

# Evaluation of the User's Satisfaction with the Functional Quality of the Educational Space with an Emphasis on the Efficiency of the Academic Centers; Case Study: Faculty of Art and Architecture, Islamic Azad University, Tabriz Branch\*

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## ABSTRACT

The quality of the environment is one of the influential parameters in the efficiency of the universities. Evaluating the students' satisfaction with the quality of the educational space is a principal criterion in measuring environmental quality. In the current study, using the post-occupancy method, as one of the valid methods in evaluating the artificial spaces, these factors were investigated among the students in the faculty of art and architecture of the Islamic Azad University, Tabriz branch, as one of the largest and comprehensive educational centers in architecture in the region. The current study identifies the solutions to increase the satisfaction of the users with the architectural body and enhance the quality of the educational environment to improve the efficiency of the educational spaces. The study, in the form of applied research, was conducted in two phases of qualitative and quantitative study using library documents and field studies, and resources. The analytical results in the SPSS software showed that the environmental quality is a result of a set of factors that to improve its level which increases through an increase in the satisfaction level of students with the educational space and improvement of the efficiency, paying attention to all these factors is necessary. The results indicate that the manifestation of the cultural symbols and values and inducing the sense of place were the students' considerations at first. Then, the location of the complex site and the extent of the possibility of using urban infrastructure facilities in the metropolitan area has a direct and positive effect on the desirability of space from the perspective of users.

**Keywords:** Educational Efficiency, Functional Quality, Post-Occupancy Evaluation, Architectural Body.

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## 1. INTRODUCTION

The necessity to improve the level of various institutions to enter the area of constructive cooperation with other institutes and avoid the organization's lag from the progress and requirements of the era leads to that every organization or institute intent to codify some criteria to evaluate the situation of the organization (Alhosseini, 2001, pp. 54-70). Since these organizations are exposed to the various quantitative and qualitative demands and requests from their audiences, and the expectation of enhancing the social value increases (Rezaei & Norouzi, 2015, p. 214). Therefore, considering the efficiency and creating change management to meet the audiences' demands (Azadi & Shahvali, 2005, p. 14) arises as a significant matter.

Higher education is one of the most significant scientific institutes in producing the knowledge, technology, the specialized human force required by the society (Sedghi Boukani, Seyyedabbasadeh, Ghale'ei, Mohajeran, & Bagheri Maj, 2014, p. 120), promoting and improving the knowledge, expanding research, and providing the suitable context for the development of the country. Therefore, the role of higher education obligates this institution to coordinate with the social, economic, and cultural developments of the country to formulate its goals based on short-term, medium-term, and long-term planning (Mohammadi Moghaddam, 2004, p. 184). What is evident is that in the evaluation of the educational spaces of the architecture, investigation in its outputs as one of the service organizations shows the necessity of paying attention to improve the current situation. Moreover, the previously conducted studies indicate the relationship between the physical space of the educational environment and efficiency.

On the other hand, the quality of education depends on the defined two-way relationship with the educational place. If the educational space cannot establish the interaction between the educational factors, the education process will have an undesirable situation (Vaziri, 2012, p. 6). Also, it will not have efficiency at a desirable level.

The lack of meaning in the built environments made the designers and environmental planners consider the space quality and role of the perceptual components in the formation of the various spaces as well as the interaction effect of the environment and the built space on the human mentality and behaviors. As a result, the attempt is to create a desirable and high-quality space that induces a sense of peace and pleasure in the audience's mind and revives the sense of presence in the place within him (Falahat & Noohi, 2012, p. 23). In recent decades, in the studies relevant to the measurement of the environment quality, satisfaction has been introduced as one of the principal criteria. According to this significance, the environment quality was defined as the transferring of a sense of well-being

and satisfaction that is conveyed to its users through the physical, social, or symbolic characteristics of the environment. (Lansing & Marans, 1969; Hashemi Tilehnoi, Mirgholam, & Rafiyan, 2014, p. 5, Quotes from Rafeian, Asgari, & Asgarizadeh, 2009, p. 5). Recognition of the plan's audiences and their needs, on the one hand, and meeting their logical demands, on the other hand, is the principal success of the change management to improve the quality of the environment. In the world of architecture, the evaluation focuses primarily on determining the value of all or part of the built environment. And these topics are different for different goals and target groups in the breadth and depth of the subject, the evaluation method, and the number of people involved in the evaluation (Kernohan, Gray, & Daish, 1992; Voordt & Wegen, 2013, p. 129). Conducting such research with a post-occupancy evaluation approach can have the correct change management in educational spaces to directly provide models for improving the quality of space and indirectly affect the quality improvement of education at the highest level. Considering the useful life of the architectural body and the high cost of its construction, providing the current system to improve productivity at a lower cost in a shorter time will affect the productivity (Mirfakhredini, Owlia, & Jamali, 2011, p. 133).

The current study aims to evaluate the satisfaction of the students of the faculty of art and architecture of the Islamic Azad University, Tabriz branch, with the functional quality of the faculty in applied research using the post-occupancy evaluation method and considering the influential role of the user. Library study, documentation, interviews with experts in the field of architecture, and experts in the field of behavioral sciences have been used to collect information, which has been done in two phases of qualitative and quantitative research.

