

Studying the Effect of Classroom Interior Design on the Happiness and Mental Health of the Female Adolescent Students

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Abstract

The present research aimed to investigate the effect of classroom interior design on the happiness and mental health of the students. Sixty girl students of ninth grade of Shiraz were selected in the academic year of 2015-16 by the random cluster sampling method; they were assigned to two groups of experiment and control during the three stages of pre-test, post-test and follow up through the Oxford Happiness and Mental Health Questionnaire. The results of variance analysis with the repeated measurements in the first stage showed that there is no significant relationship between the classroom interior design and the variables. However, a re-analysis of data without follow-up showed a significant increase in happiness, as well as the interior design has a significant effect on the mental health subscales (anxiety and physical signs) of the subjects. The interior design of the environment does affect the individuals within it, and it is possible to design suitable environments with regard to the environmental characteristics and the impact that the environment has on the students.

Key words: Interior design, Student, Happiness, Mental health

Introduction

Studentship is an important and sensitive period for individuals, starting at the age of 6 and continues till 18 years of age. The classroom, environment and educational environment are very important issues that are related to their efficiency. Everyone likes to have a space overlooking the high mountains or oceans, and the price of these environments are more expensive than the sights overlooking the highways and industrial centers with attractive architecture. Why are we looking for beautiful nature? Is our enjoyment of the environment measurable? The organization of the environment and the interior space affects people's psyche. The design of the environment and the creation of new landscapes require scientific and creative processes, and is a complex discipline related to other sciences and is a bridge between science and the art world which connects analysis with creativity (Shahidi et al., 2008). In the dictionary, the use of architecture, engineering, landscape architecture, urban and regional planning is defined in order to achieve the most appropriate environmental design environment. (Random House Dictionary, 2016). The design of the environment is also a process of addressing the parameters of the surroundings when it comes to designing a map, plan, building and so forth. Although the classical design has always considered environmental factors, this movement has been explicitly started since the 1940s. (Kateb et al., 2007) Are architects able to design buildings whose frameworks promote creativity and reduce social and internal disputes and endeavor to increase their efficiency in the environment? (Akbari and Sattarisarbangholi, 2016) Creativity in the design of the environment plays an important role, but it is not the only condition in the design of the environment. Information and knowledge derived from different fields of science and technology and the recognition of psychological issues are also important. Fitness and balance in interior design gives the human satisfaction if it is compatible with the human nature spiritually and morally, and results in a good morality. Humans are relaxed in coherent and harmonious environments (Kateb, et al., 2007). If the realm is badly designed, the border monitoring mechanisms will not work well, and people will have to resort to other mechanisms, such as verbal and nonverbal behaviors. (Altman, translated by Namazi, 2016) Human beings are always actively seeking to create a coherent and harmonious environment and realm. Happiness is a feeling that everybody wants, but few of us find it; a clear sign of such an emotion is appreciation, inner feeling, sense of satisfaction and interest in oneself and others. Its most common state of mind is pleasure and joy (Zakari Razlighi, 2006). Despite individual differences as well as many variations and differences in the sources of achieving happiness by the people, there is a considerable agreement on what is called happiness, and that people are happy or not. Happiness is the frequent presence of positive emotions, the absence of a lot of negative emotions and satisfaction with life. (Golestani Bakht, 2007)

The eye is the gateway to existence; when it sees images of the same nature with its nature, it transmits them to the center of brain perception, and the brain receives the well-deserved message, with satisfaction and without any resistance; it transmits it to other organs of the body. Naturally, this feeling is followed by a positive energy. The feeling of security, comfort makes it more relaxed; the gestures

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and behavior are regulated and thus it causes a more balanced and beneficial morality. (Grötter, translated by Pakzad and Homayoun, 2011)

