



## **AN INVESTIGATION INTO THE EFFECT OF CLASSROOM INTERIOR DESIGN WITH OR WITHOUT STUDENTS' PARTICIPATION ON THEIR SHYNESS AND EDUCATIONAL PERFORMANCE**

Zahra TAHERI

Department of psychology, Islamic azad university, Iran

**Email:** Ztaheri380@gmail.com

### **ABSTRACT**

*The aim of the present study is to investigate the effect of classroom interior design with or without students' participation on their shyness and educational performance. 60 ninth-grade students of Shiraz City in 2015–2016 who were selected by means of random cluster sampling answered the questionnaires of Cheek and Buss in three groups during three stages of pre-test, post-test, and follow-up. Their educational performance during these three stages was calculated on the mean of mathematics, experimental sciences, and literature. The results of repeated measures analysis of variance (ANOVA) indicated that there is a significant relationship between classroom interior design and variables. The results also indicated that there is a significant relationship between students' participation and non-participation in classroom interior design and variables. Furthermore, participation and non-participation in classroom design had an effect on students' educational performance. Due to the effect of environment interior design on people inside it, environments that have the best effect on students can be created in order to nurture their talents.*

**Keywords:** Interior Design, Participation, Student, Shyness, Educational Performance

### **INTRODUCTION**

Any person has once been a student and is familiar with the problems of this period. Expecting high educational performance from students make them nervous. If a student is shy, interpersonal problems, being misused, embarrassment, and anxiety will affect his health. Shyness is a social fear or anxiety and the shy person avoids unfamiliar people and social relationship (Afrouz, 2006). Since one of the main needs of mental health and psychological welfare is sufficient social relationships, a flaw in these relationships will most likely cause problems. Shyness is a mental-social phenomenon that appears due to wrong interpersonal relationships and social maladjustment at the early stages of growth at home and school (Noami et al., 2016).

Shyness has been deprecated by the Infallibles. According to Imam Sadiq, a shy person loses his action (Bihar al-Anwar) and according to the Prophet Muhammad (PBUH), shyness is deprecated and unpleasant (Ghurar al-Hikam). On the other hand, satisfaction and its outcome, good humour are a reward given to those who are happy and mentally healthy and if the person is placed in environments according with his existence, he will be relieved. When eye, which is the gate of existence, receives images according with its nature, it transfers them to the perception center in the brain and the brain receives the message in accord with nature satisfactorily and with no resistance, then it transfers it to other organs. Naturally, following this feeling, positive energy is produced. Safety, peace of mind, and breeziness make us adjust

our actions and behavior and thus, be good-humoured (Grutter, 2011). Due to human's susceptibility to the interior environment and atmospheres and their effect on the mind and body and human's influence on the environment, an environment can be designed according to the person's nature, so that the student will have peace of mind. This design can be implemented with or without his participation and opinion.

According to the definition by the National Council for Interior Design Qualification (NCIDQ), interior design is a profession including training, experience, and testing in order to increase the performance and quality of the interior atmosphere (Piotroski, 2002). Environmental psychology helps to better environment design. Environmental psychology is the study of transactions between people and their physical arrangements. In these transactions, people change their environments and their behavior and experiments change according to their environment. This includes theory, research, and practice with the aim of creating human environment and improving humans' relationships with the natural environment. Due to the large investment society in the physical environment (including buildings, parks, streets, the atmosphere, and water) and high costs of misusing nature and natural resources, environmental psychology is one the main components of the environment and human's welfare. Environmental psychologists work at three levels of analysis: (A) basic psychological processes such as imagining the environment, spatial cognition, and character in order to filter and build human's experience and behavior, (B) social atmosphere management: personal atmosphere, land, erosion, protecting privacy, and physical aspects of adjusting daily complicated behaviors such as working, learning, living in the place of residence, and society, and (C) human's interactions with nature and the role of psychology in climate change (Gifford et al., 2011). Humans are always attempt actively to create a cohesive environment and territory and play an active role in this regard. In fact, there how they are in terms of character makes no difference. However, due to characteristic lack, a person's contact may be different. Shy and indecisive people are not able to express their true feelings, reject others' illogical demands, and defend themselves. Interpersonal problems make them lack accurate planning for their life and thus, they cannot use their potential forces appropriately (Ramezani, 1994). Being misused causes many problems such as losing self-confidence, weak performance, aggression, no active participation in teaching-learning process, and educational performance failure. Kokin (2015) states that shy people, due to their discomfort at social conditions, make further mistakes in interpreting and expressing facial expressions. Shy person's conservatism makes him limit his requests, thus he will lose autonomy and self-confidence. However, socially anxious, shy, or phobic people can achieve social preparedness and success by choosing activities and situations according with their personal needs (Henderson et al., 2014).

