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Impact of Gender on Learning Environment, Concentration, Academic Achievement and Mental Health Among High Achievers in Chemistry at College Level

D. Manisekaran[1*], K. Sarala Devi[2]
[1]*Research Scholar, Meston College of Education, Chennai, India*
[2]*Associate Professor, Meston College of Education, Chennai, India*

***Abstract*: This paper presents a study on the impact of gender on learning environment, concentration, academic achievement and mental health among high achievers in chemistry at college level.**

***Keywords*: Learning environment, Concentration, Academic achievement, Mental health, High achievers in chemistry.**

1. Introduction

The role of Education is the important factor for the development of a nation. It is only education through which the change on a grand scale in the society can be achieved. Man has been learning from nature, by watching the world outside and inside him, from what others say and do.

Learning is also about order in life, order in school life that is learning why one should be punctual to classes, meals, the proper time for rest, why one should follow certain rules in school, and how they smoothen their learning. Chemistry is everywhere in the world around us. Chemistry sometimes is called the "central science" because it connects other sciences to each other, such as biology, physics, geology, and environmental science. Chemistry is the study of matter and energy and the interaction between them. There are many reasons to study chemistry, even if we aren't pursuing a career in science. Chemistry helps you to understand the world around us. Chemistry teaches useful skills. Chemistry opens up career options.

Such an atmosphere where students learn to love learning for learning's sake, results in better academic achievement. Students in the process of socialization require a healthy environment and models so as to increase their performance. Hence, a clean, quiet and comfortable environments are important components of learning environment (Gilavand, 2016). Furthermore, creating an ideal learning environment ought to be a priority of every concerned educationalist because being comfortable should be a combination of several factors which include temperature, lighting, and noise control etc (Murugan & Rajoo, 2013). The extent to which students' learning could be enhanced depends on their location within the college compound, the structure of their classroom, availability of instructional facilities and accessories. The way in which his personality interacts with the personalities of the pupils helps to determine the kind of behavior which emerges from the learning situation (Brown, 2015). Environmental factors like classrooms, textbooks, equipment, school supplies, and other instructional materials etc. are the physical conditions needed for learning (Mondal, 2012).

2. Sample

The investigator selected 750 College students out of which 339 from government College (Boys 210 and Girls 129), and 236 students from Private College (Boys 96 and Girls 140) 175 from Government Aided College (Boys 50 and Girls 125). So total population is 1760 and the sample population is 750. All the 750 students were given. Permission has been sought from students' school authorities, class teachers, Parents, through the consent form for allowing they wards for the present investigation.

3. Objectives

To know the impact of gender on Learning Environment, Concentration, Academic achievement and Mental Health among College students.

4. Hypothesis

Gender has no impact on Learning Environment, Concentration, academic achievement and mental health among college students.

5. Method

Survey method is used for the present investigation.

6. Tools

1. Mental Health by C.T. Veit and J.E. Ware, Jr. 1983.

*Corresponding author: manisekarand@gmail.com

2. Learning Environment of High achievers by Asha Bhatnagar, National. Psychological Corporation, Agra constructed this tool.
3. Concentration by Weinstein et al 1987.

From the table 1 it is clearly shown that the calculated 'C.R' values of Government College (CR.7.9, p < 001), Private College (CR.10.4, p < 001) and Government Aided College (CR.12.9, p < 001) were more than the table 'C.R' values. Hence hypothesis has been rejected and proved that there were significant difference in Learning Environment between Boys and Girls of Government, Government Aided and Private College.

From table 2 it has been pointed out that the calculated C.R. values of Government College (CR.3.73, p < 001), Private College (CR.11.23, p < 001) and Government Aided College (CR.11.23, p < 001) were significantly more than the table values, hence hypothesis was rejected and proved that there were significant differences between Boys and Girls of Concentration scores.

From the table 3 it is clear that calculated C.R. values of Government College (CR=11.4, p< 0.01), Private College (CR=26.5, p< 0.01) and Government Aided College (CR=14.1, p< 0.01) were significantly more than that of the table C.R. values. So, the hypothesis was rejected and proved that there were significant difference in Academic Achievement between Boys and Girls of Government, Private and Government Aided College.