Man likes to coordinate work and life with the natural environment. The result of this harmony with nature is to provide mental and spiritual well-being through the reduction of anxiety and nervous pressure and natural beauty through the use of materials and colors consistent with nature. According to this view, the architecture, while providing shelter for humans, is developed in a way that it has at least negative effects on nature, and in which being close to nature, provides, in addition to physical needs, the human with mental and psychological well-being. (Lang, translated by Einifar, 2009) Light is one of the most important natural factors. Individuals were more satisfied with the presence of natural light in the hospital department, and it was more effective than artificial light in improving the performance of the disease. The presence of green elements such as flowers and plants and access to natural open space within the department were factors affecting the health of the patient. Another factor was the personal privacy of the patient in his safety, which was carried out using rooms with an intangible nursing supervisor bed, not installing railing and towels behind the windows, and the possibility of free movement of the patient in the department. The presence of a space sitting and watching television and dining room in the department also had a positive effect on improving the patient's performance (Najafi, et al., 2016). Based on the studies, the green and violet colors have a positive effect on the humans more than red and yellow. In addition to absorbing contamination and germs, the presence of plants in space produces oxygen and moisture in the air. (Montazerzamour and Shahedi, 2014)

It seems that paying attention to visual pleasure and psychological factors in the design of spaces to be considerably effective in the social and economic dynamism and the increase of social interactions. Currently, the design of business centers has undergone major changes, and new lines of thought have been influenced by various sciences, including environmental psychology, in the design and planning of commercial spaces. Commercial spaces as economic and public spaces include several social, economic and physical characteristics and play a key role in meeting the needs of today's life. The application of psychological and environmental factors in the design of shopping centers has attracted the attention of visitors and improved the position. (Akbari and Sattari, 2016)

According to Ulrich (2001), we especially incline to the images and attributes of nature that have some consequences for successful survival and reproduction. Positive states, attractiveness, pleasure and preference of an environment are signs that the environment can provide resources and support survival and well-being while the effective negative modes are a warning to the disadvantage. Tendency toward nature is widely discussed as an important aspect of human behavior. (Wilson, 1984) Numerous studies have shown that human preference for environments with natural elements is often found in buildings. Effective accountability to nature can be explained by referring to our contribution to evolutionary history in the natural environment. In places that are beneficial to the survival of a person, the person tends to feel emotionally responsive. (Ulrich, 2001)

It is claimed that these fast effective responses, which are rooted in human evolutionary history, have been satisfactorily adapted. They quickly motivate the organism toward action. Although there is a strong evidence that the humans have a certain affinity with certain landscapes and elements of nature, it does not prevent that some natural or incidental occurrences cause negative and even disgusting reactions in humans. (Javi, 2006)

Some scholars express an effective relationship between the elements of nature and landscapes under a term called biophilic. Biophilic design can lead to a more attention to the perceptual quality of the things: guiding to one side from between the possible performances and accompanying the necessary performances. In addition, due to the emotional attachment to certain natural elements, the biophilic architecture can be absorbed by natural forms. Such an ecologic orientation could be appropriate. (Wilson, 1984) Many authors state that the findings of the field psychology of environment should be customary in medical treatment. The integration of art with the characteristics of nature in certain places (stressful working environments) can contribute to a positive change in feelings and improve the feelings of the individual. Natural subjects, shapes and processes have often been the source of inspiration throughout the history of architecture. Perhaps the most obvious example of this inspiration is to decorate the environment with the spectacles of animals and plants. Based on this, many architects designed the lessons of structural forces of governing nature, which had economically effective results in the architecture of the building. Nowadays, the attractiveness of the connection between nature and architecture, especially in the zoomorphic or biomorphic architecture, is evident. (Javi, 2006)

The built environments, if properly formed, can satisfy aspects of human needs, including survival, security, affiliation, esteem, learning and beauty.