## 2. RESEARCH BACKGROUND

Architecture, as the final product of all the design and construction processes, has a hidden knowledge. Its evaluation can be considered a type of decryption of the hidden processes of the design and construction and help our knowledge in the architectural efficiency with the expectations based on the tastes, experiences, and expectations of the users (Barlex, 2006). By identifying the weakness and strength of each phenomenon, the architecture can be considered as a tool to acquire knowledge. This new concept is applied in the evaluation of the architecture product, saving time, continuity of learning over time, and transferring the experiences of knowledge of the scientific knowledge of the architects and is called the learning from buildings (Vischer, 1996; Akbari Badarloo, 2013, p. 25). Since the 1960s, various methods with tools (which are similar in methodology) were designed and implemented to execute the methodological

evaluations (Baird, Isaacs, Kernohan, & McIndoe, 1996). Some of these methods are known as POEs and are almost similar to methodological approaches to the design process that have begun in the UK. Nowadays, the tendency to use these standard tools is increasing in the world to ensure efficiency in the construction of artificial space in a way that measures the achievement of pre-determined goals in which achieving the goals is significant (Khorshidi, Mahdavi, & Salmani Ghahyazi, 2013, p. 76). The main ideas in all the protocols of the P.O.E is the perception of the actual needs of the users and valuing the humans' responses to the buildings or any artificial environment methodically (Sanoff, 2010; Akbari Badarloo, 2013, p. 25). In a report on the evaluation of buildings under the cover of the US Federal Council, while defining post-occupancy evaluation as an organized process (Preiser, Rabinowitz, & White, 1988), the process of systematic evaluation of buildings after a period of their exploitation, considered the difference between them and other types of assessment in the focus of this assessment on the needs of building users, in terms of safety, security, uses, psychological and aesthetic issues along with physiological comfort (Federal Facilities Council, 2001, p. 1; AUDE, 2003; Mahmoudi & Nari Ghomi, 2014, p. 72; Akbari Badarloo, 2013, p. 25). The satisfaction of users and economic efficiency (for the owners) are the main ideas. However, P.O.E addresses more objective issues in comparison with satisfaction, which is an ambiguous concept, such as physical conditions of the environment, the dimensions of the space, and analysis of the costs to evaluate both targets, i.e., satisfaction and economic efficiency (Akbari Badarloo, 2013, p. 25).

The principal purpose of the P.O.E covers is continuous improvement in all areas. Continuous improvement can be done through two corrective and preventive actions. The corrective action addresses the actions in improving the studied space, and the preventive action<sup>1</sup> is to prevent the mistakes in the future or the next project (Akbari Badarloo, 2013, p. 27).

### 3. THEORETICAL FRAMEWORK

The irreplaceable role of the educational service in the development and advancement of societies requires particular attention for improving the quality of these services and increasing efficiency. The following questions and hypothesis arise to achieve this purpose:

#### 3.1. Research Question

- What are the influential physical factors on the satisfaction of the users with space?
- How is the quality of the functional space of the Faculty of Art and Architecture of the Islamic Azad University, Tabriz Branch, evaluated based on the perspective of this faculty's students?

- How does the educational background of the students affect their evaluation of the functional quality of the educational space and their satisfaction with space?

#### 3.2. Research Hypothesis

It seems that the efficiency of the educational centers is affected by the functional quality of the educational spaces and the satisfaction of the users with the environment.

#### 3.3. Efficiency of the Educational Spaces

Empowering the universities and maintaining their health and efficiency are the significant and principal purposes of every country as the inability of the educational system and lack of efficiency in the universities can limit the positive effects of the developmental and scientific measures of a country and lead to economic, social, and cultural crises (Yazdi & Ahmadi, 2011, p.132). Therefore, the evaluation of the efficiency, as a way of thinking, is necessary for better implementation of the measures. It is also an attempt for the change management and creation of new methods and techniques for the improvement and enhancement of the current conditions.

Evaluation of the previous studies in the efficiency shows the extent and wide range of the factors and indicators affecting the efficiency of the universities. Therefore, the various and widespread terms defining and affecting the efficiency were classified in a set of aspects to facilitate the study and comprehensive investigation as follows: human resources, interest in work, physical resources, financial resources, motivation, education, faculty space, having a sense of belonging, the quality of work-life, security, creativity, spatial standard, job satisfaction, payment and wage, material and spiritual rewards, service and welfare facilities, the participation of the employees in the decision-making process, management, research quality, scientific norms, organizational atmosphere, the academic failure, planning, costs, success in pursuing education, attraction ratio, professional growth, number of graduates, degree of reputation and acceptance and prominence and so on. These aspects form the attributes at a higher level. Human resource, management, having a sense of belonging, quality of work-life, the quality of the working space, and job satisfaction are a set of attributes that can be mentioned. Finally, through aggregation and recombination of the explained attributes, the defining parameters of the university efficiency were extracted, including educational factors, research factors, economic factors, and environmental factors. In the present research, considering the research purposes and research context, the environmental parameters, and the improvement of the functional quality of the environment were investigated to achieve the improvement of efficiency.