From table 4 it is clear that the calculated 'C.R' values of Government College (CR.16.3, p < 001), Private College (CR 9.98, p < 001) and Government Aided College (CR.7.91, p < 001) is more than that of the table ' C.R ' values. Hence, the hypothesis was rejected and proved that there were significant difference in Mental Health between Boys and Girls of Government, Private and Government Aided College.

7. Discussion

Findings of table 1 was supported by the work Nagar (1990). Men participated more in an active learning course in science, technology, engineering and math, while women reported lower perceptions of their scientific abilities, were more aware of gender identity and more likely to feel judged based on gender, a new Cornell-led study has found. but the inherent differences that students bring into the classroom are still in place, and are affected by the classroom environment which some say is subject to gender bias, and has a detrimental effect on students (Hyde & Lynn, 1986).

Findings of table 2 was supported by the followings. Good learning environment was found to be effective in terms of achievement of Science Process Skills (Vensel, 1988), in

Table 1
Differentiation of Learning Environment of Boys with Girls from the total sample

P.V.	Type of school	Gender	N	Mean	S.D.	C.R	L.S.
Learning Environment	Government College	Boys	210	50.81	4.57	7.9	0.01
		Girls	129	54.7	4.25		
	Private college	Boys	96	59.38	3.92	10.4	0.01
		Girls	140	64.66	3.73		
	Government Aided College	Boys	50	53.81	3.502	12.9	0.01
		Girls	125	61.56	3.75		

Table 2
Differentiation of Concentration scores of Boys with Girls from the total sample

P.V.	Type of school	Gender	N	Mean	S.D.	C.R	L.S.
Concentration	Government College	Boys	210	22.84	4.57	3.73	0.01
		Girls	129	29.56	4.25		
	Private college	Boys	96	32.84	3.5	11.22	0.01
		Girls	140	39.56	3.75		
	Government Aided College	Boys	50	28.84	3.9	11.23	0.01
		Girls	125	34.56	3.7		

Table 3
Differentiation of Academic Achievement of Boys with Girls of the total sample

P.V.	Type of school	Gender	N	Mean	S.D.	C.R	L.S.
Academic Achievement	Government College	Boys	210	52.8	2.2	11.4	0.01
		Girls	129	57.1	1.9		
	Private College	Boys	96	73.8	2.1	26.5	0.01
		Girls	140	79.2	1.6		
	Government Aided College	Boys	50	64.5	1.2	14.1	0.01
		Girls	125	68.9	3.4		

Table 4
Differentiation of Mental health of Boys and Girls students from the total sample

Variables	School Type	Gender	No.	Mean	S.D.	C.R.	L.S.
Mental Health	Government College	Boys	210	132.4	7.54	16.3	0.01
		Girls	129	144.37	5.81		
	Private college	Boys	96	165.00	6.26	9.98	0.01
		Girls	140	158.05	3.27		
	Government Aided College	Boys	50	161.00	5.86	7.1	0.01
		Girls	125	153.00	8.54		

increasing Meta-Cognitive Writing Skills (Bonk et at., 1989), in teaching reference skills to seventh grade students (Driscoll, 1990), in increasing the rate of the acquisition of College Readiness Skills of pre-College children (Legenhausen, 1991) and in improving writing skill (Powell-Hart, 1992). Greenfield concluded that "every medium develops some cognitive skills at the expense of other".

Findings of table 3 was supported by the followings, there has been a renewed debate on the controversial issue of gender differences on math and science achievement. This debate currently focuses on why women are not seeking careers in information technology occupations. The most comprehensive reviews of the research in the area of gender differences have shown very few true differences between math and verbal abilities between men and women (Halpern, 2000). In fact, the research has shown only two gender differences in specific sub-areas of spatial and verbal abilities, three-dimensional mental rotation (favoring men), and speech production (favoring women). Other research has also shown a decline in the differences between the genders in the past few decades on standardized test, suggesting that the more exposure that women are getting to math and science classes, the better their scores. Even though this research puts into questions whether gender differences still exist in academic achievement, many researchers are still finding differences in performance as well as general interest in areas related to math and science. Thus, achievement alone cannot be the sole reason for women as they make their career choices.

