applied to and presented in above table. From the above table, it is seen that the *t* value 0.51 which is lesser than the table value (1.96) which shows that there is no significant difference in the Multiple Intelligence students with respect to their Locality of Residence. Hence the Hypothesis stated that there is no significant difference in Multiple Intelligence of prospective teachers with respect to their locality of residence is accepted.

### **Difference in Multiple Intelligence of prospective teachers in terms of their education level**

Table 7 depicts the difference in Multiple Intelligence of prospective teachers in terms of Education level.

**Table 7: Difference in Multiple Intelligence of prospective teachers in terms of Education level**

Education level	N	Mean	SD	t-value	Remarks
Bachelors	89	267.11	28.06	0.41	Not Significant
Masters	37	271.67	28.46		

To find out the difference in Multiple Intelligence of prospective teachers with respect to their education level, t test was applied to and presented in above table. From the above table, it is seen that the calculated  $t$  value 0.41 which is lesser than the table value (1.96) which shows that there is no significant difference in the Multiple Intelligence of prospective teachers with respect to their education level. Hence the null hypothesis stated that there is no significant difference in the Multiple Intelligence of prospective teachers with respect to their education level is accepted.

### **Correlation between Multiple Intelligence and Academic Achievement of prospective teachers**

The table below shows the Correlation between Multiple Intelligence and Academic Achievement of prospective teachers.

**Table 8: Correlation between Multiple Intelligence and Academic Achievement of Prospective teachers**

Variable	Correlation Coefficient	Remarks
Academic Achievement	-0.059	Not Significant
Multiple Intelligence		

From the above Table 8, the value of correlation coefficient -0.059 shows a negative correlation. Hence it is concluded that there is no relationship between Multiple Intelligence and Academic Achievement of prospective teachers. This result was in contrast with the study of Muthusami (2013) who opined that a positive relationship exists between multiple intelligence and academic achievement.

### **MAJOR FINDINGS**

- The level of Multiple intelligence among prospective teachers is average in nature.
- The status of multiple intelligences in prospective teachers was ranked in the following order: Naturalistic Intelligence > Intra-personal Intelligence > Bodily-kinesthetic Intelligence > Existentialistic Intelligence > Visual /Spatial Intelligence > Interpersonal Intelligence > Linguistic Intelligence > Logic Mathematical Intelligence.

- The students of all three streams (Mathematics, Science, Humanities) have average Multiple Intelligence.
- The students of rural area have average level and 23.80 have high multiple intelligence when compared to urban students.
- 40.47% students of rural have average level of Multiple Intelligence and 23.80 have high multiple intelligence when compared to urban students.
- The difference in Multiple Intelligence of B.Ed. students with respect to their education level, it was seen there is no significant difference in the Multiple Intelligence students with respect to their Education level.
- There is no relationship between Multiple Intelligence and Academic Achievement of prospective teachers.

### **IMPLICATIONS BASED ON THE STUDY**

This study suggests that all the selected components of Multiple Intelligences are present in prospective teachers of in varied form. Teacher educators should know about different Multiple Intelligences. The training colleges must arrange activities based on Multiple Intelligences for their trainees. Only through this the future teachers become efficient in the subject of Multiple Intelligences.

### **RECOMMENDATIONS**

- Provide special training programmes for the teachers to develop components of Multiple Intelligence.
- Teachers should incorporate the theory of Multiple Intelligences in the process of teaching and learning.
- Through the use of Multiple Intelligences activities, each individual can study in their own way.

- Identification of the Multiple Intelligences preference will be useful for a prospective teacher to design her everyday classroom activities.

### **CONCLUSION**

This study shows that there is no significant relation between the academic achievement and Multiple Intelligence. It was understood that factors like Education level, locality of Residence, Stream of Study are not having any significant effect on Multiple Intelligence of prospective teachers. The teacher education programmes should be modified with the changes of the present educational scenario. It should be supplemented with innovative methods and teaching strategies. The student teachers should be given proper training in Multiple Intelligences based teaching, so that they can transact the curriculum effectively in the schools.

