

**Research Article**

## **CRITERIA FOR DESIGNING ART AND ARCHITECTURE FACULTY BY FOCUSING ON ENVIRONMENTAL AFFORDANCES (CASE STUDY: AZAD UNIVERSITY OF GONBAD)**

**Samaneh Taj, Mohammadi Gonbad, Abdolbaghi Moradchelleh and \*ImanTazikeh Lemeski**  
*Department of Architecture, Gonbad Kavoos Branch, Islamic Azad University, Gonbad Kavoos, Iran*  
*\*Author for Correspondence*

### **ABSTRACT**

According to the approach of environmental affordances, environment can be a set of affordances rules that provides conditions of various behaviors and aesthetic experiences for human being. The aim of this study is to investigate the theory of environmental affordances, to identify and determine these affordances along with how to authenticate them in the process of planning and designing architectural faculty and finally to create a solution to provide a proper environment for educational and research activities in Art and Architecture faculty. The research method of this article is a combination of survey, documents and field study methods. Therefore, based on the approach of environmental affordances and its theoretical proof, a questionnaire was developed to achieve the final solutions and was distributed among the statistical population of the student and university employees, which was 282 people based on Cochran Formula and using random sampling and then it was analyzed in spss statistical software. In the obtained results, respondents' expectations and intended criteria about an educational environment was identified and finally, environmental affordances including the importance of personal motivations, diversity of group activities, privacy, scientific spaces, proper sitting and meeting places and other significant issues were identified and their effect on the process of final planning and designing of the Art and Architecture faculty has been considered.

**Keywords:** *Environmental Affordance, Arts and Architecture, Physical Capability, Designing and Planning*

### **INTRODUCTION**

Today, designing a complex and environmental features in relation with human beings and how they affect human have become more important than past, because according to the approach of environmental affordances, an environment can form people's behavior and beliefs. There are several points of view about mutual effect of environmental construction on human behavior and the effect of behavioral patterns and their origins on designing proper and reliable environment in which the effect of environmental affordances on behavior has been emphasized. But this issue has been less analyzed with the approach of educational spaces. Given the history and academic structure of art and architecture in Iran, no specific and professional attention has been paid to the educational environments and spaces of these faculties, which are highly significant. A number of these faculties have been designed being inspired by foreign and contemporary architectural models of Iran and some others such as Art and Architecture faculty of Yazd and Isfahan continue their activities by making changes in available spaces in historical textures. It should be said that their effect on students' morality and the process of their intellectual development is considerable and it needs to be more scrutinized with the use of certain sciences such as environmental psychology. Based on the mentioned issues, it is better to evaluate the main criteria from the viewpoint of the people who pass most of their time in the faculty in order to succeed in designing a complex. Therefore, based on the environmental affordances approach and its aspects, it has been attempted to evaluate the main criteria of designing Art and Architecture faculty by considering students' and employees' view in the form of a field research.

### **Theoretical Bases**

In line with the intended issue and its precise investigation, history of the formation of environmental affordances approach, theoretical bases, empirical background as well as its aspects and approaches

### **Research Article**

available on environmental affordances and its effect on mental and cultural activities' efficiency will be discussed in this part.

#### **History of Environmental Affordance Theory**

James J. Gibson, an American psychologist, was the first person who used this word in his article entitled as “Affordances Theory” and expanded it more thoroughly in his book entitled as “Environmental Approach to visual concept”. After that, Don Norman, a psychologist and scientist, who studied by the supervision of Gibson, helped to the popularization of this word in his book entitled as “Psychology of Daily Issues” written in 1988. Based on the previous studies, the concept of environmental affordances is a comprehensive and thorough concept which has various interpretations due to its different implications on living environment. Architectural area and man-made environment have exploited these implications as well; but emphasis on the concept of environmental affordances in the context of these studies has been less referred to an applied and efficient concept. Therefore, it seems that we can achieve an applied and efficient conclusion by deep analysis of this central concept in the context of architectural studies and man-made environment.

In the view of the environmental psychology, factors and environment are connected to each other by affordances, which have environmental features, too. On the other hand, it is the performance of an object and environment that provides the necessary affordance for conduction of any activity. Recognition of environmental affordances including geographical, cultural and social features is required to enhance architectural design and submit a form appropriate for performance.

Therefore, potential affordances have been entered in various levels of architectural environment and application of such affordances depends on emotional, mental and physical features of people and users of those affordances (Motalebi, 1998). Lang believes that affordances are specific patterns of the built environment that are obtained by the way of its design, used materials and the way of its assignment to certain groups of people. Gibson believes the space affordance is of importance for people and it limits or expands any individual's behavioral and aesthetic choices. The environment affordance differs for each group and social level. On one hand, a form is traced back to the users' needs and their internal motivations and on the other hand, it is traced back to potential abilities of form and physical shape of the environment. Therefore, a wide range of human needs such as aesthetics, symbolism and semantics is regarded as a part of the building affordances (Matlabi, 2001). Grino, a psychologist, has categorized various levels of environmental affordances into four categories including potential affordances, conceptual affordances, application affordances, and realized affordances. Certain parts of the environmental affordances have physical and physiological aspect, whereas other parts of affordances are affected by cultural factors, social contracts and regulations. Environmental affordance is defined as the recognition of human settlement in order to meet his needs and activate his entity and such awareness of the environmental affordances and interaction of human with those affordances leads us to the process of creation and architectural design of spaces and places.

