Scientific Journal of University of Benghazi

SJUOB (2024) 37 (2) Applied Sciences: 32 – 40

Shibub

http://journals.uob.edu.ly/sjuob

Examining the Subjective Reasons Leading to Disparities in Academic Achievement among Students in the Architectural Design course at the University of Tripoli.

Case study: Architectural Design Students

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Received: 24 / 08 / 2024; Accepted: 30 / 09 / 2024

ABSTRACT

Architectural education plays a vital role in developing and advancing the urban structure and raising the level of performance of technical departments to achieve a better standard of living for the country's people within international standards. Architectural design is considered one of the most important basic subjects in the crystallization and formation of an architect's personality. Therefore, the disparity and sometimes weakness of the scientific achievement of students in the Department of Architecture in this subject undoubtedly leads to the inability of graduates to contribute to the process of construction effectively in practical life. This research aims to find out the reasons for the disparity in educational achievement among students of the architectural design subject in the Department of Architecture and Urban Planning at the University of Tripoli. The Descriptive Analytical method was employed to identify key challenges hindering students' educational progress in architectural design courses AR 302 and AR 403. The study examined a sample that comprised over [2]5% of the students across the two courses. The results were that all reasons for lack of achievement related to the students themselves. They were represented in order and according to importance in the degree of intelligence; hobbies; method of reading; access to books and references and the extent of benefiting from them; and attention and concentration during lectures. The study found that students did not have the moral courage to answer questions due to shyness (91.7%) and fear of the professor (8.3%). The research resulted in a set of recommendations, the most important of which is that professors should invest in the first meeting with students when presenting the course program. The study also recommends professors provide students with advice and guidance in developing their IQ, aim to reduce or eradicate the effects of shyness, and encourage and motivate students to participate in discussions and ask questions. Implementation of these recommendations will increase the likelihood of fostering an integrated educational institution that is constructive and capable of graduating confident scientific cadres.

KEYWORDS: disparity- academic achievement- intelligence- shyness.

1. INTRODUCTION

Faculty members and educational institutions need to be aware of the underlying causes for the disparity in students' scientific achievement to correct them or contribute to correcting them. The scientific achievement of the academic courses in general and of the architectural design course, in particular, is reflected in the performance of the students of the Department of Architecture and Urban Planning. The scientific achievement of the students is evaluated through different evaluation stages and grades that they obtain in various exercises, tests, and midterm and final exams.

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These grades show the extent of the students' understanding and assimilation of the knowledge that they received in lectures, lessons, and discussions when the students use that information and apply it in their work on various exercises during the semester. As mentioned, the subject of Architectural Design is considered one of the most important subjects for students of Architecture and Urban Planning, as it is the backbone of the specialization. However, the results of this important subject frequently vary significantly from one student to another, indicating the disparity in their levels of academic achievement. Such disparity exists even though many of the academic and educational factors are the same and the opportunities are usually equal for all students. From these points, the research problem was identified.

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2. RESEARCH PROBLEM

The disparity of the academic achievement levels among the students of the Architectural Design subject can be inferred from the clear discrepancy in the grades of the students enrolled in this subject; in addition to the level of the projects presented as academic output at the end of the semester. For this reason, the researcher investigates the problems and reasons that lead to this disparity, determining a number of research aims to achieve in this paper.

3. RESEARCH AIMS

- Knowing the reasons that lead to disparity in the levels of academic achievement among students in the Department of Architecture.
- Raising the level of educational achievement of students and graduating capable groups and active cadres in society.

To achieve these goals, the research was addressed by answering the main question of the research.

4. RESEARCH QUESTION

What are the subjective reasons that lead to disparities in academic achievement among students in the Architectural Design subject?

5. METHODOLOGY

The research relied on the Descriptive Approach, which addresses scientific studies on the subject of research and extrapolation of some psychological influences on the composition of students and their impact on their academic achievement. In addition to the analytical approach, a questionnaire tool was used; in which several questions were asked to a sample of students of the Architectural Design subject (branch AR 302-AR403), and the results of the questionnaire were analyzed through Microsoft Excel.

Teaching Methods and Their Impact on Students' Academic Achievement

When researching academic achievement, it is necessary to review some theories and schools that are interested in researching teaching methods. Many educational theories and teaching schools explain the factors for the success of the educational process, such as John Watson's behavioral school, inductive, constructivist, associative, and sensory-to-cognitive schools, which produced the Gestalt school. Gestalt is a German word that means the characteristic of the senses (visual and auditory) and their impact on learning and knowledge. Gestalt theory appeared in Germany in the early 1920s and is considered one of the most influential theories in university education. The Gestalt School focused on the principles of visual sensory effects on learning and knowledge, such as shape, similarity, proximity, sharing, and closure. Therefore, we see it as the closest direction to teaching arts in general, and the field of architecture and design in particular. This theory focuses on many scientific concepts that have a significant impact on university education methods. The most important of these concepts are perception, organization, reorganization, transfer, and internal motivation for learning. The goal of these concepts was to determine the extent to which students understand the lessons given and the internal motivation of the students to make them learn new academic subjects that have a significant impact on their practical life after graduation[1]. The author of this paper studied inductive theory in this school, which relies on research, contemplation, and thinking. In the inductive method of teaching, the student moves in research from one part to the whole. This method is used when producing laws or theories, and it is one of the methods that helps students to research and discover new things on the subject of the study[2].

