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SCIENCE ANXIETY AMONG SECONDARY SCHOOL STUDENTS IN RELATION TO THEIR GENDER AND LOCALE

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Abstract: *Science Anxiety refers to students' negative emotions about learning science or unfavourable feelings towards learning science. Students experience a lot of anxiety because of the seriousness and complexity of science-related topics. The purpose of this study was to investigate the significant difference in the mean scores of Secondary School Students in science anxiety in relation to their Gender and Locale. A total of 250 students, which includes equal number of males and females (125 each) from the secondary schools of District Samba were drawn by employing random sampling technique. The score of the science anxiety among the secondary school students was assessed using science anxiety scale constructed by the investigator. The data was quantitively analyzed using various descriptive and inferential techniques. The result revealed that there was no significant difference in the mean scores of the secondary school students wrt. their locale on their science anxiety whereas significant difference was found among them wrt. their gender on the science anxiety.*

Key Words: ***Science Anxiety, Gender, Locale, Secondary school students***

INTRODUCTION

Anxiety has been popular area of research for many years for psychologists and educators. It may both serve to inspire and have its worst negative consequences on the cognitive and problem-solving processes that the teacher is seeking to develop. According to Ericson and Gardner (1992), pupils who are anxious in the classroom perform worse.

Children may experience stress in schools in general due to the increased academic demands and responsibilities. Some students report that science subjects are extremely challenging. Students experience a lot of anxiety because of the seriousness and complexity of science-related topics. Students' general performance can be impacted by their experience with science anxiety. The science education offered at the school is crucial because it equips each student for further study and helps him or her develop into a valued member of society who will give their fair share to national development. Science is acknowledged as a

crucial subject that develops students' cognitive abilities and fosters their creativity. Science has a dense body of knowledge, which discourages students from becoming interested in it and occasionally causes them to adopt unfavourable opinions.

Additionally, the amount of practical or experimental effort required discourages students from liking or being interested in the topic. One significant factor that influences how well children perform in science is scientific anxiety. Dr. Jeffry Mallow, who oversaw the creation of a desensitising clinic programme at Loyola University in Chicago, created the term "science anxiety."

Mallow (1978) initially defined science anxiety as a scared emotional state concerning science in general, which leads to subpar performance in science courses, antiscientific views, a lack of scientific knowledge, and aversion to people who work in the field. Many children today feel science anxiety, which is a fear of the science instruction. Therefore, "science anxiety" refers to students' unfavourable feelings toward learning science. Science anxiety is described by Mallow (1986) as a dislike or dread of science concepts, scientists, or science-related activities. According to Mallow (1988), this fear causes individuals not to learn the subject and to think negatively about the lesson. Science anxiety is described by Seligman et al. (2001) as tension that prevents the use of science in academic courses or in many aspects of daily life. According to certain studies, students who struggle with scientific anxiety are afraid to pursue careers in science and disciplines related to science. Even if they don't comprehend the topic, anxious scientific students won't ask questions. Science education is difficult because of anxiety, especially for secondary students and teenagers.

As a result, anxiety plays a significant role in science education, and it is crucial for students to understand it in order to succeed academically and participate in careers related to science. In order to develop strategies to lessen science anxiety, it would be interesting to determine how much anxiety the students experience when learning science.

REVIEW OF RELATED STUDIES

Udo et al. (2004) pointed out that the number of females who had science anxiety were higher than the number of males who had science anxiety, **Foo and Ong (2007)** indicate that Form Four females showed higher overall science anxiety than the Form Four male, **Griggs et al. (2013)** conducted research and found a positive correlation between gender and science anxiety in fifth graders, indicating that boys had more science anxiety than girls, **Ucak et al. (2019)** in their study found there is no significant difference between students' science anxiety levels in terms of gender**, Caymaz and aydin (2021**) have studied that there was no significant difference between students' anxiety towards science course in reference to their gender and **Ozbugutu and Emrah (2021)** found in their study determined no significant relationship between science anxiety and gender.

RATIONALE OF THE STUDY

It would be of interest to find out the extent to which students feel anxious in learning science so that the measures could be taken to reduce science anxiety.

Research studies had been conducted to study the science anxiety like **Udo et al. (2004)** where they found that female students had higher anxiety levels in science in comparison to male students whereas **Grigges et al. (2013)** conducted research and found a positive correlation between gender and science anxiety and found that boys had more science anxiety then girls. But, **Caymaz and aydin (2021)** had found that gender does not play any significant role in determining the anxiety level among the students of the science course.

By studying science anxiety among secondary school students in relation to their gender and locale, investigator could understand the reason behind anxiety issues that student's face and is there any relation between gender and science anxiety, locale and science anxiety and what measures can be taken to treat the anxieties more effectively. In the long term this may reduce the loss of students in scientific fields. Once this educational barrier is removed, it may very well open the doors for the students to enter in the fields of science without any feeling of anxiety. Hence, the researcher finds out that there were very rare studies conducted related to science anxiety with the variables- locale and gender and thus a need was felt need to study the influence of gender and locale on science anxiety among secondary school students. The researcher selected the population of District Samba (J&K) for the research study.