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## PERCEPTION ABOUT MEDICAL LAB TECHNIQUES AND ACHIEVEMENT IN ZOOLOGY AMONG HIGHER SECONDARY STUDENTS

7

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### INTRODUCTION

The prosperity and strength of a country are directly dependent on the level of science and technical knowledge cultivated in the country and on its capacity to make use of that knowledge to serve practical ends. We have to depend upon science for basic needs such as food, clothing and shelter. All our daily routines are controlled by science and its products. Science and technology are playing important roles in our lives. They have become an integral part of our social and cultural life. Various activities in our lives are controlled and governed by science. We cannot think of a world without science. We can feel the impact of science and technology in all aspects of our life. In India, science occupies most important place in curriculum, both at school and college level of education. Science and Mathematics should be thought on a compulsory basis to all students as a part of general education up to high school level. In higher secondary level, science occupies specialized position in education. In the social perspective, education has aimed at

equipping creation of society which is free from diseases, hunger, poverty and other evils. India being a developing nation, a sound system of science education alone can provide solution to these issues.

### PERCEPTION

Everyday different provocations around us will be stimulating our sense organs. Many of these are received by our sense organs and are converted into sensations. These sensations are transmitted to the concerned parts of brain. The brain in turn will interpret these sensations. It is only after such interpretation that we understand what the stimulus is. In understanding the world around us, attention occurs first, followed by sensation and finally interpretation by brain. This process of interpretation of stimulus is known as perception. Normally, we perceive our environment through our five senses, hearing, sight, smell, taste and touch. Perception is combination of gathering raw data and analysing it. We perceive with our senses and analyse with our minds.

## **ACHIEVEMENT**

The desire to achieve something of excellence is inherent in all human beings. It refers to the ability of an individual who strives to accomplish something, to do his best, to excel over each other in performance. Achievement means knowledge attained or skill developed by pupils usually in the school subjects measured by test scores or by marks assigned by teacher or both. It also encourages the students to work hard and learn more. Higher secondary school students are viewed as leaders of tomorrow. They have academic achievement as their major goal. For this goal to be achieved, it requires dedication, sacrificial self-discipline, motivation and cordial relationship between students and teachers.

## **NEED AND SIGNIFICANCE OF THE STUDY**

Achievement plays an important role in life of an individual, shaping the vocation, career, profession and planning for further education. In educational context, academic achievement is highly valued. The scientific advancement has also raised the question of better achievement for all in the highly competitive society of today. A good academic record of students is an index of an effective educational system. Student's developmental process is a product of the interaction between choices and socialization experiences in academic disciplines. Therefore, researchers have been attempting long to investigate various factors determining academic

achievement. It is of great importance to know if the perception influence pupil's academic achievement or not, and from there to design possible means of intervention for promoting effective learning and achievement.

According to the National Policy on Education, "the goal of education is the laying of a sound basis for scientific and reflective thinking while the goal of education is aimed at providing well trained manpower in applied science, technology and commerce at the subprofessional grades. Hence, making students learn Biology at school is not only to communicate the spirit of science but also to ensure that students acquire skills of science". Learning Biology for higher secondary school students requires a combination of classroom experiments and traditional reading and lecturing methods. The present study aims to determine the perception about medical lab techniques and achievement in Zoology among higher secondary students. Hence, student's level of perception may affect their achievement in Zoology. Hence the study on perception is helpful in improving the quality of learning biological sciences among higher secondary school students, framing the curriculum and assignments according to their perception. This study also provides opportunities for generating ideas to design the innovative strategies and emerging trends and applications of new teaching and learning process.



## OBJECTIVES OF THE STUDY

The following are the objectives of the present study.

1. To find out the level of perception about medical lab techniques of higher secondary students with respect to their,
  - Gender
  - Type of school
  - Locality of school
  - Parent's occupation
  - Type of Family
  - Residential location
2. To find out the level of achievement in Zoology of higher secondary students with respect to their,
  - Gender
  - Type of school
  - Locality of school
  - Parent's occupation
  - Type of Family
  - Residential location
3. To find out the relationship between perception about medical lab techniques and achievement in Zoology of higher secondary students.