Humans are holist. An aspect of personal life or its surroundings will affect the behavior and its whole being. A change affects one of its family members or in its living space affects other members and families. An interior designer should know that his work affects family members when he or she redesigns a home or even a room. So when the interior is designed, the needs of the people who enter the environment and the family should be met. (Lang, translated by Einifar, 2009)

The effects of the environment on individuals can be cited by Zweigenhaft (1976), which according to the 1969 Samer's findings are: a) some architectural qualities that motivate human interactions; the individuals tend to sit in opposite positions in competitive situations, but

in the context of co-operation in the vicinity of each other. These individuals were evaluated less positively by the students. And they themselves, were less concerned about student-professor interaction. In general, they were less pointed as teachers.

Yanic Joye (2006) states that the humans are attracted to the natural landscapes and special settings of the environment. This has a positive effect on human performance and can reduce stress. However, the opportunity to contact these elements in modern urban life has declined. It is unclear that how this evolution can have subtle effects and side effects on mental health and well-being. These factors can even be contrasted with the integration of features. He also emphasizes on the use of plants for using in fractal nature in a framework of architecture.

The researches also showed positive behavioral effects to visual stimuli provided in natural scenes with biophilic content against urban environments. General results have strongly supported the use of evolutionary and environmental psychology in advertising. (Hartman, 2010)

The results of the researches indicate that the most prominent human tendencies are to achieve well-being and happiness. Considering the impressionability of humans from the environment and internal spaces and their effects on mental and physical health, as well as on the impact of humans on the environment, one can design an environment that is consistent with the individual and the student is comfortable with it.

Undoubtedly, the nature and its elements also do affect the students, and these elements can be added through design to the class because we know that the students' emotional and psychological needs are of high priority. Therefore, considering the importance of study period and the impact of school and classroom on the lives of individuals, this study intends to measure the effect of classroom interior design on the mental health and happiness of the students.

Method

The present research, conducted during the period from March to February 2011, is an experimental research of the type of pre-test, post-test with a control group which was selected among 9th grade female high school students in Shiraz by the method of random cluster sampling of two schools. In these schools, one class was selected randomly in order to implement the design and another class as a sample group. The subjects were 60 people. 23 subjects were in the first group (group whose classroom was designed with many pots), 28 people were considered as control group. Initially, the purpose of the research was expressed for the subjects; they were asked to participate in the research if they wished to.

Data collection tool was General Health Questionnaire and Oxford Happiness Inventory, prepared by Argil, which were given simultaneously to the subjects.

Reliability and validity of Oxford Happiness Test have been calculated in Iran. The reliability of this test was obtained by 92 through the split-half method and through the internal consistency and Cronbach's alpha by 93. Through the actor analysis method, 5 factors were extracted from among 29 test questions that explained 57.1% of the total variance. In this test, the scoring range is from 1 to 4 (Alipour and Nourbala, 1999).

The Mental Health Questionnaire has been validated in the form of 36, 12, and 28 items; the form of 28 items is used in Iran. In this research, this version was used. In Yaghoubi's research, the reliability coefficient of the questionnaire was obtained by 88% through the retrieval method. Also, in the Hooman's study, the coefficient of internal consistency has been reported by 83%. In Nasri's research, by the implementation of the above questionnaire on the nurses, the internal consistency coefficient was 93%, and the reliability coefficient was 83% by the split-half method. From this test, each person receives 5 scores, 4 scores of which are related to the sub-tests and one score as the total score is obtained from the total scores of sub-tests. In this test, lower scores represent better mental health (Narimani, and Abolqasemi, 2006).

After scoring questionnaires and sorting the data, using SPSS software, the descriptive statistics were used to analyze the data. All data obtained in this research were presented as frequency distribution tables and diagram, and the results were analyzed using ANOVA through the repeated measurement.

Findings

In Tables 1 and 2 you can see the mean and standard deviation of happiness and mental health of the subjects.