Since constructive elements of each architectural space define its generality, such elements and their components must strengthen these affordances in order to increase environmental affordances. In addition, application of the concept of affordances can lead to the fact that the designer regards all users' possible activities through the designing process, which is increasingly significant in most designing cases.

The role of affordances in the main process of designing is to consider all possible activities of the user in order to offer a solution for environment (Liu and Lu, 2009). Thus, definitions of deep studies of environment affordances, implications and their evident and hidden aspects can create bases to effectively design environment.

#### **Empirical Background**

In 2007, Daniel conducted a research entitled “contribution of Physical Space in the approach of Environmental affordances”. According to his idea and findings; the article offers a broad view about environment and its affordances in relation to psychology. Unlike most recent researches, he doesn't consider the effect of environment on people and their lives as unilateral and he explains that the effect of

**Research Article**

environment on people somehow depends on people’s behavioral and mental features. Additionally, environment alone cannot affect people’s lives and morals, but it affects them in relation with their mental and behavioral features. That is, designing a triangular room may affect two people differently based on their psychological features (Daniel, 2007). In 2008, Wischer conducted a scientific study entitled "environmental affordances of a workplace". According to the researcher’s idea and findings, environmental affordances of a workplace refer to the social and physical conditions of a workplace that have been designed by employers and these conditions affect employees’ mental and behavioral conditions as well as their activities' efficiency. This study indicates that employers are concerned about the fact that their employees lose their energy as a result of weak design of the workplace or undesirable space, so that the employers’ investment will be reduced. Environmental aspects of a workplace include: noise, light, sound quality, temperature, furniture and agronomy design and the psychological aspects of the workplace including employees’ level of satisfaction, belonging to the workplace, positive productivity, a sense of comfort and positive attitude (Jacqueline and Vischer, 2008).

**Table 1: Examples of the studies conducted in the field of environmental affordances Reference:**

Author	In the field of	Year	Theoretician
Conducted Studies  Environmental affordances must be considered before constructing an environment. Environmental affordances must be predicted and implemented by architects and engineers for designing in order to avoid available costs and save energy.	Environment and sustainability in high-rise structures	2006	Richard Wener
It offers a broad view about environment and its affordances in relation to psychology. He doesn’t consider the effect of environment on people and their lives as unilateral and he explains that the effect of environment on people somehow depends on people’s behavioral and mental features. Additionally, environment alone cannot affect people’s lives and morals, but it affects them in relation with their mental and behavioral features.	Contribution of physical space in the approach of environmental affordances	2007	Daniel Montello
environmental affordances of a workplace refer to the social and physical conditions of a workplace that have been designed by employers and these conditions affect employees’ mental and behavioral conditions as well as their activities' efficiency. This study indicates that employers are concerned about the fact that their employees lose their energy as a result of weak design of the workplace or undesirable space, so that the employers’ investment will be reduced. Environmental aspects of a workplace include: noise, light, sound quality, temperature, furniture and agronomy design and psychological aspects of the workplace including employees’ level of satisfaction, belonging to the workplace, positive productivity, a sense of comfort and positive attitude.	Environmental affordances of work place	2008	Wischer
Based on the researcher’s idea, various places such as stores, walking areas, upper and lower places of the city, accommodation type, natural and residential spaces have the affordance to affect people’s physical and mental health and even their social interactions.	investigating Public Health in the framework of the approach of environment affordances	2010	Wells

**Research Article**

Wells (2010) conducted a study entitled "investigating Public Health in the framework of the approach of environment affordances". Based on the researcher's idea and findings, various places such as stores, walking areas, upper and lower places of the city, accommodation type, natural and residential spaces have the affordance to affect people's physical and mental health and even their social interactions. Moreover, people who live near parks and open areas are physically more active and healthier compared to others. Examples of the environmental factors affecting public health are density of public gatherings, parks size, size and height of residential structures, design and construct of roads (Wells *et al.*, 2009). Richard (2006) conducted a study entitled "environmental psychology and sustainability in high-rise structures". According to this researcher's idea and findings, environmental affordances must be considered before constructing an environment instead of constructing an environment and then discussing its affordances later. Environmental affordances must be predicted and implemented by architects and engineers for designing in order to avoid available costs and save energy. This article considers human elements in sustainable design of urban high-rise buildings. Moreover, it is identified that in a sustainable design, social, mental and behavioral issues as well as considering emotional and mental needs of people can be effective (Wener and Carmalt, 2006).

**Affordances**

An environment is an organized collection of all abilities and affordances. The concept of ability and aptitude is an incomplete translation of the English word of affordance, which was first proposed by James Gibson, an American psychologist.