In implementing design subject courses, professors rely on giving theoretical lectures on the most important design standards and methods for dealing with site characteristics, user characteristics, and function. What they receive is applied in a design project for a building that bears the characteristics of the required function. The history of project-based learning dates to 1897 AD, at the hands of the famous psychologist John Dewey (1896), who proposed the idea of "education by doing." The student has the freedom to investigate and research the scientific subject, and the professor does not have the right to impose any scientific ideas, but his role is to guide his students. This is why scientific attempts began to research new methods and ideas that would help develop science and learning, and one of the most important ideas was "project-based learning." Many psychologists discussed this idea, the most important of whom was Jean Piaget, who described it as one of the best ideas ever proposed. One of its most important principles is that it stresses that the student should be an important part of the lecture by assigning him/her to research a specific problem and propose several solutions to it by studying some similar projects that serve as concrete evidence from which the most important solutions that are considered successful can be deduced by applying them in these projects' list. The scholar Vygotsky had ideas contrary to those proposed by Piaget, as he believed that education and social and collective learning were an important part of the cultural and cognitive development of students. It contributes effectively to increasing students' awareness, and this development will only occur through contributing to positive social interaction among peers and under the care of highly experienced people, represented by the professors. In addition, it helps to filter thoughts and actions based on practice that develops the level of

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cognitive awareness among students[3]. A questionnaire was prepared for this study, containing questions that reflect the above-mentioned information required for the research results.

6. RESULTS

The questionnaire was distributed to the members of the selected sample, who are students of design courses (302Arch and 403Arch) in the Fall semester 2022-2023. After the questionnaire was collected and data extracted, the results were as follows in Table 1.

Table 1. Data extraction from the questionnaire.

No.	Factors	Percentage		
1	IQ among students	Excellent 10 to 20%		
2	IQ in digital and arithmetic	Excellent 0 to 10%		
3	IQ in shape recognition	Excellent 30 to 40%		
4	The hobby (intellectual-physical/intellectual-physical)	Intellectual 40%	Physical 50%	Intellectual physical 10%
5	Residence (near/far)	Near the university 80%		
6	A language he or she is fluent in	Arabic 100%		
7	English language	20%		
8	Availability of books and references	60%		
9	Visiting the Library	60%		
10	Reading/(Full-Partial)	100% Partial		
11	Headache or falling asleep while reading	Headache 10%	Sleep 60%	No 30%
12	Architectural relatives	70% to 90%		
13	Concentration and attention percentage	High 30%	Average 40%	Weak 30%
14	Focus on the lecture and discussion.	(Focusing during discussion) 90%		
15	Language of teaching	Arabic with English terms 100%		
16	The difference between professors	Huge difference 100%		
17	Thinking on questions after lecture	Always 30%	Sometimes 70%	
18	Questions arise during the exercises.	Always 60%	Sometimes 40%	
19	The reason for not asking questions	Belief of Understanding 30%	Shyness 70%	
20	The time allotted for reading	More than an hour 70%	More than 5 hours 30%	
21	Understanding the terminology	60% do not understand	40% weak	
22	Entertainment	10% Physical	30% Intellectual	60% Entertainment
23	Literary and artistic Inclinations	20% Literary	60% Art	20% Both

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7. DISCUSSION

The information that was extracted from the table prepared after transcribing the information collected from the questionnaire was classified into two groups, the first being factors common to more than 80% of the students and the other being factors in which they differed. The results were as follows:

- **Common factors exceeding 80%:**

The results in Table 1 show that 100% of the students' mother tongue is Arabic. 80% believe that they are not proficient in English. They all prefer classroom teaching to be in Arabic with English terminology, and all believe that there is a substantial difference between professors in teaching. They do not read the topics in full; rather, their knowledge of the topics is partial. Their focus rate is 90% during the discussion, and 80% of them live close to the university, which has a favorable effect on attending lectures on time and not being late due to traffic congestion.

- **Varying factors:**

The factors are intelligence, concentration during lectures and visits to the library, headaches or falling asleep while reading, asking questions during lectures and during exercise, time allocated for reading and entertainment, linguistic accuracy, and understanding the meanings of terms, phrases, and words, and intellectual and literary inclinations.