## HYPOTHESES OF THE STUDY

The following hypotheses were formulated based on the objectives of the study.

1. There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their gender.

2. There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their type of school.
3. There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their locality of school.
4. There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their parent's occupation.
5. There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their type of family.
6. There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their residential location.
7. There is no significant difference in achievement in Zoology of higher secondary students with respect to their gender.
8. There is no significant difference in achievement in Zoology of higher secondary students with respect to their type of school.
9. There is no significant difference in achievement in Zoology of higher secondary students with respect to their locality of school.

10. There is no significant difference in achievement in Zoology of higher secondary students with respect to their parent's occupation.
11. There is no significant difference in achievement in Zoology of higher secondary students with respect to their type of family.
12. There is no significant difference in achievement in Zoology of higher secondary students with respect to their residential location.
13. There is no significant relationship between perception about medical lab techniques and achievement in Zoology of higher secondary students.

## VARIABLES IN THE STUDY

### Variables of study

The present study employed a group of variables such as independent, dependent variables and background variables.

### Independent variables

In the present study the investigator chose perception about medical lab techniques as an independent variable.

## THE RESEARCH PARADIGM

The research paradigm of the study is shown in Table 1.

**Table 1.1: The Research Paradigm**

No	Variable	Sample	Tools	Statistics
1	Perception about Medical Lab Techniques	300	Scale of Perception about Medical Lab Techniques	Mean, S.D, 't', F, r .
2	Achievement in Zoology	300	Scale of Achievement in Zoology	Mean, S.D, 't', F, r .

### Dependent variables

In the present study, achievement in Zoology is a dependent variable which is used for the development of hypothesis and statistical analysis.

### Back ground variables

Gender, type of school, locality of school, type of family, parent's occupation, and place of residence were the background variables selected by the investigator in this study.

## METHODOLOGY

### Method

The present study is based on normative survey method.

### Sample

A sample of 300 higher secondary school students was selected. They were selected using cluster sampling technique.

### TOOLS

The following tools were used in the study,

1. Scale of Perception about Medical Lab Techniques developed and validated by the investigator.
2. Scale of Achievement in Zoology developed and validated by the investigator.

**Table 1.2: Secondary School Students Perception about Medical Lab Techniques in terms of Mean, SD, *t*-value.**

S. No.	Category		N	M	SD	<i>t</i> -value	<i>p</i> -value
1	Gender	Male	147	2.1293	.48642	4.61827	.000** S
		Female	153	2.4118	.56812		
2	Locality of School	Rural	140	2.3000	.51871	0.78881	.431** NS
		Urban	160	2.2500	.57188		
3	Family Type	Joint Family	94	2.1915	.49245	1.75549	.080** NS
		Nuclear Family	206	2.3107	.56791		
4	Residential Location	Rural	162	2.2901	.53082	.57499	.566** NS
		Urban	138	2.2536	.56751		

\* Significant at 0.05 level. \*\* Significant at 0.01 level. NS-Not significant at 0.05 level.

**Table 1.3: Higher Secondary Students Perception about Perception about Medical Lab Techniques in terms of Sum of squares, Mean square, 'F' value.**

S. No.	Category		Sum of Squares	Mean Square	F-ratio	<i>p</i> -value
1	Type of School	Between groups	10.262	5.131	8.560	0.000** S
		Within groups	178.018	0.599		
2	Parent's Occupation	Between groups	3.384	1.692	3.200	0.042** S
		Within groups	157.052	0.529		

*P* < 0.05, \*\*Significance at 5% level

**TABLE 1.4: Secondary School Students Achievement in Zoology in terms of Mean, S.D, *t*-value.**

S. No.	Category		N	M	SD	<i>t</i> -value	<i>p</i> -value
1	Gender	Male	147	2.2245	.53374	5.37	0.000**
		Female	153	2.5490	.51223		
2	Locality of School	Rural	140	2.3929	.50460	0.08	0.933** NS
		Urban	160	2.3875	.58264		
3	Family Type	Joint Family	94	2.3298	.49488	1.29	0.198** NS
		Nuclear Family	206	2.4175	.56782		
4	Residential Location	Rural	162	2.3889	.51379	.038	0.970** NS
		Urban	138	2.3913	.58490		

\* Significant at 0.05 level. \*\* Significant at 0.01 level. NS-Not significant at 0.05 level.