Table 1: The mean and standard deviation of happiness

Tests	Group	Mean	Standard deviation
Pre-test	1	121.7813	24.99772
	2	122.6429	16.94045

	Total	122.1833	21.44405
Post-test	1	133.4688	26.56457
	2	123.4643	19.25363
	Total	128.8000	23.78562
Follow-up	1	128.7813	29.18322
	2	120.3571	22.89139
	Total	124.8500	26.55651

Table 2: Mean and standard deviation of mental health

Tests	Group	Mean	Standard deviation
Pre-test	1	24.8750	16.42137
	2	25.7500	11.64164
	Total	25.2833	14.27941
Post-test	1	17.4688	14.79752
	2	24.0000	16.06468
	Total	20.5167	15.61886
Follow-up	1	17.6562	12.86809
	2	24.7857	13.67170
	Total	20.9833	13.61641

To determine the significance of the difference between the means, we use the variance analysis test with repeated measurement.

Table 3: Test of Happiness Repetitive Measurement

Tests	Source	Total squares	Freedom of degree	Mean squares	F	Significance level
Inner-group effect	Repetition	1191.950	2	595.975	2.732	.069
	Repetition*group	1029.372	2	514.686	2.359	.099
	Error	25308.083	116	218.173		
Inter-group effect	By intercept	2803701.222	1	2803701.222	2190.196	.000
	Group	1536.133	1	1536.133	1.200	.278
	Error	74246.644	58	1280.115		

In the first step, by analyzing the data in Table 3, it can be seen that the effect of the repetition, the effect of the group and the interactive effect are not significant at all. That is, the students of one class have not had more happiness than the other, none of the tests (pre-test, post-test, and follow-up) have more happiness, and the group interaction and repetition are not significant either.

But a re-analysis of data without follow-up showed that the effect of repetition and interactions is significant, and the experimental group had more happiness at the time of the implementation, although after the removal of pots, a fall of happiness is seen.

Table 4: Re-Tests of Repeated Measurement of Happiness without Follow-up

Tests	Source	Total squares	Freedom of degree	Mean squares	F	Significance level
Inner-group effect	Repetition	1168.334	1	1168.334	7.198	.009
	Repetition*group	881.601	1	881.601	5.431	.023
	Error	9414.491	58	162.319		
Inter-group effect	By intercept	1876813.752	1	1876813.752	2195.089	.000
	Group	624.152	1	624.152	.730	.396
	Error	49590.339	58	855.006		

You see these changes in Figure 1.

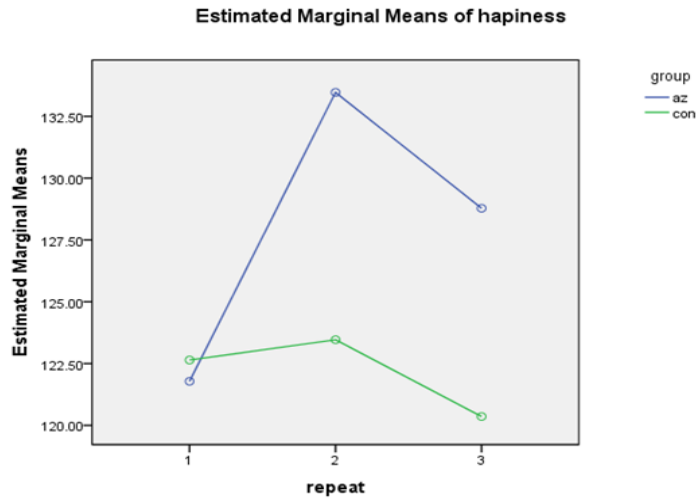


Figure 1: Diagram of Changes in Happiness

Concerning mental health, the results indicate that the effect of repetition is significant, but the effect of group and interaction is not significant. This means that the students did not have mental health more than the rest of the population; the difference in the tests (pre-test, post-test) has been downward from pre-test to post-test, indicating improvement in mental health. The group interaction and repetition is not significant either.

Table 5: Repeated Measurement Test of Mental Health

Tests	Source	Total squares	Freedom of degree	Mean squares	F	Significance level
Inner-group effect	Repetition	755.359	2	377.679	4.666	.011
	Repetition*group	355.759	2	177.879	2.198	.116
	Error	9389.664	116	80.945		
Inter-group effect	By intercept	90097.073	1	90097.073	196.711	.000
	Group	1051.740	1	1051.740	2.296	.135
	Error	26564.988	58	458.017		

Changes can be seen in Figure 2.