Youth is mainly the exploration period and the process of gradual selection of moving towards cohesive self-concept. The best description of this period is the process of advancement, i.e. enhancing the ability to overcome complicated challenges of educational, interpersonal, and emotional assignments and discovering talents, social identity, and new favorites. In this regard, the necessity of educational and psychological issue experts in order to teach the necessary skills to teenagers and help them overcome the obstacles and successfully achieve the turning point in this period of psychological growth and adaptability is felt.



The grade point average (GPA) that a person achieves in all lessons or some such as mathematics, science, and literature can be called educational performance. Researches indicate the effect of the environment on human's performance. Lisa Heschong found a relationship between the outside view and performance improvement among employees. Better view improved employees' performance. Employees in rooms with a view were 7 to 12 percent more rapidly responsive than those who were in rooms with no view. They also did the test 10 to 25 percent better than those who were in rooms with no view. The results indicated that there is a significant relationship between employees' scores and images. Employees with better images showed fewer negative health signs and the report on fatigue increase was strongly along with no images (Wierenga et al., 2004).

Hartig found that people who are in the natural environment act better and show further positive emotions (Wierenga et al., 2004). New models used to perceive the performance of short-term memory in cognition and behavior indicate that the physical environment may be applied as an auxiliary memory. In the Savanna project, Heerwagen and Wise cooperated with a team of Herman Miller's personnel in order to test the hypothesis that designing interior environments in order to arouse the necessary features and qualities of the preferred natural settings will improve the cognitive performance. These people used three workstations in the experiment: the first workstation was in a gray environment, the second one had a geometric pattern, and the last used a designed digital image that conveyed the quality of Savanna environment. The subjects conducted a series of tasks designed to measure cognitive skills such as memory, creativity and problem-solving. Each participant worked for half a day in each workstation. Researchers found a positive relationship between the natural images of workstations and subjects' scores in creative problem-solving tests; however, they did not find any significant relationship with the performance of memory test. Although further researches are required to find that which features of the images create creative thinking and how different aspects of these images affect the short-term memory, the Savanna team concluded that creative problem-solving and emotional performance can be manipulated through the application of visual images used to cover the working environment (Wierenga, 2004).

According to Davis, physical variables should be both observable and controllable. In a fundamental research corporation in Atlanta, Beth Shapiro investigated the opinion of 1050 schoolteachers all over the country. The results indicated that 88% believed that attractive colors and the pattern of ceilings and walls have a strong effect on students' learning and success. 79% of teachers also believed that these factors are important when handling the students. Therefore, if the classroom interior environment provides comfort and relief, students will gain positive experiences (Wang and Russ, 2008).

King has conducted an investigation into previous researches regarding the relationship between personal behavior and educational environments. Physical features include sound, water, air, color, and lighting. An educational environment can improve through health improvement, air quality, smell control, glare reduction, and use of relaxing colors. King concluded that weather, temperature, humidity, air circulation, and sound have more significant effect on success and performance than light and color; however, these two factors are also important. Hathaway investigated the effect of air quality, color, lighting, smell, temperature, and mental and physiological effects on human. His studies indicated that all these factors have a close relationship with human's learning and performance (Wang and



Russ, 2008). Do the facilities of the school provide a useful environment for learning? As it was mentioned before, it has been strongly proved that people are affected by their surrounding environment. Children under the environmental conditions are no exception.

A delay in repairs (flaky walls, deteriorating plaster, unusable toilets, weak lighting, insufficient ventilation, and inappropriate heating and cooling systems) can cause the environment to affect students' health and morale (Frazier, 1993).

Although researchers have suggested that home environment, surrounding nature, and activities of the universe may affect students' performance, one of the important factors is the building environment and its design. Schools are particular environments that people attend them for learning. In Iran, approximately 107000 schools provide about 13.5 million students with educational requirements.