**Environmental Affordances**

Environmental affordance is defined as the recognition of human settlement in order to meet his needs and activate his entity and such awareness of the environmental affordances and interaction of human with those affordances leads us to the process of creation and architectural design of spaces and places (Daneshgar *et al.*, 2002).

**Table 2: Definitions of Environmental Affordances Reference: (Daneshgar *et al.*, 2002)**

Orientation of the theory	Context of the theory	Theoretician	Definition of environmental affordances
Form Operational	Physical Environment	Court Kafka 1935 Lewin 1936	Demand and Invitational Valance: German translation is Aufforderungscharakter
Theoretical	Physical Environment	Alexander 1964	Fit: Congruence of human needs with environmental abilities
		Barker 1968	Synomorph
Theoretical	Physical Environment	Mickleson 1967	Congruence
Perception	Physical Environment	James J Gibson	It is a part of what makes it usable for the living creature.
		Shaw <i>et al.</i> , 1982	Effectivity: effect
Theoretical	Physical Environment	Kaplan 1983	Compatibility: adaptability
		Louis Kahn	Availabilities
		Aldophen Ike	Multivalence
Operational	Physical Environment	James J Grenow	Ability: depends on each job occurring in the environment and its interaction type
		Osnow 1992	Aptitude
		Bell Vessey Green and Thomas	Affordances are certain facilities provided by environment and powerful elements of the behavior.
		Brown	Capabilities

**Research Article**

<b>Operational</b>	Physical Environment	Mac Andrew	Underlying performance: achieving useful performance of the objects
--------------------	----------------------	------------	---

The concept of environmental affordances is a widespread and widely used concept which has been common by the behavioral scientific studies in architecture and man-made environment. Given the theory of environmental affordances, environment can be certain regulations of affordances that provide various behavioral conditions and aesthetic experiences for human. Environmental affordances are divided into two direct and indirect categories (Lang, 2005). Table 2 investigates different definitions of affordances and their implications in relation to man-made environments based on the mentioned views.

**Application of Affordances in Architectural Exercises**

In attempting to understand the designing process in its general definition, it is first needed to turn back in order to answer the question that "why do people design the objects surrounding them?" Gibson first used the definition of affordances to answer this basic question that why human being changed the shape and nature of his surrounding area in order to change what they could deal with (Gibson, 1977). Therefore, the incentive behind each designing project can be defined in the framework of certain words such as creativity or making some changes in affordances of the objects designed by human; not only a functional view or merely creation of beautiful forms, but also creation of hand-made objects that can be used and have meaning. The concept of affordances provides a proper solution for designing environment that focuses on perfection and improvement of the relationship between environment and its addressee, i.e. between the forms of buildings and behaviors of their users as the function of the building.

In his book entitled "designing daily objects", Norman points out that most people who use public buildings face such problem that whether to pull or push the door while entering and exiting or it was just a door over there (glass doors).

In modern buildings, design is involved in informing how to use this building. Norman points to objects in general and claims that if they need written instructions, they may have not been designed very well. A proper and superior design indicates with its natural features what the usage is and what its responsibility is in a way that no description is required (Norman, 1988). Given the fact that architectural design, in its nature and base, is not different from other designs that humans do, it is first needed to identify the required (positive) and unacceptable (negative) affordances.

The relationship between users and buildings, which leads to the formation of behavior, is of great importance in architecture. Today, this issue has mostly been neglected in the great chaos that exists in the architecture. On the other hand, based on the broad range of architecture and various sciences involved in order to form and use a structure, significance of considering the addresses and their behavior is completely felt in all the steps of the project from planning, designing, application to evaluation after application.

This issue includes designing building details such as designing a door knob to designing a structure (lighting, heating and ventilation systems). These various designing activities often offer no common base for consensus and coordination. If architects and engineers have access to a common theoretical base of affordances, they can more easily work together and communicate with each other and also design their own professional systems simultaneously. Unfortunately, this alone is not sufficient for designing man-made structures that must have specific affordances and according to Norman, unexpected affordances. Therefore, the designing process can be simplified and evaluated as follow:

- a. It should have all expected affordances.
- b. It should not include any unexpected affordances.

Given the importance of this issues and identification of what these man-made structures should provide and what should not, one important and basic step of the designing process is dedicated to it. In the field of architecture, this step is more related to architectural planning (Norman, 1988).

**Position of Environmental Affordances in the Architecture**

"Affordances-Based Design" has generally significant efficiency in planning projects in architecture. It is important to consider the fact that the concept of affordances must not be limited merely to the planning step, but also it should be related to all steps of architectural design. "Problem seeking", written by Penaw

### **Research Article**

(2001), is one of the books that has been cited a lot and considers architectural planning as an analytical stage and considers it superior than next designing steps that have been identified as problem solving. The first approach of Penaw toward architectural planning that was published in 1977 significantly influenced architectural exercises and provided a base for later writings in architectural planning. Such as “Architectural programming”, written by Robert Hershberger, that was published in 1999. In the step before designing, architects and other people who are involved in the designing system must use various methods to collect data related to internal and external forces affecting the project. In general, designing team may take the responsibility to identify and evaluate environmental values, to collect the required data, to interview various groups of the users by selecting proper methods, to explain and regulate goals and to prepare a list of required equipment and the technologies. During the inquiry stage, all goals are set, the designing problem is identified and all the equipment needed for the project implementation are identified (Duerk, 1993). Finally, lots of information is placed in several key concepts in order to advance and inform the next steps of the designing project. Most approaches of architectural planning apply a segmented designing process and plan, which is more intensified in great architectural designs.