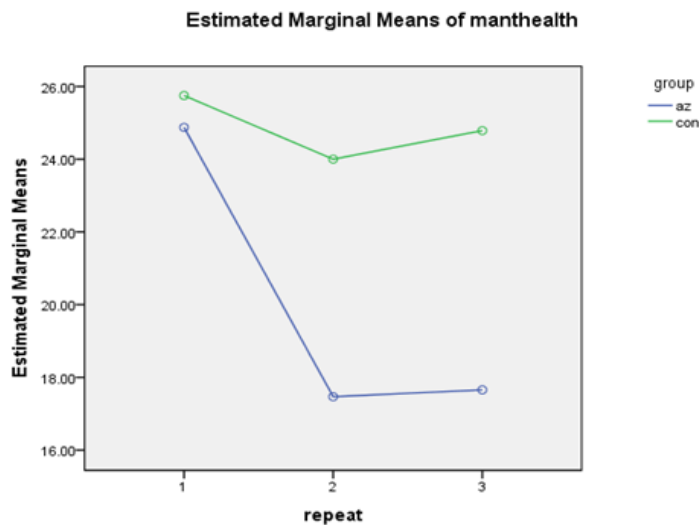


Figure 2: Diagram of mental health changes

In order to determine the impact of environmental design on mental health more precisely its sub-scales were also taken into consideration.

Table 6: Average and standard deviation for severe depression

Tests	Group	Mean	Standard deviation
Pre-test	1	5.2500	5.59954
	2	6.0714	5.37435
	Total	5.6333	5.46473
Post-test	1	2.9375	4.55035
	2	4.6786	5.55813
	Total	3.7500	5.07778
Follow-up	1	4.0000	5.11796
	2	6.6786	3.59066
	Total	5.1000	3.73122

Table 7: The mean and standard deviation of social dysfunction

Tests	Group	Mean	Standard deviation
Pre-test	1	6.2812	3.96138
	2	7.2143	3.03507
	Total	6.7167	3.56105
Post-test	1	5.4375	4.20397
	2	6.7143	3.76983
	Total	6.0333	4.02520
Follow-up	1	5.6875	4.35103
	2	6.6786	3.59066
	Total	5.1000	3.73122

Table 8: Mean and standard deviation for the physical sub-symptoms

Tests	Group	Mean	Standard deviation
Pre-test	1	6.2500	4.56494
	2	5.3214	3.51772
	Total	5.8167	4.10247
Post-test	1	3.8750	3.50806
	2	5.7500	5.81585
	Total	4.7500	4.77857
Follow-up	1	4.2813	3.62993
	2	6.1071	5.58662
	Total	5.1333	4.69571

Table 9: The mean and standard deviation of anxiety and insomnia

Tests	Group	Mean	Standard deviation
Pre-test	1	7.0937	5.37233
	2	7.1429	3.30784
	Total	7.1167	4.49139
Post-test	1	5.2187	4.36802
	2	6.8214	4.46429
	Total	5.9667	4.44921

Follow-up	1	3.3437	2.44434
	2	7.1071	3.96596
	Total	5.1000	3.73122

To study the significance of the means, we use variance analysis with the repeated measurement.

A) Anxiety and Insomnia:

Table 10: Repeated measurement test of anxiety and insomnia

Tests	Source	Total squares	Freedom of degree	Total squares	F	Significance level
Inner-group effect	Repetition	107.927	2	53.963	6.202	.003
	Repetition*group	103.927	2	51.963	5.972	.003
	Error	1009.262	116	8.701		
Inter-group effect	By intercept	6714.636	1	6714.636	202.800	.000
	Group	145.969	1	145.969	4.409	.040
	Error	1920.359	58	33.110		

The results show that the effect of repetition, group and interaction is significant. This means that the students of the research group have been improved. The difference in the tests (pre-test, post-test) has been downward from the pre-test to post-test, which indicates the improvement of the status of the experimental group's students in this sub-scale. Repetition and group interaction is also significant. Changes can be seen in Figure 3.