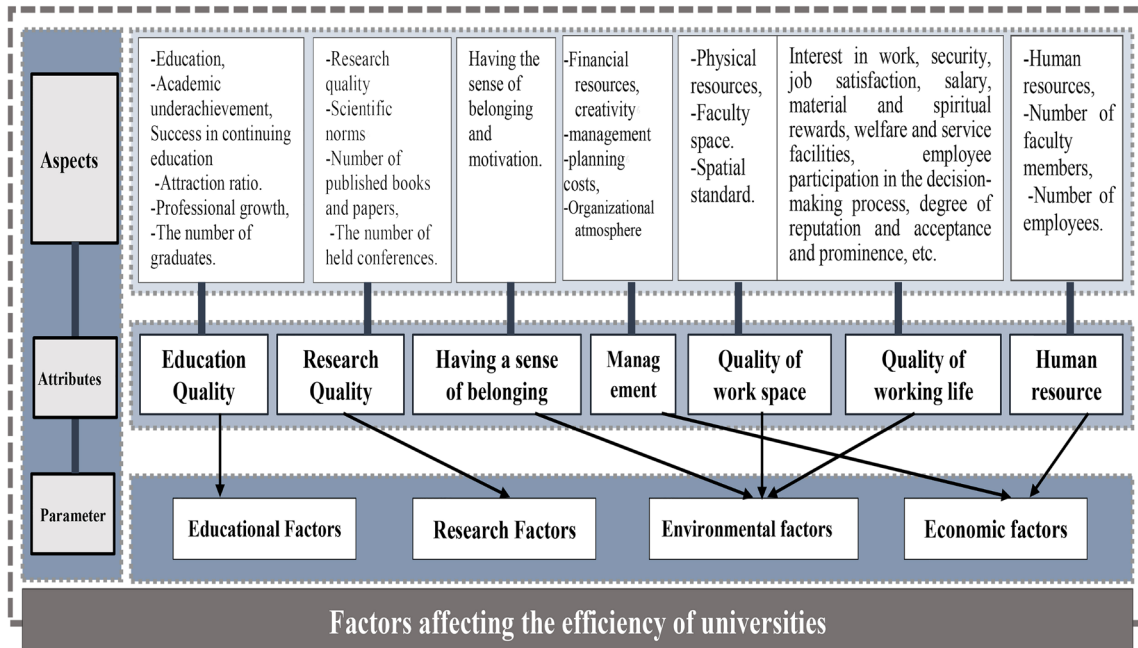


Fig. 1. The Influential Factors on Efficiency in Accordance with the Results Obtained From the Previous Studies

### 3.4. Evaluation the Physical Quality and the Variables Affecting That

The first step in the evaluation of environmental quality is to determine the evaluated variables. Studying the specialized books<sup>2</sup> and the common stated issues in them have classified the evaluation of the space quality into four functional, aesthetics, technical, and economic parts. This classification was in line with the traditional triple classification of the Vitruvius of Eutels, Venustus, and Firmitas and as three groups of function, form, and technology by adding the cost factor (Voordt & Wegen, 2013, p. 138). Moreover, the conducted studies<sup>3</sup> in the P.O.E indicate that this factor evaluates the functional aspects of the space most important attribute of which is the daily required requirements of the users in that space. Therefore, due to the lack of access of students to the information related to the aesthetics, technical, and economic information and based on the purpose and main idea of the P.O.E method, which is the investigation of the

objective factors of the users' satisfaction, the current study investigated the functional quality of the space. In the empirical models of the research on environmental quality, satisfaction with the space quality has been considered as one of the main criteria. Furthermore, studying the papers on the satisfaction of the users with their environment indicates that the understanding of the satisfaction from each person is different in various personal, social, economic, cultural, and physical conditions (Van Poll, 1997, p. 22). Also, the personal features of the research users, including age, gender, discipline, and academic degree, affect their perception of the environment quality. The environmental perception process has been presented in Figure 2 based on the conclusion of the previous studies of the researchers. The studies showed that although gender has been an important personal feature in the psychological studies, it does not seem to be an important feature to evaluate satisfaction (Carp & Carp, 1982, pp. 295-312).

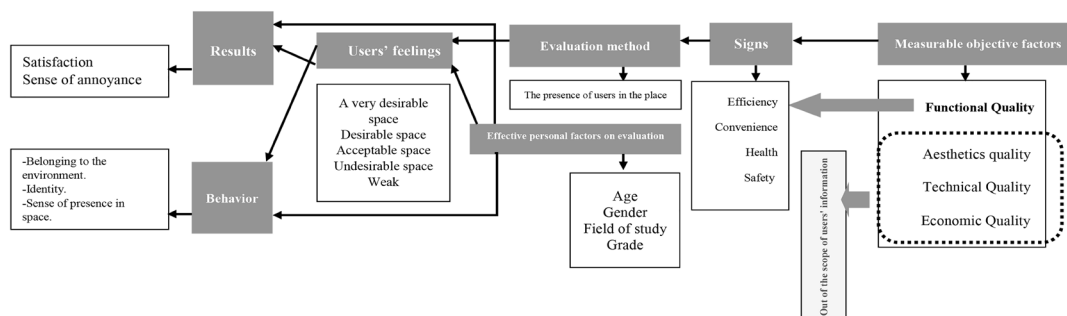


Fig. 2. The Phases of the Environmental Perception of Students From the Educational Space Studies

The functional quality of a building means the affordance of implementing functions that were predicted for that (Voordt & Wegen, 2013, p. 6). Also, a functional building is a building appropriate

for the considered activities for that. The people who live in a building must have the functional efficiency, convenience, health, and safety, and a two-way relationship understanding must be established



between the affordance of the environment and the perceiver along with other features of the users, such as social, cultural, and physical aspects in a physical environment (Daneshgar Moghaddam & Eslampour, 2013, p. 78).