Learning is not limited to classrooms and teachers use all the areas of school environment for teaching the students. Kuttner states that school should develop learning environments actively and to a large extent. A technical school in Massachusetts believes that in reality, 20% of learning occurs in common classroom (Colman, 2002). Common classrooms (learning studios) are where students can do different tasks in different times. There are many positive relationships between building variable design and students' success (Hughes, 2005).

If the person can have an active role in designing the learning environment and doing tasks, he will feel good; however, sometimes, characteristic factors such as shyness stop him. Undoubtedly, nature and its elements affect students and they can be added to the classroom through designing and with the help of students, since we know that their emotional and mental needs are the top priority. As high scores and efficient performance are important and due to the importance of education and the effect of school and classroom on people's life, this study attempts to measure the effect of classroom interior design with or without students' participation on their shyness and educational performance.

## **METHOD**

The present study conducted over a time interval between January and March 2015, is an experimental research including pre-test and post-test with a control group. Among female ninth-grade students of Shiraz City, two schools were selected using random clustering sampling. Then in these schools, two classrooms were selected randomly to implement designing and one classroom was selected as the sample group. The number of subjects was 60; 16 individuals were in the first group (those who designed the classroom on their own), 16 individuals were in the second group (those whose classroom was designed by the researcher), and 28 individuals were considered as the control group. At first, the aim of the research was described for the subjects and they were asked to participate in the project.

The collecting tool was 20-question Cheek-Buss Shyness Scale (1981) and in order to measure educational performance, the average of students' scores in three lessons of mathematics, science, and literature in early January, late March, and mid May was taken into consideration.

The subjects answered 20-question Cheek-Buss Shyness Scale (1981) according to their current condition and reported their shyness degree on a 5-point Likert Scale (1 strongly disagree to 5 strongly agree). In this scale, the subject's score is in the range of 20 to 100.



Researches indicate that the mentioned scale is of high consistency in terms of validity. The Alpha Cronbach's coefficient for the scale has been reported by Melchior and Cheek (1990) and Cheek and Krasnoperova (1999) as 0.94 and 0.92 respectively. In order to use this test in the Iranian culture, this version was translated and then its validity was measured by means of exploratory factor analysis. The KMO index was equal to 0.90 and Chi-Square index in Bartlett test was equal to 1163.541 and significant at 0.0001 level. According to factor analysis conducted on 20 questions of the test and by considering eigenvalues equal to 1 and higher as well as the scree plot, a general factor was identified and it was named as shyness. Factor loading of 20 questions fluctuated between 0.44 and 0.68 and in order to determine the validity, Alpha Cronbach's method has been applied, which was equal to 0.89 (Chari and Delapour, 2006).

After scoring the questionnaire, calculating the average of scores for educational performance, and sorting the data using SPSS software, descriptive statistics were applied to data analysis. All the data collected in this research has been illustrated as frequency tables and diagrams and the results have been analyzed using repeated measures analysis of variance (ANOVA).

## FINDINGS

In Tables 1 and 2, the mean and standard deviation of subjects' shyness and educational performance have been summarized.

**Table 1: the mean and standard deviation of shyness**

Tests	Group	Mean	Standard deviation
Pre-test	1	59.6250	12.85755
	2	59.3125	14.56351
	3	58.5714	9.67022
	Total	59.0500	11.78828
Post-test	1	41.9375	9.11752
	2	66.4375	16.25205
	3	58.0000	10.54795
	Total	55.9667	14.97565
Follow-up	1	63.1875	12.96261
	2	68.1875	17.19387
	3	59.8571	12.58369
	Total	62.9667	14.22455

**Table 2: the mean and standard deviation of educational performance**

Tests	Group	Mean	Standard deviation
Pre-test	1	17.2188	3.12633
	2	17.7656	2.21448
	3	17.7143	3.07372
	Total	17.5958	2.84750
Post-test	1	17.1406	3.06454
	2	18.5312	2.01840
	3	17.5000	2.99073
	Total	17.6792	2.79417
Follow-up test	1	16.2344	3.40645
	2	17.7344	2.11043
	3	17.5179	3.09115



	Total	17.2333	2.97193
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In order to determine the significance of mean difference, we use repeated measures test.