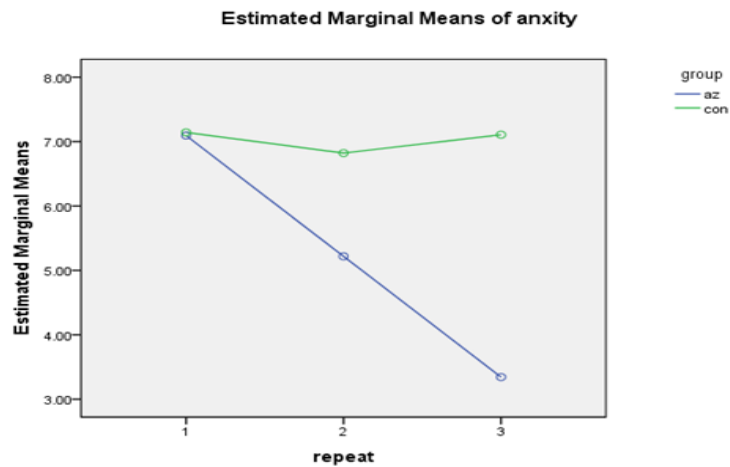


Figure 3: Diagram of Anxiety Changes

B) Social dysfunctions:

Table 11: Repeated measurement test of social dysfunction

Tests	Source	Total squares	Freedom of degree	Total squares	F	Significance level
Inner-group effect	Repetition	15.567	2	7.783	.920	.401
	Repetition*group	1.011	2	.506	.060	.942
	Error	980.955	116	8.457		
Inter-group effect	By intercept	7192.979	1	7192.979	257.399	.000
	Group	51.001	1	51.001	1.825	.182
	Error	1620.799	58	27.945		

The results of the subscale of social dysfunction show that the effect of repetition, group and interaction is not significant. That is to say, the students did not have any difference compared to the rest of the students. These changes can be seen in Figure 4.

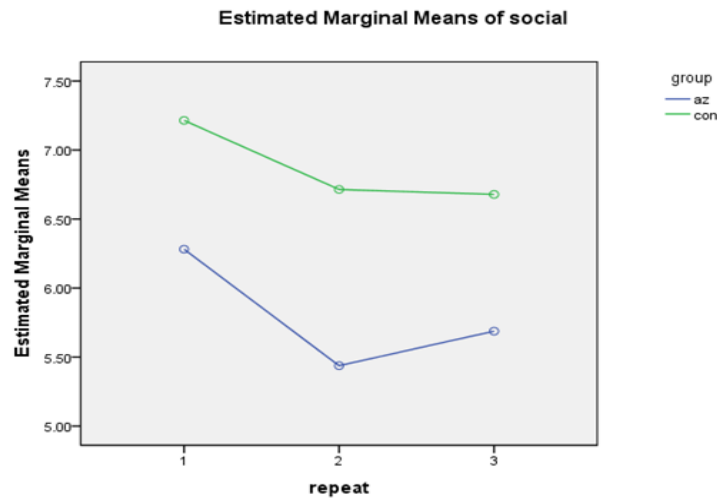


Figure 4: Diagram of Social dysfunctions

C) Physical symptoms:

Table 12: Repeated measurement test of physical symptoms

Tests	Source	Total squares	Freedom of degree	Total squares	F	Significance level
Inner-group effect	Repetition	28.726	2	14.363	1.436	.242
	Repetition*group	76.904	2	38.452	3.845	.024
	Error	1160.063	116	10.001		
Inter-group effect	By intercept	4965.836	1	4965.836	121.735	.000
	Group	38.258	1	38.258	.938	.337
	Error	2365.942	58	40.792		

The results show that the effect of repetition and group is not significant. But the group interaction and repetition are effective. It can be observed that the experimental group shows a significant decrease in this sub-scale, indicating that their performance is improving. See the results as shown below.