**TABLE 1.5: Higher Secondary Students Achievement in Zoology in terms of Sum of Squares, Mean Square, 'F' Value.**

Category		Sum of Squares	Mean Square	F-ratio	<i>p</i> -value
Type of School	Between groups	10.947	5.474	9.167	0.000** S
	Within groups	177.333	0.597		
Parent's Occupation	Between groups	5.489	2.745	5.261	0.006** S
	Within groups	154.948	0.522		

\* Significant at 0.05 level. \*\* Significant at 0.01 level. NS-Not significant at 0.05 level.

**TABLE 1.6: Relationships between Perception about Medical Lab Techniques and Achievement in Zoology of Secondary School Students.**

Variables	N	'r' value	<i>p</i> -value
Level of Perception about medical lab techniques	300	0.671	.000** S
Level of Achievement in Zoology	300		

\*Significant at 0.05 level.

## TESTING THE HYPOTHESES

### HYPOTHESIS-1

There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their gender.

Here,  $p$ -value is less than 0.05, the null hypothesis is rejected at 5% level. So the hypothesis is rejected. It is concluded that there is significant difference in male and female higher secondary students in their perception about medical lab techniques.

### HYPOTHESIS-2

There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their type of school.

Here,  $p$ -value is less than 0.05, the null hypothesis is rejected at 5% level. So the hypothesis is rejected. It is concluded that there is significant difference among higher secondary students studying in Government, Government aided and Private school in their perception about medical lab techniques.

### HYPOTHESIS-3

There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their locality of school.

Here,  $p$ -value is greater than 0.05, The null hypothesis is accepted at 5% level. So the hypothesis is accepted. It is concluded that there is no significant difference in perception about medical lab techniques of higher secondary

students with respect to their locality of school.

### HYPOTHESIS-4

There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their parent's occupation.

Here,  $p$ -value is less than 0.05, the null hypothesis is rejected at 5% level. So the hypothesis is rejected. It is concluded that there is significant difference among higher secondary students in perception about medical lab techniques of higher secondary students with respect to their parent's occupation.

### HYPOTHESIS-5

There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their type of family.

Here,  $p$ -value is greater than 0.05, the null hypothesis is accepted at 5% level. So the hypothesis is accepted. It is concluded that there is no significant difference between higher secondary students in perception about medical lab techniques of higher secondary students with respect to their type of family.

### HYPOTHESIS-6

There is no significant difference in perception about medical lab techniques of higher secondary students with respect to their residential location.

Here,  $p$ -value is greater than 0.05, the null hypothesis is accepted at 5% level. So the hypothesis is accepted. It

is concluded that there is no significant difference between higher secondary students in perception about medical lab techniques of higher secondary students with respect to their residential location.

#### **HYPOTHESIS-7**

There is no significant difference in achievement in Zoology of higher secondary students with respect to their gender.

Here,  $p$ -value is less than 0.05, the null hypothesis is rejected at 5% level. So the hypothesis is rejected. It is concluded that there is a significant difference in achievement in Zoology of higher secondary students with respect to their gender.

#### **HYPOTHESIS-8**

There is no significant difference in achievement in Zoology of higher secondary students with respect to their type of school.

Here,  $p$ -value is less than 0.05, the null hypothesis is rejected at 5% level. So the hypothesis is rejected. It is concluded there is a significant difference in achievement in Zoology of higher secondary students with respect to their type of school.

#### **HYPOTHESIS-9**

There is no significant difference in achievement in Zoology of higher secondary student's respect to their locality of school.

Here,  $p$ -value is greater than 0.05, the null hypothesis is accepted at 5%

level. So the hypothesis is accepted. It is concluded that there is no significant difference in achievement in Zoology of higher secondary student's respect to their locality of school.

#### **HYPOTHESIS-10**

There is no significant difference in achievement in Zoology of higher secondary students with respect to their parent's occupation.