Evaluation factors of this study, according to the

main purpose of the study, is limited to the study of physical conditions and environmental psychology by classifying and summarizing the models presented in previous research<sup>4</sup> by experts. Accordingly, the concept of functional quality is studied in the following nine aspects.

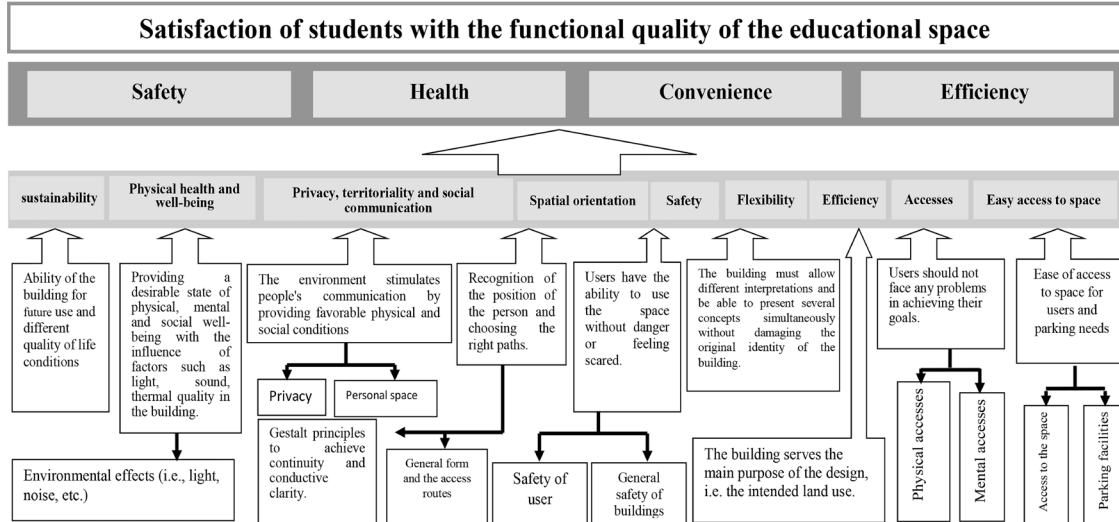


Fig. 3. Empirical Model for Measuring Satisfaction with the Functional Quality of Educational Space

#### 4. RESEARCH METHOD

Conducting research is usually based on a philosophical framework and presuppositions, with particular regard to the field of science. The methodology is precisely a set of the same presuppositions and the choice of method that the researcher uses for his research. In other words, the methodology is the field of study to reach the research method that, in fact, precedes it.

##### 4.1. Methodology

The present research is applied in terms of nature and research purpose because its final objective is to achieve the information to make decisions and meet the immediate needs and issues, and also to apply a scientific method to solve the problems in a particular time or place. This study is conducted to evaluate

and measure the satisfaction of the students with the quality of the educational environment using the post-occupancy evaluation method, with an emphasis on the content analysis and use of the P.O.E tests. According to the research foundation, mix research method (i.e., quantitative and qualitative methods) was used in the research to achieve a precise study, and inductive and deductive reasoning were emphasized in the study.

According to Creswell and Plano Clark (2007), the current study can be related to convergent design studies because, in this design, the research has been divided into several levels. Then, in each level, the quantitative and qualitative findings are investigated so that these levels have a hierarchy to establish a relationship and balance between the quantitative and qualitative findings (Hakimzadeh & Abdolmaleki, 2011, p. 27).