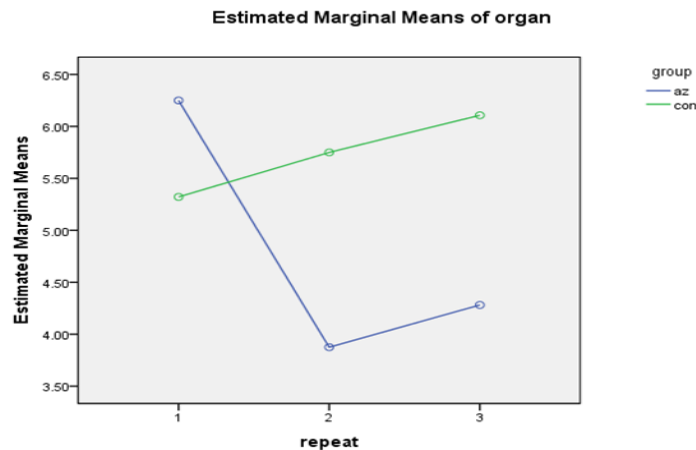


Figure 5: Diagram of Social Dysfunctions Changes

D) Depression and insomnia:

Table 13: Repeated measurement Test of depression and insomnia

Tests	Source	Total squares	Freedom of degree	Total squares	F	Significance level
Inner-group effect	Repetition	103.817	2	51.908	4.176	.018
	Repetition*group	6.617	2	3.308	.266	.767
	Error	1441.750	116	12.429		
Inter-group effect	By intercept	3915.032	1	3915.032	72.622	.000
	Group	67.032	1	67.032	1.243	.269
	Error	3126.768	58	53.910		

The results show that the effect of repetition is significant, but the effect of group and interaction effect are not significant. This means that the students have not had any depression in any of the classes more than the rest; the difference in the tests (pre-test, post-test) has been downward from pre-test to post-test, indicating a decrease in depression. The group interaction and repetition is not significant too. The changes can be seen in Figure 6.

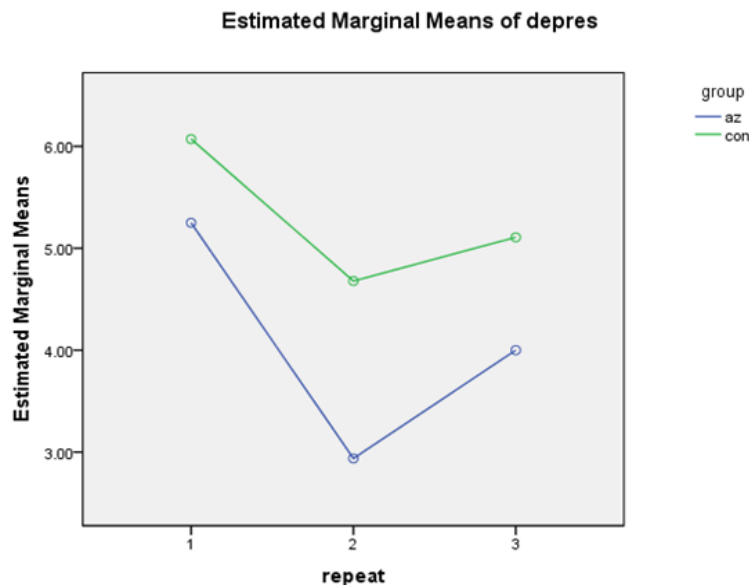


Figure 6: Diagram of Changes in depression and insomnia

Discussion

This study measures the impact of classroom interior design on the happiness and mental health of the students.