One of the limitations of such segmented approach is non-effective transmission of information to designers and people who participate in the later steps of the project. Planning process is a strong analytical process that intends to emphasize measurable aspects. Such high-level analytical process often makes a functional view to a designing problem. It should be noted that although such an applied and functional view to designing is highly important, it should be modified by an artistic and poetic view toward designing in order to achieve high-quality architecture (Pirsig, 1974). By providing a common understanding of the designing process, required equipment, project implementation and analysis of the suggested structures, the concept of affordances can create a framework for smooth transfer of information in various steps of the designing process. Application of the concept of affordances is a better and more proper attempt in planning and designing among various models. It should be noted that identification of affordances directly depends on the skillful designers who are professional in construction of man-made structure or building. It includes a definition which is implied by the elements; the goal which is considered by designing a man-made structure and functional and formal aspects. The main difference of affordances -based approach with other designing approaches is the precise identification of what that design mustn't provide. In other words, it is not appropriate that a man-made structure provides other unwanted objectives along with the given ones (such as predicted budget, required appearance).

#### ***The Approach of Affordances-Based Design and Scientific Base of Architecture***

A key superiority of the concept of affordances is that it can be used from the basic levels of project design to evaluation after completion of the project. Understanding the basic information in the form of affordances can help designers to identify measurable objectives or hypotheses that can be useful in the process of designing. Such hypotheses can be evaluated after exploitation of the building. Therefore, by the fulfillment of such an issue, we can expect assistance in the available scientific base for architecture in order to identify causes of success and failure of the design. Additionally, this method can be a substitute for traditional methods of information and knowledge transmission among people who participate in the design process. The need to such scientific bases in International Conference of America (AIA) in detail was "nature of poetic and logical design".

There is no stimulating issue pointing to this item more than every other issue that there is no adequate knowledge to study decisions used in designing; a knowledge that is helpful in judgments and decisions when designing group exchanges idea with employers and investors. Hamilton (2006) believes that architectures have used to accidental controls instead of dealing with hardships and scientific severities. He also states that architects are used to not submitting clear hypotheses and continuous, measurable claims to create a scientific approach. It is said that when designing goals are not correctly and clearly involved in designing process, the after-use evaluation that whether design has achieved its own objective or not will face difficulty.

### **Research Article**

Such evaluation can include various aspects such as security, user's welfare, efficiency, flexibility, aesthetic issues and so on. Necessity of such practical approach has caused people who are involved in designing projects look for certain solutions to meet employers' expectations in order to fulfill their ideas; a solution to prove designers' position as leaders who are capable of combining creative arts by a scientific, logical and valid approach.

Right and proper application of the concept of affordances can help founding such scientific base and principle.

Affordances can avoid repetition of design problems in architectural exercises in later projects by providing a device to compare practical occurred attitudes with the given affordances and documentation of the solution in meeting designing problems (Battisto *et al.*, 2006).

### **Significance and Importance of the Study**

Today, education can play a significant role in the process of cultural and economic development of a society. Such an important issue is done through the provision of proper facilities and designing educational environments with the affordance of increasing scientific abilities of the relevant people.

University is an example of educational environments that have a determinant role in the society's scientific structure. Therefore, in most available researches in the field of designing educational and scientific environments, environmental affordances and their features are not considered because by changing an environment structure and a proper design, a great effect can be left on students in various grades. Therefore, given the fact that most available researches on the environmental affordances of educational spaces are scarce and rare about certain fields such as faculties or faculty of architecture and in the process of architectural education, role of the physical environment of the education should be considered in addition to the students' potential talents, it seems necessary to conduct this study. Necessity of considering this issue is more identified by knowing the fact that architectural faculties of Iran haven't been specifically designed for such a reason or this issue hasn't been considered while designing these faculties and finally it is attempted to identify effective factors and then offer the required solutions for optimal design of architectural faculty by focusing on environmental affordances of educational spaces.

### **Research Hypotheses**

- 1- Educational environment affects mental and behavioral states of students and efficiency of their activity.
- 2- Increasing educational environment's quality plays an effective role in students' learning in Art and Architecture faculty.
- 3- Environmental compatibility can be increased by increasing potential environmental affordances and their compatibility with the intended behaviors.
- 4- People's misbehaviors can be significantly prevented by considering the approach of environmental affordances and a proper design of an environment.