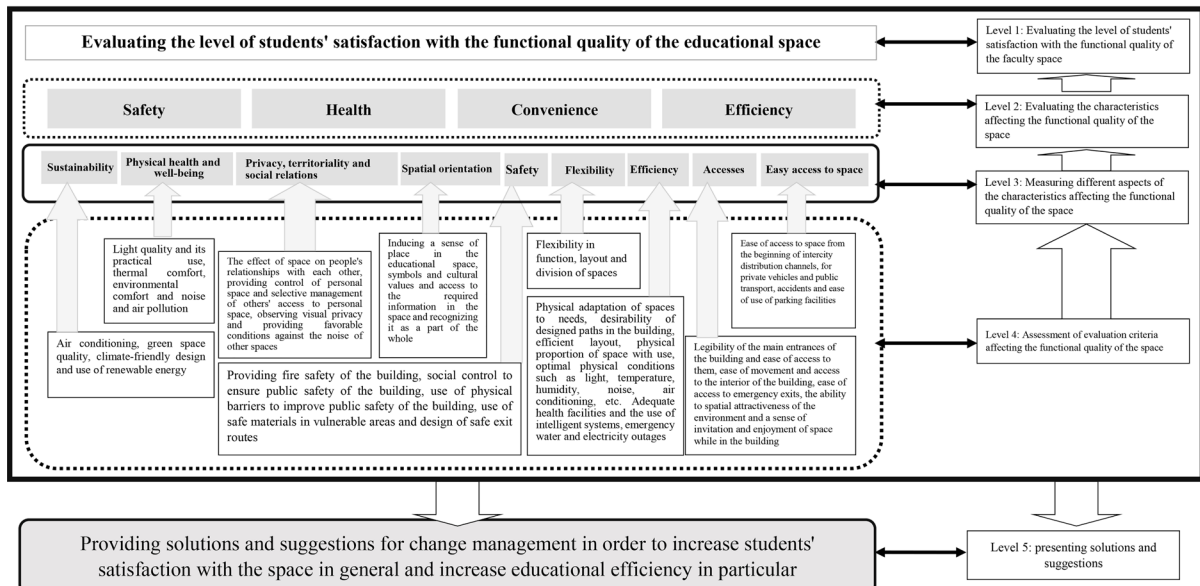


Fig. 4. The Analytical Model Applied in the Study

Information collection method was a mix method of two descriptive (to describe the situation and conditions of the studied phenomena) and experimental (to find the causal relationship between the study variables). Information collection was done at a different level of study and in different methods including field study (using the observation and questionnaire from the educational space actors and interview with experts and scholars in the area of architecture and behavioral studies) and library study (using documentation study and the recent studies and theories of the theorists). The statistical sample is limited to the students of the faculty of art and architecture of the Islamic Azad University, Tabriz branch. The sampling method is a

mix of fundamental sampling methods of purposive and random. First, the classes and sub-classes were determined in the classification and observation of the number of students in the fields of architecture, urbanism, and art of the faculty. Then, each class was divided into a Ph.D. degree, Master's degree, and Bachelor's degree considering the number of students. In the next step, the sample members were selected from a larger community randomly. The required number was calculated using Morgan Table and was determined 300.

The statistical sample size for 274 students, according to population ratio, in terms of gender, field of study, and degree, is classified according to Table 1.

**Table 1. Descriptive Statistics of Gender, Education Field, and Degree of the Respondents to the Questionnaire**

Classification of the Statistical Sample		Frequency	Frequency Percentage
Gender	Female	139	50.7
	Male	135	49.3
Field of study	Architecture	135	49.3
	Urbanism	112	40.9
	Visual Communication	17	2.6
	Painting	10	3.6
Degree	Undergraduate	185	67.9
	Master's	59	21.5
	Ph.D.	29	10.6
Total		274	100

On the other hand, in the current study, the qualitative and quantitative data, collection, analysis and interpretation, and the results of the qualitative data will be useful for the results of the quantitative data in development or examination of the tool. Data were valued using a five-point Likert scale, and descriptive statistics and inferential tests were used as a correlation test (simultaneous input model of predictor variables) to analyze the data with the help of SPSS software.

The applied questionnaire<sup>5</sup> was presented based on the questionnaire presented in the P.O.E protocol and by applying changes in proportion to the studied project, which includes 59 questions. Nine aspects of the influential indicators on the functional quality of the space were surveyed. According to Table 2, the maximum mean in the efficiency variable is 29.51, and the minimum mean related to the flexibility is 7.93.

**Table 2. Descriptive Statistics of the Research Variables**

	Frequency	Mean	Standard Deviation	Minimum	Maximum
Accessibility to space	274	16.34	4.53	6	30
Accesses	274	13.79	3.70	5	24
Efficiency	274	29.51	8.01	11	50
Flexibility	274	7.93	2.41	3	14
Safety	274	28.87	7.69	11	49
Spatial orientation	274	21.28	6.18	8	35
Privacy, territory etc.	274	10.70	3.51	4	19
Physical health and wellbeing	274	27.55	7.97	10	48
Sustainability	274	10.31	3.42	4	20

The correlation matrix between the research variables was investigated to study the relationship between the variables. According to Table 3, there is a relationship

between all the research variables that is significant at the level of  $p < 0.1$ . Therefore, a multivariate regression test can be used.

Table 3. Correlation Matrix between the Research Variables

	Field study	Gender	Grade	Accessibility to space	Accesses	Efficiency	Flexibility	safety	Spatial orientation	Privacy, territory, etc.	Physical health and wellbeing	Sustainability
Field study	-	-	-	0.321**	0.254**	0.330**	0.213**	0.303**	0.208**	0.170**	0.272**	0.153*
Gender		-	-	0.105	0.032	0.130*	0.072	0.012	0.014	0.065	0.127*	0.126*
Grade			-	0.035	-0.169**	-0.158**	-0.198**	-0.131*	-0.231**	-0.180**	-0.166**	-0.086
Accessibility to space				1	0.531**	0.639**	0.422**	0.514**	0.376**	0.399**	0.461**	0.398**
Accesses					1	0.722**	0.522**	0.542**	0.548**	0.444**	0.563**	0.540**
Efficiency						1	0.629**	0.702**	0.614**	0.541**	0.623**	0.396**
Flexibility							1	0.644**	0.578**	0.532**	0.539**	0.569**
Safety								1	0.704**	0.538**	0.661**	0.610**
Spatial orientation									1	0.677**	0.705**	0.611**
Privacy, territory, etc.										1	0.839**	0.552**
Physical health and wellbeing											1	0.686**
Sustainability												1

\*\* : significance at the level of  $p < 0.01$

\*: significance at the level of  $p < 0.05$

## 4.2. Study Area

Faculty of Art and Architecture, Islamic Azad University, Tabriz Branch, is the largest and most comprehensive center for architecture education in the region, one of the faculties approved by the

university in 2011, which has three departments of architecture, art, and urban planning. 2343 students are studying in this complex in the field studies of visual communication, urbanism, architectural engineering, painting, and visual arts in doctoral, master's, and bachelor's degrees<sup>6</sup>.