Here,  $p$ -value is less than 0.05, the null hypothesis is rejected at 5% level. So the hypothesis is accepted. It is concluded that there is a significant difference in achievement in Zoology of higher secondary students with respect to their parent's occupation.

#### **HYPOTHESIS-11**

There is no significant difference in achievement in Zoology of higher secondary students with respect to their type of family.

Here,  $p$ -value is greater than 0.05, the null hypothesis is accepted at 5% level. So the hypothesis is accepted. It is concluded that there is no significant difference in achievement in Zoology of higher secondary students with respect to their type of family.

#### **HYPOTHESIS-12**

There is no significant difference in achievement in Zoology of higher secondary students with respect to their residential location.

Here,  $p$ -value is greater than 0.05, the null hypothesis is accepted at 5% level. So

the hypothesis is accepted. It is concluded that there is no significant difference in achievement in Zoology of higher secondary students with respect to their residential location.

### **HYPOTHESIS-13**

There is no significant relationship between perception about medical lab techniques and achievement in Zoology of higher secondary students.

Here, *p*-value is less than 0.05, the null hypothesis is rejected at 5% level. So the hypothesis is rejected. It is concluded that there is a significant relationship between perception about medical lab techniques and achievement in Zoology of higher secondary students. Pearson's Correlation Value is 0.671 indicates a Strong positive correlation between Level of Perception and Level of Achievements.

### **FINDINGS OF THE STUDY**

The following are main findings of the study.

1. Significant difference is found between male and female higher secondary students in their Perception about Medical Lab Techniques. Female students have better Perception about Medical Lab Techniques than male students.
2. Significant difference is found among higher secondary students studying in government, government aided and private schools in their Perception about Medical Lab Techniques. Private school students have better perception about Medical

Lab Techniques than the government and government aided school students.

3. No significant difference found in Perception about Medical Lab Techniques of higher secondary students with respect to their locality of school.
4. Significant difference found among higher secondary students in Perception about Medical Lab Techniques with respect to their parent's occupation. Students whose parents are in government jobs have better perception about Medical Lab Techniques than the students whose parents are in private jobs or self-employed.
5. No significant difference found in Perception about Medical Lab Techniques of higher secondary students with respect to their type of family.
6. No significant difference found in Perception about Medical Lab Techniques of higher secondary students with respect to their residential location.
7. Significant difference found in Achievement in Zoology of higher secondary students with respect to their gender. Female students proved better Achievement in Zoology than male students.
8. Significant difference found in Achievement in Zoology of higher secondary students with respect

to their type of school. The higher secondary students from private schools are found to be significantly better than the students of government and government aided schools.

9. No significant difference found in Achievement in Zoology of higher secondary student's respect to their locality of school.
10. Significant difference found in Achievement in Zoology of higher secondary students with respect to their parent's occupation. Students whose parents are in government jobs proved better achievement in Zoology than the students whose parents are in private jobs or self-employed.
11. No significant difference found in Achievement in Zoology of higher secondary students with respect to their type of family.
12. No significant difference found in Achievement in Zoology of higher secondary students with respect to their residential location.
13. Significant relationship found between Perception about Medical Lab Techniques and Achievement in Zoology of higher secondary students. Pearson's correlation value of 0.671 indicates a strong positive correlation between level of perception and level of achievement.

## DISCUSSION

The female students proved better Perception about Medical Lab

Techniques than male students. The perception between male and female are quite varied because they live in different realities. The female students gain more motivation and guidance from the family members. This finding is in harmony with the reviewed studies of Saravanaperumal, C., & Deepa, H. (2020), Vlckova, J., Kubiak, M., & Usak, M. (2019), Sou, H. (2018), Koseoglu, P., & Pehlivan, H. Himschoot, A. R. (2012) and Zeidan, A. (2010)

The higher secondary students from Private schools are found to be significantly better in their Perception about Medical Lab Techniques. This may be due to the fact that they have enough support from the parents and private tuitions that enable them to take the right decision.

The higher secondary students whose parents are in Government job are found to be significantly better in their Perception about Medical Lab Techniques. This may be due to the fact that they have the influence of their parents to think about future. They may receive advice and work on gaining skills that improve their thinking.