**Table 3: test of repeated measures for shyness**

Test	Source	Sum of squares	Degree of freedom	Mean square	F	Sig.
With-in subject effect	Repetition	1929.238	2	964.619	14.288	.000
	Repletion * of group	3425.431	4	856.358	12.685	.000
	Error	7696.292	114	67.511		
Between-subject effect	Y-intercept	593909.472	1	593909.472	1.698E3	.000
	Group	2314.063	2	1157.031	3.309	.044
	Error	19932.932	57	349.701		

Concerning shyness, the results indicate that the effect of significant repetition is the significant interactive group. In other words, there is a different between groups and the test has been effective.

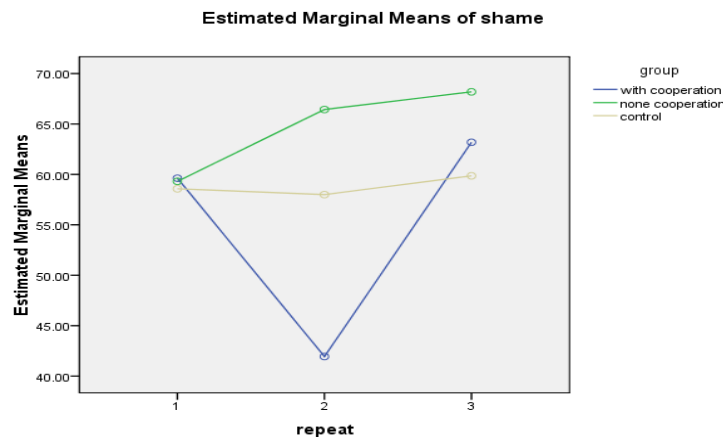
In order to observe the main place of the difference between groups, Bonferroni post hoc test was applied. According to Table 4, we conclude that participation in designing can affect shyness.

**Table 4: Bonferroni test of shyness**

Group (I)	Group (J)	Mean difference of (I-J)	Std. Error	Sig.
1	2	-9.7292*	3.81718	.041
	3	-3.8929	3.38357	.764
2	1	9.7292*	3.81718	.041
	3	5.8363	3.38357	.270
3	1	3.8929	3.38357	.764
	2	-5.8363	3.38357	.270

\*p<0.05

According to Diagram 1 of tests (pre-test to post-test), group 1 has shown more expressiveness at the test time, while in groups 2 and 3, there has been no change.



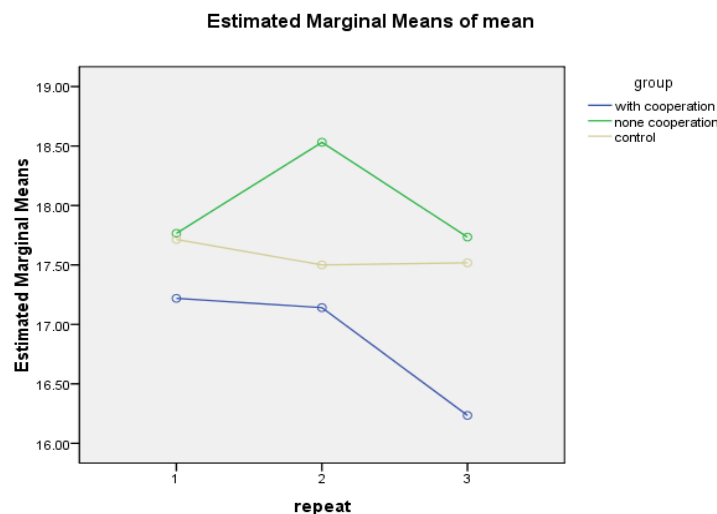
**Figure 1: diagram of changes related to shyness**

The data analyses of educational performance indicate that the repetition effect and the interactive effect are significant, while the group effect was not significant.

**Table 5: repeated measures test of educational performance**

Test	Source	Sum of squares	Degree of freedom	Mean square	F	Sig.
With-in subject effect	Repetition	9.402	2	4.701	8.922	.000
	Repletion * of group	10.148	4	2.537	4.815	.001
	Error	60.068	114	.527		
Between-subject effect	Y-intercept	51356.709	1	51356.709	2.156E3	.000
	Group	32.387	2	16.194	.680	.511
	Error	1357.528	57	23.816		

The interaction of group and repetition are obvious in Diagram 2. From pre-test to post-test, groups 1 and 3 are almost vertical, group 2 has progressed from pre-test to post-test, while the subject group has regressed since the post-test.