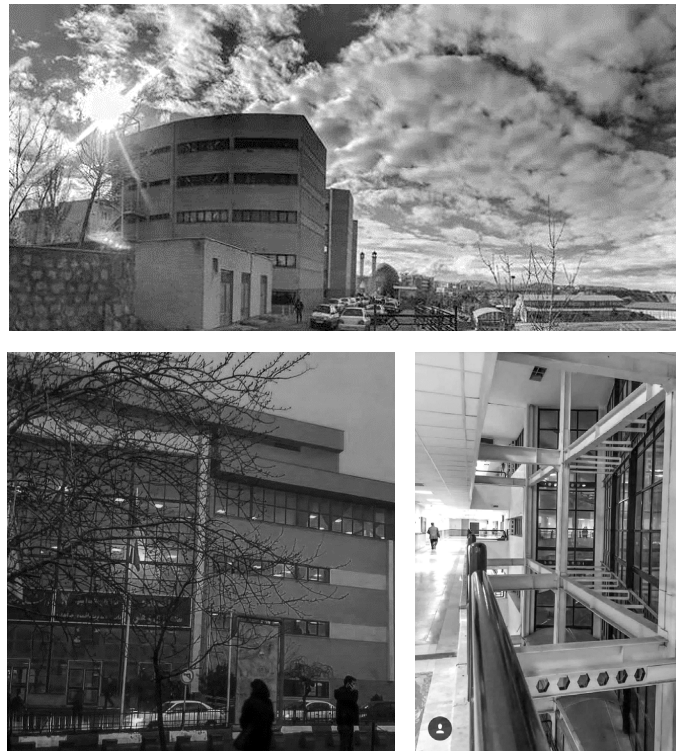


Fig. 5. Photos of the Faculty of Art and Architecture, Islamic Azad University, Tabriz Branch.

## 5. RESEARCH FINDINGS

The information collected from the questionnaire were analyzed using SPSS software and the results obtained from the analysis of the information are as follows:

### 5.1. Questionnaire Validation

The main purpose of using Cronbach's alpha coefficient is to investigate the internal consistency of the items in

a scale that is provided through the process of indexing. This coefficient indicates the overlaying of different questions of a test in terms of testing a common feature, which is variable in the name of alpha and a range between 0 to 10 (Vaziri, 2012, p. 111). According to the results obtained from the validation and according to Table 4, the Cronbach's alpha coefficient used in this questionnaire is 0.95, indicating a high validity and reliability of this questionnaire.

**Table 4. Cronbach's Alpha Coefficient**

Reliability Statistics	
Cronbach's Alpha	N of Items
0.950	59

### 5.2. Investigating the Physical Factors Affecting the Satisfaction of Users

It is necessary to observe the assumptions of multivariate regression test (simultaneous input model of predictor variables) to investigate. Also, the

Kolmogorov-Smirnov test has been used to check the normality. Due to the correlation matrix between the research variables and considering that sig is greater than zero, the data related to the variable are the normal research criteria, and a multivariate regression test can be used.

**Table 5. Kolmogorov-Smirnov Significance Test to Investigate the Normal Distribution of Criteria Variable Scores**

	Number	Z	Sig
Students' Satisfaction	274	0.614	0.845

Assumption of error independence: Table 6 contains the value of multiple Rs that are increased by adding predictor variables; This means that the predictive power of the regression equation has increased. Given

that the Durbin-Watson value is 1.658 and is between 1.5 and 2.5, then there is no correlation between errors and regression can be continued.

**Table 6. Summary of the Regression Model Findings**

Model	Predicting Coefficient (R)	Determination Coefficient (R <sup>2</sup> )	Modified Coefficient	Durbin-Watson	Error
1	1.000	10.000	1.000	1.658	0.00

Assumption of the lack of collinearity: collinearity indicators in Table 7 indicated that there is no collinearity between the predictive variables because

the tolerance values were between one and zero and all the VIF values were less than 10. Therefore, multivariate regression can be used.

**Table 7. Collinearity Indicators of the Tolerance and VIF Values**

Predictive Variable	Tolerance	VIF
Accessibility to the space	0.557	1.797
Accesses	0.427	2.341
Efficiency	0.284	3.526
Flexibility	0.370	2.129
Safety	0.324	3.087
Spatial orientation	0.346	2.888
Privacy, territory, etc.	0.254	3.942
Physical health and welfare	0.192	5.218
Sustainability	0.438	2.285

According to Table 8, based on the regression results, the effect coefficient for the space accessibility variable is  $B = 0.235$ , the access variable is  $B = 0.096$ , the efficiency variable is  $B = 0.104$ , the flexibility variable is  $B = 0.063$ , the safety variable is  $B = 0.100$ , and the

spatial orientation is 0.24. Also, the variable of privacy, territoriality, and social communication is  $B = 0.091$ , the variable of physical health and well-being is  $B = 0.202$ , and the variable of sustainability is  $B = 0.133$ .