STATEMENT OF THE PROBLEM

"Science Anxiety among Secondary School Students in Relation to their Gender and Locale"

The objectives of the study were: -

1. To study the science anxiety among secondary school students in relation to their gender (male and female).
2. To study the science anxiety among secondary school students in relation to their local (rural and urban).

HYPOTHESES

The hypotheses of the study were: -

H1 There would be no significant difference in the mean scores of male and female secondary school students in science anxiety.

H2 There would be no significant difference in the mean scores of the secondary school students in science anxiety with respect to their locale (rural and urban).

METHODOLOGY

In present study, descriptive research design was used. The study was conducted on the secondary school students studying in the (types of school) secondary school of District Samba. For the collection of the data a total of 250 secondary school students studying in the various schools of the District Samba were taken as sample using random sampling. Out of the sample drawn, the number of males was 125 (Rural= 65, Urban= 60) and females was also 125 (Rural= 65, Urban= 60). From the constituted sample the data was collected using the Science anxiety scale constructed by the investigator. The scale consists a total of 30 items, out of

which 15 items were positive while as 15 items were of negative type. Each item was provided by the response set in the form "Always", "Often", "Sometimes", "Rarely" and "Never". Students are required to put a tick mark as response in front of the statement which is appropriate in their point of view related to that statement. The positive items would get 5 scores for "Always", 4 for "Often", 3 for "Sometimes", 2 for "Rarely" and 1 for "Never". The scores are reversed in case of negative items.

Following the collection of the data, the collected data was subjected to statistical treatment like Mean, Standard Deviation, t-test.

DATA ANALYSIS AND FINDINGS

1. **Hypothesis H1:** There would be no significant difference in the mean scores of male and female secondary school students in science anxiety.

In order to check the hypothesis, the t-test was applied and the results are as shown in the table below :

Table 1 : Mean scores of male and female secondary school students in Science Anxiety.

Group	N	Mean	SD	t-value	Level of Significance
Female	125	100.16	16.72	3.10	Significant at 0.01 level
Male	125	94.368	12.58		

The perusal of above table (1.0) revealed that the mean comparison between male and female secondary school students in Science Anxiety. The result revealed that there was a significant difference between two groups and the difference was significant at 0.01 level. As the mean difference favours female secondary school students which mean that the female secondary school students have more Science Anxiety than the male secondary school students.

Therefore, Hypothesis H1 which states, "There would be no significant difference in the mean scores of male and female secondary school students in science anxiety". Stands rejected.

2. **Hypothesis H2:** There would be no significant difference in the mean scores of the secondary school students in science anxiety with respect to their locale (rural and urban).

In order to check the hypothesis (H2), the t-test was applied and the results are as shown in the table below :

Table 2: Mean scores of rural and urban secondary school students in Science Anxiety.

Group	N	Mean	SD	t-value	Level of Significance
Rural	130	95.64	13.70	0.47	Not Significant at both levels
Urban	120	94.74	16.25		

The perusal of the above table 2 shows the mean comparison between rural and urban secondary school students in Science Anxiety. The result reveals that there is no significant difference between two groups at both levels (0.05 and 0.01).

Therefore, Hypothesis H2 which states, "There would be no significant difference in the mean scores of the secondary school students in science anxiety with respect to their locale (rural and urban)." Stands Accepted.

MAJOR FINDINGS

On the basis of analysis and interpretation certain meaningful findings have been drawn which are reported as under:

1. There was a significant difference between male and female secondary school students in science anxiety. It was found that female secondary school students have more science anxiety then the male secondary school students.
2. There was no significant difference between the rural and urban secondary school students in science anxiety.

CONCLUSIONS

The main purpose of the present study was to find out the science anxiety among secondary school students. Findings of the study revealed that gender does not play a role in creating science anxiety among the secondary school students. While the locale plays a major role in the science anxiety among the secondary school students. The infrastructure available in the schools like laboratories, the school climate etc plays an important role in the mitigation of the anxiety among the students. A positive school environment and effective pedagogical strategy adopted by the science teacher can help to a large extent in reducing the anxiety among the learners. Science teachers as well as Parents should not force students for achievements in science beyond their intellectual ability.

EDUCATIONAL IMPLICATION

On the basis of above findings, the following implications can be drawn:

The finding of this study revealed that male students showed a higher level of science anxiety. By considering the gender difference in science anxiety, the teacher can become effective in providing their instructions to students. Thus, teacher should be aware of the needs and capabilities of the students with different science anxiety levels when designing teaching strategies for them. Science teacher strive to understand science anxiety and implement appropriate teaching and learning strategies which can help the students overcome their science anxiety.

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