The female higher secondary students have better academic achievement than the male higher secondary students. This may be due to the fact that unlike male students, the female students concentrate more in their studies without being much distracted by the external circumstances. The submissive and obedient nature of female students, the committed guidance of the women



teachers and the conduciveness created in the school environment make the female students do better in their studies and to be in the forefront of academic achievement. This finding is in harmony with the reviewed studies of Taviyad Mansingbhai, S., & Yasvantbhai, H. P. (2014) and Sadananthan, M. (2014), Veronica, C. U., & Casmir, N. E. (2019) and Mohammed, A. A. (2019). The following studies however are not in harmony with the current findings. Vani, T., & Shabana. (2019), Madhu Gupta, M., & Laur, B. (2017), Dandagal, & Yarriswami, M. C. (2016), Stella, J. M., & Balamurugan, M. (2014), Chandra, R. (2013), Arora, R., & Gautam, N. (2013), Wagbara, S. O. (2020), Fereo, D. O. (2019), Nimmi Maria Oomme (2019), Adnan, A., & Chaudhry, A. A. (2012) and Yusuf, M. O., & Afolabi, A. O. A. (2010)

The higher secondary students from private schools are found to be significantly better in Achievement in Zoology. The ultimate reason is that cream of students of society are rushing towards private schools looking forward to better discipline, infrastructure and excellent academic results. Some private schools run for name and fame and have good advertising methods to attract better performing students. They coach the students towards scoring and provide such orientation. Students in private school could afford for subject-wise private tuition. This finding is in harmony with the reviewed studies of Kumari, A., & Chamundeswari, S. (2013), Arora, R., & Gautam, N. (2013), Vijayalakshmi, V. (2016) Sadananthan, M. (2014), Kuburat,

O., & Adams, O. (2018) and Olufunke, B. T. (2012) However, this finding is not supported by the studies of Vani, T., & Shabana.(2019).

## SUGGESTIONS FOR FURTHER STUDIES

Some suggestions with regard to further studies in the field of education are given as under:

1. The same study can be undertaken with different tools.
2. This study was conducted with 300 samples only. The sample size can be increased for better generalization of the findings.
3. The same study can be undertaken in other districts with large number of samples and extending some more socio psychological variables.
4. Perception about Medical Lab Techniques can be studied under qualitative research, which may be more meaningful and impacting.
5. Perception about Medical Lab Technique can be studied with respect to emotional intelligence and academic achievement.
6. The present study has been conducted on the subject Zoology. A similar study can be conducted on other subjects.
7. The present study is aimed at achievement of Science students. A similar study can be conducted aiming at achievement of Vocational students.

8. Perception about Medical Lab Techniques and Scientific Attitude of higher secondary students can be studied.
  - Encourage the students to participate in the laboratory activities. So that they can acquire good research and achievement skill.
9. A comparative study can be conducted on Academic achievement and knowledge on Applied Biology.
  - Recommendations to the parents,
    - The students to solve the day-to-day health related activities.
    - Develop awareness about the benefits of family health techniques.

### **CONCLUSIONS AND EDUCATIONAL IMPLICATIONS OF THE STUDY**

There is a significant difference in the research variables Perception about Medical Lab Techniques and Achievement in Zoology of higher secondary students with respect to gender, type of school, locality of school, type of family, parent's occupation and place of residence.

The Perception about Medical Lab Techniques and Achievement in Zoology of higher secondary students are at a higher level than the male higher secondary school students.

### **RECOMMENDATIONS OF THE STUDY**

Recommendations to the teachers,

- Encourage the students to solve the classroom and laboratory related problems.

### **SCOPE FOR FURTHER STUDY**

1. A study on perception about medical lab techniques and Achievement in Zoology of teacher trainees may be conducted.
2. A study on perception about medical lab techniques and Achievement in Zoology of medical students may be conducted.
3. A study on about medical lab techniques and Achievement in Zoology of university students may be conducted.
4. Interactions between the dimensions of about medical lab techniques and their impact on achievement of paramedical students may be chosen.

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