### **Research Objectives**

#### *Operational Objectives*

- Flexibility and adaption of most spaces with changes in educational programs
- Creation of spaces with suitable affordances for users
- Compatibility and compliance of users by providing proper environmental affordances
- Provision of a proper and suitable environment for educational and research activities

#### *Strategic Objectives*

- Considering environmental affordances in physical layers of the space
- Considering opportunities and constraints and their relation with users' features in each environment
- Identifying environmental affordances and their effect on the process of architectural planning and design
- Considering all possible activities of user to offer a solution for environmental design

### **Research Tools**

The primary studies have been conducted using two following methods:

### Research Article

#### A: Library Studies:

Libraries, internet sites, organizations, public and research organizations have been used in this method in order to collect data related to principles of designing educational spaces, the role of behavioral sciences in architectural design, studies on environmental affordances as well as investigating certain instructions and terms related to construction and design of educational places.

#### B: Field Studies:

In order to gain more precise information on the present status and observe current behaviors and activities in educational environments, interviews with professors, students and employees of Art and Architecture faculty were conducted.

#### Population and Sample size

The population of this study includes 1071 people. It includes all students of art and architecture as well as professors and employees of Azad university of Gonbad province. Additionally, educational level of the students is bachelor and master. Scientific aspect of the research is preferred over appropriateness of large samples. An ideal sample must be such great in order to represent a society and generalize its results and it must be sometimes really small in order to be economical in terms of gaining subjects, economics, time and data analysis (Mirzaei, 2010).

Given the estimation of the statistical population, the final sample size is obtained by the use of Cochran Formula.

**Table 3: Estimation of statistical population and final sample size through Cochran Formula**

Reference: Author

$$n = \frac{1071(1/96)^2 p.q}{1071(0/05)^2 + (1/96)^2 (p.q)} = \frac{1071 \times (1/96)^2 \times 0/5 \times 0/5}{1071(0/05)^2 + (1/96)^2 (0/5 \times 0/5)} = 281.882$$

Based on the conducted test, the final sample size has been considered 282.

#### Data Analysis Tools and Methods

The research method of this study is survey and it is conducted to describe and analyze data. Accordingly, quantitative data and information packages have been collected using a questionnaire and have been analyzed through spss software.

Since the topic of this study is theoretical - applied and theoretical, the following two methods have been used for data analysis:

##### a. Theoretical Analysis

Theoretical analytical method is used to identify dimensions, size, per capita, physical features, and to recognize the main and basic concepts and issues of spaces planning.

##### b. Content Analysis

In studying documents and sources after selection of the sources related to the subject, it has been tried to extract, study, and use concepts, issues, hypotheses and ideas related to the subject in a targeted and regular way in the framework of objectives and research methodology.

Sampling method in this study was simple random sampling due to the lack of access to the sampling framework and shortage of time and economic cost. In this technique, the final sample contains selection of various samples and it should be conducted in a way that the final interview cost is reduced. Therefore, simple random sampling has been used and the questionnaire has been distributed among the respondents. The questionnaire has been designed based on the students', professors' and employees' needs and activities. Finally, the level of significance of each item will be identified considering the percentage of their responses to each item. Moreover, designing will be commenced based on the solutions taken from this process.

#### Investigating Affordances in Locating Faculty's Site

Location, the given environment and its potential features are among the factors affecting a project. Locating site, reasons to select site location and the climate affecting it are highly significant and must be

### Research Article

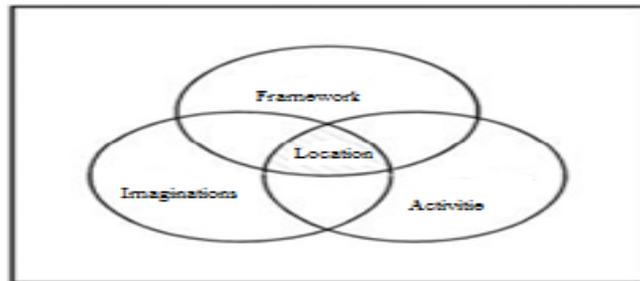
considered in suitable design of a space. The concept of affordances can be also used in personal environment theories and in researches about location; this emphasizes a quantitative view of users' reactions in dealing with the environment. Such trends intend to understand this type of relationship which includes environmental psychology (Canter, 1977), architecture (Schultz, 1988) and human geography (Tan, 1980).

“Location theory” is a word mostly used to include emotional definitions and constraints involved in physical environments. In fact, by the actual relationships in personal environments, the mutual relationship between the environment components and person's behavioral experiences are related to each other. This has caused the mutual relationship of empirical nature of the location and personal sense of awareness to be considered by researchers. Moreover, it highly depends on both user (person) and the made environment and they don't exist separately.

An example of such studies is David Canter's research (1977). He has summarized researches on new psychology in his book “The Psychology of place”.

In Canter's model, place is a combination of physical attributes, activities and conceptions that is shown by the intersection of three matching areas that refer to physical environment, attitude and concepts.

In this model, the physical attributes are shown as what demonstrates thoughts of construction and living in the architecture, indicates a physical entity and fields that include building appearances such as structure and materials, shape features (volume, size, facade, internal relations of the space, geometry and so on), indoor furniture and environmental affordances (Sohrabi, *et al.*, 2009).