Researches show that individuals who meet the psychological needs defined in the SDT (self-determination theory) and the PWB (psychological well-being theory) report better well-being. For example, when people experience communication, feelings of self-acceptance, a sense of meaning and purpose in life, they report happiness and more life satisfaction. (Stagher et al., 2008) The home, as a place used by all layers of society, plays a fundamental role in human health, both physically and mentally, and is a factor in the formation of the culture of a society. In today's cities, the density of buildings and their expansion at altitude has made it impossible for man to enjoy rest and comfort in his life; he deprives himself from nature. The unhealthy house has harmful effects on human health, including poisoning, depression and mental disorders. Hence, the urban designers and architects aiming at green or nature-oriented architecture try to bring people rest and comfort, to return the social, cultural and geographical identities of the environment to the modern cities. In fact, the creation of green spaces in the city raises the sense of social orientation and peaceful life. (Alireza'i et al., 2014)

In this research, as in other studies, it can be seen that interior design has been of effect on the variables. Data analysis without follow up of happiness indicates a significance of interactive effect in research, that is, the happiness in the experimental group has been growing, but in the control group, this growth does not exist.

In examining the effect of classroom interior design on mental health, according to Figure 2. it can be seen that at the first stage, we have seen improvement in the mental health of experimental groups, although this improvement is not significant; by re-analyzing the data related to the sub-scales of mental health, it is observed that the interior design has reduced anxiety and insomnia, as well as decreased physical symptoms. A review of Frazier's Findings (1993) suggests that a delay in repairs (flaked off colors of the walls, damaged plaster, inefficient toilets, poor lighting, inadequate ventilation, and inadequate heating and refrigeration systems) can create a climate that affects the students' health and morale.

Our findings are consistent with the Park and Volhard's research. The study of Park on 35 women and 56 men undergoing thyroid and appendicitis treatment indicated that their placement in the hospital interior environment was effective with the psychological principles of landscape and environment in reducing the levels of their anxiety compared to the control group. Design of natural environments improves and reduces stress and increases the attention and quick improvement of patients and reduces anger and increases patience and tolerance. (Tavakoli, 2010)

Findings of Tavakoli's research (2010) also indicate that the designed environment has effect on the anxiety index of the clients and reduces it. Also, people were more satisfied with the presence of natural light in the hospitalization unit and considered it more effective than artificial light in improving the performance of the disease. The presence of green elements such as flowers and plants and access to natural open space within the department are factors affecting health. Another factor was the patient's privacy while protecting his/her security, using rooms with a careful nursing supervisor bed, not installing railing and towels behind the windows, and allowing the patient to move freely in the department. A space for sitting and watching TV and dining room in the department also had a positive effect on improving the patient's performance (Najafi, et al., 2016).

Many researches have shown that good environmental design can reduce anxiety, lower blood pressure and reduce pain. In contrast, the researches on poor design or environments without psychological support have shown that they have negative effects such as high delirium occurrence, high depression, need for pain medications, and longer stay in the hospital. (Olrich, 2001, 2002).

Many hegemonic theories emphasize the importance of endeavor, employment and engagement. (Stagher et al., 2008) Students' participation in school education processes can be the best effort for them.

The interest in environmental psychology has always existed. The problems of differentiating between the physical and social environment have never been resolved sufficiently, but the nature is changing human physical or social and virtual settings; the nature is an interconnected biophysical and psychological mixture and highlights the fundamental importance of understanding the environmental conditions for understanding human behavior. Some argue that we should look at alternatives to understand the exchanges of people and the environment (Gifford, et al., 2011).

It may be possible to investigate extensively the effects of classroom design on the students' personality factors in order to obtain the highest possible use of all personal and environmental dispositions in the near future for scientific and personality efficiency.

If this research is carried out in a larger statistical population, it may be able to provide us with more information. It seems that if the design of a class is done for an academic year, it will have better results.

The findings of this research suggest that classroom interior design is of effect on happiness and mental health of students. Therefore, as the costs are assigned to the school buildings, they can also spend on designing the environment and bringing nature to the classroom environment so that students can use the environment more.

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