**Figure 2: diagram of changes related to educational performance**

## DISCUSSION

This investigation measures the effect of classroom interior design with or without students' participation on their shyness and educational performance.

In this research, following the previous researches that people tend to sit opposite one another in competitive situations, while they tend to be next to each other in cooperative situations (Haft, 1976) and due to the importance of cooperation as well as the effect of these interactions on the person and his behavior, it was attempted to let students sit next to one another and as a circle.

The findings of this research indicate that classroom interior design affects shyness and according to the results, the effect of repetition, the interactive effect, and the effect of group are significant. The result analysis indicated that there is a difference between the group who had designed their classroom on their own and the group whose classroom had been designed



by the researcher. In fact, in the first group, who had designed the classroom on their own, shyness had decreased during the project. Although in this group, after removing the vases during the interval between post-test and follow-up, shyness reached the initial level once more, it can be concluded that student's major role in creating an appropriate educational atmosphere can be effective in reducing interpersonal problems.

In this research, the aim of the first group's participation in classroom design was to develop self-concept and assertiveness and according to the findings, it is obvious that there is a significant difference between the first group who had participated in classroom interior design and the second group who had no participation. As the research conducted by Henderson et al., (2014) indicates, socially anxious, shy, or phobic people can achieve social preparedness and success by choosing activities and situations according with their personal needs.

Researches indicate that people who set and accomplish significant innate goals, and goals according with the person's true self, values, and wishes or providing autonomy, competence, and communication participate further in welfare (Steger et al., 2008). Furthermore, teaching assertiveness skills to female teenagers reduces their shyness (Noami et al., 2016). The findings of other researches also indicate that assertiveness group teaching reduces students' social anxiety and increase their social skills as well as educational progress.

The research conducted by Beth Shapiro indicated that 88% of teachers believe that attractive colors and the pattern of ceilings and walls have a strong effect on students' learning and success. 79% of teachers also believed that these factors are important when handling the students. Therefore, if the classroom interior environment provides comfort and relief, students will gain positive experiences (Wang and Russ, 2008).

The findings of the present study about educational performance indicate that the effect of repetition and the interactive effect are significant. Educational performance in group 2 at the first stage is increasing, while in group 1 and the control group is almost stable. Therefore, classroom interior design affects educational performance. During the second stage (post-test to follow-up), students' scores in experimental groups are decreasing.

King's (1979) studies indicated that physical features including sound, water, air, color, and lighting in an educational environment can improve through health improvement, air quality, smell control, glare reduction, and use of relaxing colors. King concluded that weather, temperature, humidity, air circulation, and sound have more significant effect on success and performance than light and color; however, these two factors are also important. Furthermore, Hathaway's findings indicated that air quality, color, lighting, smell, and temperature have a close relationship with human's learning and performance (Wang and Russ, 2008).

In the research conducted by Shokri et al. (2007), the results of correlation matrix between variables indicated that educational performance has a significant and positive relationship with conscientiousness, extroversion, acceptance, and adaptability. Moreover, there is a significant and negative relationship between neurosis and educational performance and a positive relationship between the performance of a duty and educational performance.

Concerning the effect of participation on the environment design, the findings indicated that the group whose learning environment had been designed by the researcher showed an improvement in educational performance. By investigating the results of the first two stages, we find that the second group has further progressed in terms of educational performance and



this growth is significant, i.e. contrary to the research hypothesis, non-participation in classroom design affects educational performance. As the research conducted by Meftah (2002) indicates, there is no relationship between shyness and educational progress; however, self-esteem has a relationship with educational progress. In fact, as in other researches, classroom design and its good condition can lead to educational progress, provided that it improves students' morale and does not distract them. Moeinpour et al. (2004) state that although there is no significant relationship between physical variables and students' educational progress, these variables affect teacher's attitude and teacher's attitude affects students' educational progress. Furthermore, the educational atmosphere of our current schools is not compatible with children and teenagers' mental characteristics.

If this research is conducted in a larger statistical population, it may provide us with further information. It seems that if the classroom design is implemented for one educational year, it will provide better results.

The findings of this research indicate that classroom interior design has an effect on educational performance, while it has no effect on shyness, perhaps due to the effect of various factors on shyness. Therefore, as heavy costs are spent on constructing the school building, it is recommended that more money be spent on designing the environment and bringing nature to the classroom, so that students can benefit the environment.

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