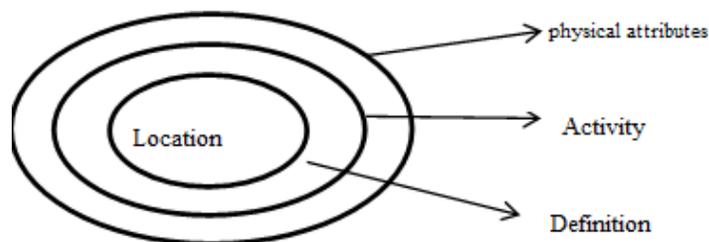


**Figure 1.3: Canter's model      Reference: (Canter, 1977)**

In this mode, the component of activity also includes all human behaviors appearing in various physical and psychological status as well as internal relationships among different activities. Finally, the third component includes mental imaginations, emotional relationship, the relationship between symbols and signs and aesthetic values of the building. This word has been chosen due to more adaptation and location of this word in the literature of this country.

Based on what has been stated about the concept of location and Canter's model, the more the adaption among physical attributes, activity nature and function with the created meaning is, success and achieving a location will be more. Final optimality is in total adaptation of the three components (physical attributes, activity and meaning). In case of lack of similarity among these three components, location won't have any meaning, but the balanced and achievable status in architectural design is relative share of these components. In other words, when the share of physical attributes, activity and meaning is relatively equal with less compatibility, we will have a more desirable place with its all criteria.

**Research Article**



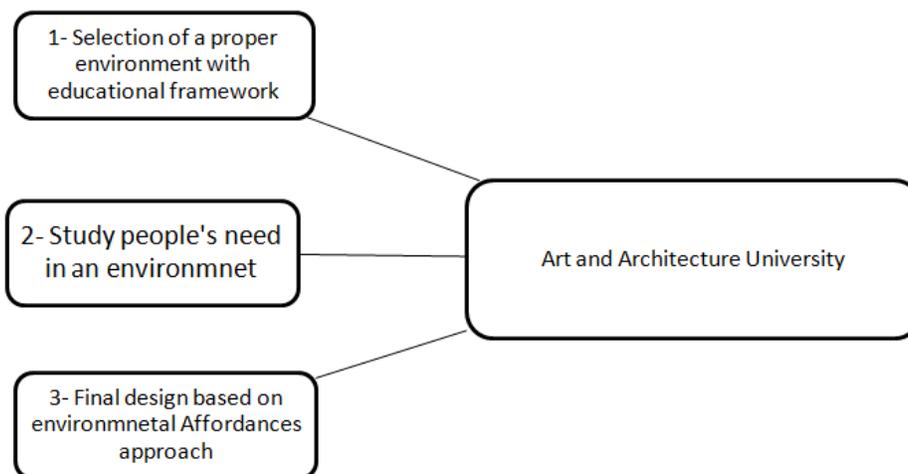
**Figure 3.2: Full compliance of all three components of physical attributes, activity and meaning Reference (Sohrabi et al., 2009)**

Now, it is necessary to identify which sites are suitable for Art and Architecture faculty and have the required affordances; historical buildings and the sites which are located in artistic and cultural areas of the cities. Based on the definitions and conceptions existing regarding these sites, they can be suitable for the Art and Architecture faculty. Some of the Art and Architecture faculties of Iran have been formed by making certain changes in historical structures or they continue their activities in the sites considered for artistic and cultural activities of cities' master plan. It can be a proper choice based on the definitions found in these sites. Old texture, being away from the main university site and student activities conducted in it and being in accordance with three components of the place can create certain problems. In addition to the mentioned issues, being away from the facilities considered at university scale such as central library, dormitory, Recreational amenities and so on as well as universities' policies to create a unique complex and the relationship between various fields have caused the sites in the university to have a proper status.

Activities of universities are educational and research activities that have appropriate congruence with the given activities in the faculty that is under design and the implied definition has created a proper condition. In order to adapt the current three components in location authentication, affordances affecting the component of physical attributes such as neighborliness, accesses, land dimensions and size and topography must be precisely identified and considered in planning and design. Additionally, all available activities in the area of site and relation of the given faculty with other faculties must be considered to achieve more suitable compliance of the components. After all the conducted studies in this matter and studying the suggested site for designing Art and Architecture faculty of Gonbad, the site of National University of Gonbad was selected as the final choice due to having more proper conditions.

Accordingly, the required intermediate studies have been chosen in the first part to select an environment based on the environmental affordances approach. It is not absolutely the final part of the job and this environment mustn't be designed regardless of people who are in it. Therefore, people's needs and expectations from an educational environment in the framework of the Art and Architecture faculty will be studied and evaluated in the next step in order to design an environment in accordance with students', professors' and employees' requirements. Accordingly, after conduction of the basic and topographical studies in selection of proper environment, appropriate designing criteria of an environment have been studied and evaluated from the viewpoint of university students, professors and employees in order to complete this project along with better design of the Art and Architecture faculty based on the approach of environmental affordances. Generally, three basic steps have been implemented in this study. Firstly, a proper environment has been selected for designing and then people's ideas have been evaluated based on the approach of environmental affordances. Finally, the final design has been conducted based on the two main principles.