Previous research has consistently shown moderate to large differences between pain reports of men and women undergoing experimental pain testing. These differences have been shown for a variety of types of stimulation. However, only recently have sex differences been demonstrated for temporal summation of second pain. This study examined sex differences in response to temporal summation of second pain elicited by thermal stimulation of the skin. The relative influences of State Anxiety and gender role expectations on temporal summation were investigated. Asymptomatic undergraduates (37 women and 30 men) underwent thermal testing of the thenar surface of the hand in a temporal summation protocol. results replicated those of Fillingim et al indicating that women showed increased temporal summation compared to men. We extended those findings to demonstrate that temporal summation is influenced by anxiety and gender role stereotypes about pain responding. When anxiety and gender role stereotypes are taken into account, sex is no longer a significant predictor of temporal summation. These findings highlight the contribution of social learning factors in the differences between sexes' pain perception: Results of this study demonstrate that psychosocial variables influence pain mechanisms. Temporal summation was related to gender role expectations of pain and anxiety. These variables explain a significant portion of the differences between men and women's pain processing, and may be related to differences in clinical presentation. Robinson ME, Wise EA, Gagnon C, Fillingim RB, Price DD, (2004). Allan Jones (2008) study were to investigate the influence of anxiety on pain perception and to test whether gender differences in pain perception are anxiety dependent. Sixty male and female university students exposed to situation–evoked anxiety or a control procedure were measured for their pain threshold, tolerance, and perceived intensity during a cold presser test. Both subjective and autonomic responses indicated that anxiety was successfully induced in participants exposed to the anxiety condition. Increased situational anxiety had no significant effect on pain threshold or pain tolerance. Significant increases in pain intensity were found for the anxiety group. Levels of anxiety, however, did not correlate with this increased intensity, raising doubt as to the role of anxiety in producing this effect. No gender differences were found for pain tolerance or pain intensity. Gender differences were found for pain threshold in the anxiety group with, contrary to past findings, females showing significantly higher pain thresholds than males.

The results are discussed in the light of related studies. Anger is a commonly experienced emotion popularly thought to differ for men and women. Studies have produced conflicting evidence for sex differences on measures of anger often due to definitional confusion, methodological limitations, the use of non-random samples and the use of student and clinical populations. Some previous studies have suggested that males and females do not differ in measures of anger and that gender role identification may be more predictive of patterns of anger experience and expression. This study aimed to investigate the influence of sex, gender role identification and sex of the target of anger on measures of state and Trait anger in a community sample of the Australian population. Results supported the prediction that gender role identification rather than sex were related to anger experience, expression and control, with this finding being consistent across two situational contexts. Sex of the target of anger was found to provide a weak contextual influence on male and female expression of anger. The implications of these findings for future research and for those working with anger in clinical settings are discussed. Darryl Milovchevich,(2000).

Allison et al 2000 found out that there were no significant differences between the depressed and nondepressed groups. However, the study did indicate interesting findings regarding mood state, gender, and cardiac outcomes. Depression was significantly overrepresented among females ($chi2 = 24.0$, $df = 1$, $P < 0.05$). When gender and mood state were considered together, women with cardiac disease who were depressed had significantly longer lengths of stay (LOSs) and increased costs than men with depression ($F = 6.6$, $df = 1$, $P = 0.01$). A major unanticipated finding was the extremely low incidence of depression detected in these patients (1.6%) when compared with patients in other studies. One possible reason for the low incidence of depression was related to the use of a financial, rather than a clinical, data set. Significant differences in the STPI/HB profile for males and females were observed, with greater sex-group differentiation on the trait scales than on the state scales. Specifically, Israeli females show higher levels of Trait-Anxiety and Trait-Anger than Israeli males, whereas higher levels of State-Curiosity are observed among the latter. Overall, the sex difference profiles are highly comparable for Israeli and American college students. Observed sex-group

differences are discussed and explicated. Ben-Zur and Moshe Zeidner-1988.