**Table 8. Summary of the Findings Obtained From Regression and Variance Analysis**

Criterion	Predictive Variable	Sig	F	Estimated Error	Impact Factor (B)	Modified R <sup>2</sup>	R <sup>2</sup>	R
Satisfaction of Students	Accessibility to the space	0.00	819.85	38.57	0.235	0.750	0.751	0.867
	Accesses	0.00	1135.90	25.27	0.096	0.893	0.893	0.945
	Efficiency	0.00	1363.53	19.30	0.104	0.937	0.938	0.969
	Flexibility	0.00	2795.77	11.91	0.063	0.976	0.977	0.988
	Safety	0.00	4437.15	8.47	0.104	0.988	0.988	0.994
	Spatial orientation	0.00	8546.24	5.20	0.091	0.995	0.996	0.998
	Privacy, territory, etc.	0.00	8546.24	5.20	0.091	0.995	0.996	0.998
	Physical health and welfare	0.00	15654.82	3.590	0.202	0.998	0.998	0.999
	Sustainability	-	-	0.000	0.133	1	1	1

### 5.3. Evaluation of the Functional Quality of Faculty of Art and Architecture Space of the Islamic Azad University, Tabriz Branch, From the Perspective of Students

According to Table 9, the total mean of male students' satisfaction (M= 346.44) is higher than the female students' satisfaction. The male students' satisfaction is in all the field studies except for the male students of the Ph.D. degree.

**Table 9. The Descriptive Statistics of the Research Variables**

Gender	Study Field	Degree	Mean	Number	Standard Deviation	Minimum	Maximum
Female	Architecture	Undergraduate	307.034	44	871.73	173	486
		Master's	317.785	21	897.45	191	463
		Ph.D.	299.000	12	49.211	234	390
		Total	308.909	77	70.635	173	486
	Urbanism	Undergraduate	376.016	25	70.444	248	498
		Master's	319.050	10	57.388	253	424
		Ph.D.	335.040	10	75.181	231	452
		Total	354.151	45	71.865	231	498
	Visual communication	Undergraduate	370.733	15	50.570	304	463
		Total	370.733	15	50.570	304	463
	Painting	Undergraduate	369.500	2	24.748	352	387
		Total	369.500	2	24.748	352	387
	Total	Undergraduate	339.848	86	75.691	173	498
		Master's	318.387	31	69.425	191	463
		Ph.D.	315.545	22	63.522	231	452
		Total	331.215	139	72.827	173	498
Male	Architecture	Undergraduate	326.675	40	87.482	159	527
		Master's	333.692	13	63.798	248	429
		Ph.D.	255.200	5	76.411	145	344
		Total	322.086	58	312.83	145	527
	Urbanism	Undergraduate	359.980	50	73.922	187	499
		Master's	346.066	15	77.246	205	483
		Ph.D.	348.500	2	4.949	345	352
		Total	356.522	67	73.204	187	499
	Visual communications	Undergraduate	480.000	2	28.284	460	500
		Total	480.000	2	28.284	460	500

Gender	Study Field	Degree	Mean	Number	Standard Deviation	Minimum	Maximum
Male	Painting	Undergraduate	398.500	8	64.787	321	516
		Total	398.500	8	64.787	321	516
	Total	Undergraduate	352.140	100	82.591	159	527
		Master's	340.321	28	70.303	205	483
		Ph.D.	281.857	7	77.260	145	352
		Total	346.044	135	80.948	145	527

#### 5.4. Evaluation of the Functional Quality of the Educational Space in the Perspective of Students of the Faculty of Architecture Per Field Study

According to Table 10, the total mean of the satisfaction of the painting students ( $M=397.700$ ) is higher than the satisfaction of the students of other disciplines of the art faculty. The satisfaction is higher in undergraduate students than in other degrees of the faculty.

Table 10. Descriptive Statistics of the Demographical Variables of the Research

Total	Study Field	Degree	Mean	Number	Standard Deviation	Minimum	Maximum
	Architecture	Undergraduate	316.547	84	80.731	159	527
		Master's	323.911	34	70.880	191	463
		Ph.D.	286.117	17	59.563	145	390
		Total	314.570	135	76.322	145	527
	Urbanism	Undergraduate	365.373	75	72.710	187	499
		Master's	335.440	25	69.944	205	483
		Ph.D.	337.583	12	68.211	231	452
		Total	355.714	112	72.350	187	499
	Visual communication	Undergraduate	383.588	17	60.037	304	500
		Total	383.588	17	60.037	304	500
	Painting	Undergraduate	392.700	10	59.010	321	516
		Total	392.700	10	59.010	321	516
	Total	Undergraduate	346.457	186	79.457	159	527
		Master's	328.796	59	70.113	191	483
		Ph.D.	307.413	29	67.236	145	452
		Total	338.521	274	77.152	145	527

#### 6. FINDINGS ANALYSIS

The analysis of the data resulted from the regression analysis and variance analysis showed that the following variables explain the total variance of the dependent variable (student satisfaction): Accessibility to space variable 0.235%, Accesses variable 0.096%, Efficiency variable 0.104%, Flexibility variable 0.063%, Safety variable 0.100%, Spatial orientation variable 0.241%, Privacy, territoriality and social communication (0.091%), physical health and well-being (0.202%), sustainability (0.133%); also, considering the value of F and the level of significance, it can be said that the regression equation is statistically confirmed. That is to say, the explanatory power of the independent variable is statistically significant.