**Research Article**



**Diagram 1: The three main steps conducted in this study Reference: Author**

**Analysis and Evaluation of Collected Data**

Based on the results of the survey research, some of the main factors in the respondents' view have been identified. The identified items in the framework of environmental affordances can have a significant role in the fulfillment of students' expectations and pushing them toward pre-determined activities. The first subject was designing a cozy and comfortable space for students, which can be regarded significant and influential based on respondents' ideas and environmental affordances. Therefore, some subjects such as designing a proper buffet and dining hall in the central area of the faculty and creating pause locations, significance of a space to sit and exchange ideas for the students as well as the variation in collective activities in open areas and its multi-purpose feature have been considered; because existence of such spaces can be regarded as leisure, refreshment place as well as a space to have more relations. Designing a calm and quiet study area, seminar and conference halls and the significance of the link between buffet and other educational spaces are factors that were of high importance for respondents. These factors have been used in the final design in order to create a calm study area based on environmental affordances approach and significance of all these factors in terms of respondents' views.

**Table 4: Proper solutions and criteria for designing a faculty Reference: Author**

**Proper guidelines and criteria which have significant effects on designing the faculty**

- Considering activities
- Assessment of users' needs
- Attempting to pay attention to urban scale and layout base
- Method of building establishment based on available features and accessibilities
- Attempting to create a visual relation with adjacent buildings
- Field preparation for creation of involvement and users' activities
- Separation and space layout

**Table 5: The most significant priorities which is important for users in designing an art and architecture faculty reference: Author**

Importance level	Designing criteria of art and architecture faculty	Priority
84%	Significance of the relationship between buffet and studios along with other educational places	First
80%	Designing certain places for behavior personalization given the importance of privacy	Second
79%	Separation of areas and avoidance of open and tangled spaces	Third
79%	Elimination of stable furniture ad dividers	Fourth
78%	Observation of open area hierarchy from public to private	Fifth

**Research Article**

77%	Designing seats for gathering	Sixth
77%	Orientation, stretch, shadow and penetration	Seventh
74%	Creation of sculpture and visual arts workshops	Eighth
74%	Determination of specific areas for each group and the relations with Colonnades	Ninth
72%	Lively colors to create a sense of dynamism	Tenth
71%	Provision of social-cultural-service uses in accordance with faculty scales	Eleventh
70%	Relation of studios with educational places of the faculty	Twelfth
70%	The need for natural light in closed areas	Thirteenth
70%	Definition of interface seat space	Fourteenth
67%	Consideration of natural effects and topography of the base	Fifteenth

One of the issues that can be placed in the concept of environmental affordances is the beauty of landscape and environment, which has significant effect on people in terms of psychological factors. Therefore, certain features such as sight provision and proper perspective, exploitation of natural elements in indoor spaces have been highly significant for respondents and are also important in the concept of environmental affordances and have thus been used in the final design. Other components which have been considered in this study are privacy and how to maintain it, so that features of the space designing were highly significant for personalization of behavior from the viewpoint of respondents and that is why it has been applied in the final design. In a general conclusion, it should be said that the final design of the Art and Architecture faculty has been conducted through a survey method and in the framework the approach of environmental affordances; because, today, in addition to the concepts and approaches of architecture, we should use viewpoints and ideas of people who use an environment in order to increase people's satisfaction to design an environment and also it is effective for a better design. The main priorities considered by students, professors and employees regarding designing of Art and Architecture faculty have been shown in the following table based on the level of importance.

**CONCLUSIONS**

The base of the study in the approach of environmental affordances requires a profound view in mutual relation between human and environment; because, unlike previous studies, this relationship is not unilateral and it is absolutely a mutual issue. Moreover, the study on affordances is highly dependent on understanding the mutual relationship between people and the objects made by them. These artifacts include buildings, architecture and any changes in the natural environment. Therefore, the study of form and meaning in architecture is pushed toward relation of any individual and observer's environmental processes. There is no doubt that it seems that meaning can be regarded as a separate affordance independent from physical form of the architectural elements, beliefs and past experiences of the observer. Therefore, the significance of the approach of environmental affordances has been studied in the form of document studies and standard criteria have been implemented by the use of field study in order to design an environment.

In the next step, indicating significance of the selected criteria in designing an environment has been assigned to students, professors and employees for better evaluation. There are some points that are helpful in the whole planning and designing project process and should be considered. One of them is considering addressee along with their needs and it sometimes leads to some changes in design and its required principles. In certain cases, such studies on environmental affordances and principles of designing educational places can guide us toward specific provisions. Accordingly, the most significant criteria which are acceptable by the environment residents must be considered, because the importance of such issue has been proved in the theory of environmental affordances. Regarding the claimed issue, Gibson states that environmental affordances consider the relationship between human and environment based on the areas that any individual is located in. These are points that more refer to the social

### **Research Article**

relationship between people and its relations. In the field study of environmental affordances, it has been identified that a series of meanings are shown to human beings in their interaction with their own surrounding areas. Such meanings have caused formation of human behavioral patterns based on motivations and needs of human being along with power of using potential affordances of the environment and it is required to consider them in designing the man-made structure. In order to comprehend and understand affordances, either positive or negative, study of meaning can create certain sparkles in the mind to discover the relationship between users and the built environment.