Findings of table 4 was supported by the followings, Females (52%) of the medical institute suffered from mild to moderately-severe depression in contrast to the males (33%). Females were found to be affected by mild anxiety and phobia (42.7 and 26% respectively) exceeding the male population (27.3 and 15.3% respectively). However, severe depression or anxiety was not observed in either gender groups significantly, suggesting a healthy mental picture of these medical students. It can be concluded that health care students in modern upgraded education systems, in contrast to evidence from literature, have been able to adopt better coping mechanisms for maintaining their mental health. (Mehannaz nuruudin Gitaz et al, 2019).

The interaction that the instructor facilitates in the classroom towards the student is largely a product of who dominates the classroom; who interacts more often with the teacher; who generates more learning opportunities, and who is disciplined more frequently. As we will see, these behaviors can be reinforced by early gender specific behavior patterns nurtured in the infant according to what the parents, and society believe is gender appropriate. Once the child grows to interact in the adult society, the issue becomes one of a personality filter, and of young men and women who have traditionally been raised from infants to be comfortable in certain gender specific environments (Streitmatter, 1994). The growing use of screen-based media have strengthened visual-spatial intelligence, which in turn strengthen the ability to do that involve keeping track of lots of rapidly changing signals. But that has been accompanied by "new weaknesses in higher-order cognitive processes," including "abstract vocabulary, mindfulness, reflection, inductive problem solving, critical thinking, and imagination." The results of the studies are that the students are becoming more concentrated in such computer assisted instruction. This research would suggest that in order to encourage more women into math, science, and information technology fields, interventions need to be designed that focus not on the academic achievement of women but in how to make math- and science-related occupations more interesting for young, high achieving women. This type of intervention should start early in the academic careers for these adolescents and young women; our results suggest the lack of interest in math begin earlier than the junior high College years and never improve. Miriam R. Linver et al., 2002.

8. Educational Implications

The parent is an important stakeholder in the process of learning. It is indeed unfortunate that there is absence of the role clarification of the parents in the entire scheme of the learning process.

As parents have a sense of proprietary rights on the learners, they are emotionally attached to all that is happening around the child. This may be as a consequence of their pursuit to realize some of their unfinished dreams or may be due to sense of insecurity, which they harbour towards their wards. Therefore, they would like to shape the mind, body and emotions of their wards in a way that is acceptable to them or in a way that would satisfy their expectations. In order to achieve the same, they exercise certain demands on their wards, the teachers and the institutions to which their wards are attached. They intervene with the content and pedagogy both at school and home so that the children would be motivated to achieve the goals cherished by them.

Mother is the first teacher and family is the primary temple of learning for child. The first experience of the child impressed by its mother and the family lasts long. Only a conscious mother and healthy and ideal family environment can provide enough stimulation for the child to learn is a systematic and desire way.

Our ancestors gave the third place to the teacher in society the first being the mother, the second father and the fourth place to the God. The influence of the first two persons is inevitable for each and every child in their home. The children proceed to the next sacred place to temple of learning. That is school, where they are influenced by various situations of classrooms. Lacunae are there in the behaviour of the children; they are compensated and corrected by teachers in a school complex. That is why it is said, parents are the first teacher of a child and the teacher is the second parent of a child. Now-a-days, each pupil is taught by a number of teachers who differ in achievements, either in one subject or in different subjects taught by different teachers in the classroom.

9. Suggestions for Further Research

- Relationship between learning environment and academic achievement of higher secondary Students.
- Study could be undertaken at all levels of Education from primary schools to university level.
- Relationship between Parental encouragement and academic achievement of higher secondary Students.
- An in-depth study into learning environment and parental encouragement among various districts and states and its influence on students' achievements could be undertaken.
- Impact of test anxiety on subjective well-being among students.
- Examination stress on cognitive style among students.
- Relationship between cognitive style and personality of students.
- Religious attitude and cognitive style among students.

10. Conclusion

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