Analysis of the tablets obtained from information analysis showed that the three variables of spatial orientation, accessibility to space, physical health and well-being have the most impact and flexibility,

privacy, territoriality, and social communication; and accesses have the least impact on student satisfaction. On the other hand, descriptive statistics show that male students are more satisfied than female students, which seems to be due to psychological factors and characteristics (i.e., social, gender, etc.). However, changing these statistics in the doctoral program in terms of the age range of male doctoral students or their professional and social status necessitates the need for discussion and research in this regard.

Furthermore, the high mean of satisfaction among the art students and the lower mean among the architecture students can be due to the effect of educational background on the environmental perception of the students, the psychological impacts of the field study, the attitude towards the environment, and environmental expectations. Therefore, it requires more study in this regard.

## 7. CONCLUSION AND RECOMMENDATIONS

The wide range of the factors and indicators affecting the efficiency of the universities shows the necessity of classification of these factors in various aspects to facilitate a comprehensive study. Following this classification, the influential attributes on the efficiency of the universities are obtained that by limiting these attributes, the educational factors, research factors, economic factors, and environmental factors affecting the universities' efficiency are provided. Moreover, the results of the research indicate that the users' satisfaction with the environmental quality is one of the environmental factors affecting the efficiency of an organization, which is a result of a set of factors that are necessary to each other. Therefore, the mentioned factors must be taken into account to improve the users' satisfaction with space. Thus, recognizing the shortcomings and deficits and applying change management is a solution to improve the current situation. Also, improving the quality of the environment based on the P.O.E method through the evaluation of the satisfaction level of students with the functional quality of the educational space is considerable.

The results obtained from the evaluation of the users' opinion of the faculty of art and architecture of the Islamic Azad University, Tabriz Branch indicate that the manifestation of the cultural values and symbols and inducing the sense of place were the first considerations of the students of this faculty. Also, the location of the complex and the extent of the possibility for using the urban infrastructures at the metropolitan city had a direct and positive effect on the space desirability in the perspective of the users. Moreover, the role of internal spaces design in terms of light quality was considerable in the evaluation of the quality of the educational space, and it was effective in achieving the satisfaction of the users. The lack of flexibility in designing spaces both functionally and in terms of classification, on the one hand, and lack of observing the affordance of the environment in controlling the personal spaces and selective management of others, on the other hand, and lack of legibility and inducing the sense of pleasure by being in the environment are the dissatisfaction indicators of the users of the complex and led to the sense of annoyance.

The obtained results are in line with the studies conducted by Brokato, Mirkamali, and Narenji Sani

(2008), Carayol and Math (2004) who consider the sense of belonging to the environment effective on efficiency, and the studies conducted by Godazgar and Alizade Aghdam(2006) due to proving the relationship between the space facilities of the university and increase in the efficiency, and the research implemented by Razavian et al. (2013) in determining the effect of location and access variables and legibility on the quality of the environment.

Therefore, considering the role of architectural education in the higher education system, the following recommendations are presented to achieve the main research purpose, which is increasing the satisfaction level of students of the faculty of art and architecture of the Islamic Azad University, Tabriz Branch:

1. In order to improve the quality level of education and increase educational efficiency, change management should be considered in order to increase students' satisfaction with the body of the faculty and to achieve a quality-oriented environment, at a lower cost in a short time.

2. Paying attention to the results of the research and matching them with the questions of the questionnaire, it seems that by implementing change management in the internal space of the faculty and improving the ability to recognize the position of the individual in the building as part of the whole by installing signboards and information panels, etc., users' satisfaction with the environment will increase.

3. It seems that making the space dynamic, turning the faculty space into a user-centered environment, and consequently inducing an emotional feeling in the educational space, by creating open and multi-functional spaces (by removing a number of fixed architectural elements and using movable separators) will have an effective role in the increasing the level of satisfaction of students.

4. According to the results, the environment stimulates people's communication by providing desirable physical and social conditions. Therefore, it seems that the change management applied to achieve a crowd or solitude place in proportion to the land use and occupation can provide the enhancement in the satisfaction level of the users.

5. It is suggested that a desirable status of the physical, mental and social welfare be considered by modifying the factors such as light, noise, the quality of the internal air, colors, and materials to achieve a high-quality educational environment.

**END NOTE**

1. Learning from buildings is a type of preventive actions (International standards for Quality Management).
2. The following books can be mentioned as the specialized books: (Preiser, 1988; Benes & Vrijling, 1990; Baird, 1996; Stichting REN, 1994).
3. These studies are: (Keys & Wener, 1980; Fridman et al., 1978; Preiser et al., 1988; Zimring & Reitzenstein, 1980; Wener, 1989; Teikari, 1995; Preiser & Vischer, 2004; Zimring, 1988; Preiser, 1994).
4. The presented models in the studies conducted by Moghaddam, Eslampour (2011); Daneshpour et al, 2009; Razavian et al., 2014; Rafi'ian et al., 2009, Voordt & Wegen et al., (2013).
5. This questionnaire is developed based on the samples of (Template 3: operational review stage) and (Template 6: occupant survey questionnaire sampled) provided in the Guide to Post Occupancy Evaluation published by the University of Westminster.
6. Information is provided by the faculty office and the website of the faculty of art and architecture.



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