In a general summary of environmental affordance and its position in an effective design of an environment including workplace and living place, hospital or the intended issue of this article (Art and Architecture faculty), it should be said that actions and attitudes, thoughts, feelings, interactions and other human features are affected by outdoor environment in the framework of environmental affordances. As proved, mental, personal and cultural features of people are mostly influenced by the environment in which they live. Similarly, the final design of this study has been conducted based on categorization and identification of a continuum of various criteria and their evaluation by respondents (students and employees) and based on their significance level. The present study has studied the students' expectations from an educational environment named as the Art and Architecture faculty in addition to the approach of environmental affordances in order to leave reductionism trap aside. Thus, in a mutual interaction between human and environment, an environment is designed and created based on respondents' view and expectations, which has an influential role in forming final attitude, feelings, interactions, practical structures and other human aspects. Based on the research findings, it has been identified that among all mentioned criteria, the respondents have highly considered certain criteria including enhancing personal motivations affected by environment, a proper space for various group activities, privacy and maintaining privacy, a sense of comfort with various psychological features, suitable space for commuting, providing a space to exchange ideas and negotiate, cozy and comfortable space, observing dimensional standards and agronomy principles, exploiting natural elements in indoor spaces, adequate and proper light in closed areas, designing calm and quiet reading place, seminar and conference halls along with modern designs, variation in collective activities, eliminating stable furniture and dividers, and provision of proper view.

Based on the prioritization of the respondents' ideas, the aforementioned factors have been considered in designing the faculty. Finally, it should be said that designing Art and Architecture faculty has been totally conducted in accordance with respondents' view (students and employees) and based on the approach of environmental affordances.

### **REFERENCES**

- Battisto D, Allison D and Crew L (2006).** A green community wellness center: Expanding the scope of design for health. *Academy Journal* 18 Clemson University.
- Canter David (1977).** *The Psychology of Place* (The Architecture press LTD, Linden).
- Daneshgar Moghaddam G and Eslampour M (2002).** Analysis of Environmental Affordances theory based on Gibson and its feedback on human and man-made environment studies. *Journal of Utopia Architecture and Urbanism* (9) 73-86.
- Daniel R Montello (2007).** The contribution of space syntax to a comprehensive theory of environmental psychology. Department of Geography and Psychology, University of California, Santa Barbara, USA
- Duerk DP (1993).** *Architectural Programming: Information Management for Design*
- Gibson JJ (1977).** The Theory of Affordances. In: *Perceiving, Acting, and - [Δ]-Knowing*, edited by Robert Shaw and John Bransford, ISBN 0-470-99014-7.
- Hamilton K (2006).** Four Levels of Evidence-Based Practice [Electronic Version]. *The AIA Journal of Architecture*. Retrieved 21/11/07 from
- Jacqueline C Vischer (2008).** Towards an Environmental Psychology of Workspace: How People are affected by Environments for Work. University of Sydney. *Architectural Science Review* 51(2) 97-108.

**Research Article**

**Lang J (2005).** *Creation of Architectural Theory: The Role of Behavioral Science in Environmental Design*, translated by Alireza Einifar (Tehran University publication).

**Liu Ying-Chieh and Lu Su-ju (2009).** An Investigation of Function Based Design Considering Affordances in Conceptual Design of Mechanical Movement. *8th International Conference, EPCE Springer 2009, Germany.*

**Matlabi G (2001).** Environmental psychology of a new knowledge serving architecture and urban design. *Fine Arts Magazine* (10).

**Mirzaei Kh (2010).** Thesis Writing, Sociologists publication.

**Motalebi Gh (1998).** A Theory of Meaning in Architecture and Urban Design: An Ecological Approach. Unpublished PhD dissertation, Faculty of the Built Environment, The University of New South Wales, Sydney.

**Norman DA (1988).** *The Psychology of Everyday Things* (New York: Basic Books).

**Pirsig RM (1974).** *Zen and the Art of Motorcycle Maintenance* (New York, NY: Random House).

**Richard Wener and Hannah Carmalt (2006).** Environmental psychology and sustainability in high-rise structures. Department of Humanities and Social Sciences, Polytechnic University, Brooklyn, NY 11201, USA. Rutgers University, 205 6th St, Apt 1, Hoboken, NJ 07030, USA

**Sohrabi M, Mandgari K and Kousheshgaran SA (2009).** Restoring Eghbal factory of Yazd in the process of turning to a place, *Articles of Recognition Conference and Introduction of Advantages Along with the Restoration Capacities and Exploiting Historical and Cultural Sites* 509-526.

**Wells NM, Evans GW and Yang Y (2010).** Environments and Health: Planning Decisions as Public-Health Decisions. *Journal of Architectural and Planning Research* 27(2) 124–143.