Through this classification, the discussion will be about the factors in which there is a disparity between students, as these will be the source of the discrepancy in academic achievement. Since the research aims to determine the reasons for the disparity in achievement among students, which is shown by their final grades, the comparison will be made between the students with the highest grades and the lowest grades, and this is shown in Table (2), which brings together the factors and the students with the highest achievement and their counterparts with the lowest achievement.

Table 2. Shows the relationship between the highest-achieving students and the lowest-achieving students.

No.	Factors	Evaluate	The highest-achieving students			The lowest-achieving students		
			1	2	3	4	5	6
1	General IQ	Excellent	Excellent		Excellent			
		Very good		Very good			Very good	
		Good						
		Accepted				Accepted		Accepted
2	Arithmetic IQ	Very good						
		Good	Good	Good	Good			
		Accepted				Accepted	Accepted	Accepted
3	IQ in shape recognition	Excellent	Excellent	Excellent				
		Very good			Very good		Very good	
		Good				Good		
		Accepted						
4	Hobby (intellectual, physical, artistic)	Intellectual		Reading				
		Physical			Sport			
		Artistic	Drawing			Drawing	Drawing	Drawing
5	Residence (near and far)	Near	Near	Near	Near	Near	Near	Near
		Far						
6	A language he or she is fluent in	Arabic	Yes	Yes	Yes	Yes	Yes	Yes
7	English language	Yes					Yes	
		No	No	No	No	No		No

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8	Availability of books and references	Available						
		Sometimes	Sometimes	Sometimes	Sometimes	Sometimes		Sometimes
		Unavailable					Unavailable	
9	Visiting the library	Visit	Yes	Yes	Yes	Yes	Yes	Yes
		No						
10	Reading and learning	Full						
		Partial	Partial	Partial	Partial	Partial	Partial	Partial
11	Headache or falling asleep while reading	Both						
		Headache		Yes	Yes			Yes
		Sleep	Yes	Yes			Yes	Yes
12	Architectural relatives	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		No						
13	Concentration and attention percentage	High	High	High	High	High		
		Low					Low	Low
14	Focus on the lecture and discussion.	Discuss	More	More	Less	More	More	More
		Equal						
15	Language of teaching	Arabic- English	Yes	Yes	Yes	Yes	Yes	Yes
16	Difference between professors	Huge		Huge	Huge	Huge	Huge	Huge
		Little	Little					
17	Thinking on questions after the lecture	Always	Always	Always				
		Sometimes			Sometimes	Sometimes	Sometimes	Sometimes
18	Questions arise during the exercises.	Always	Always		Always	Always		Always
		Sometimes		Sometimes			Sometimes	
19	Reason for not asking questions	Professor					The fear	
		Shyness	Shyness	Shyness	Shyness	Shyness		Shyness
20	Time allocated for studying and reading	From 1 to 5			4 hours		4 hours	
		One hour	One	One		One		One
21	Understanding terminology	Yes	Yes	Yes	Yes			

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		No				No	No	No
22	Entertainment	Intellectual			Intellectual			
		Physical				Physical		Intellectual
		Entertainment	Entertainment	Entertainment			Entertainment	
23	Inclinations	Literary %	40%	20%	70%	50%	40%	50%
		Artistic %	60%	80%	30%	50%	60%	50%
24	Best scientific subject		Art	Architectural drawing	History	History	Design	Art
			Prospective	Prospective	Prospective	Design	History	History
25	Subjects of the highest score		Art	Prospective	History	Art	Art	Art

Table 2 shows that factors No. 5, 6, 9, 10, 12, 15, and 20 are the factors that do not affect the disparity in achievement, while the rest of the factors vary to different degrees. The most important factor of which is the degree of intelligence (IQ), which is shown in figure 1. The two categories converge in the visual aspect and shape recognition. On the other hand, we notice in the table that there is a large difference between the two categories in the aspect of mathematical intelligence, sometimes called analytical, which indicates the importance of this aspect in its impact on the students' academic achievement.

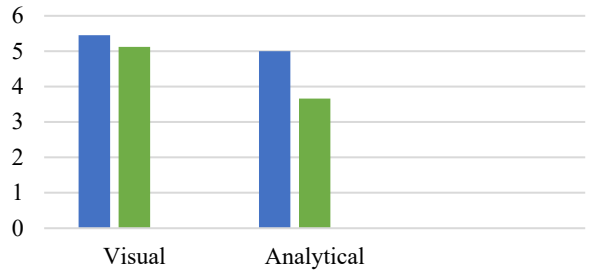


Fig. 1. shows the difference in analytic intelligence (digital) and visual (shape recognition) between the least achieving and the most achieving students. (The highest-achieving students- The lowest-achieving students)

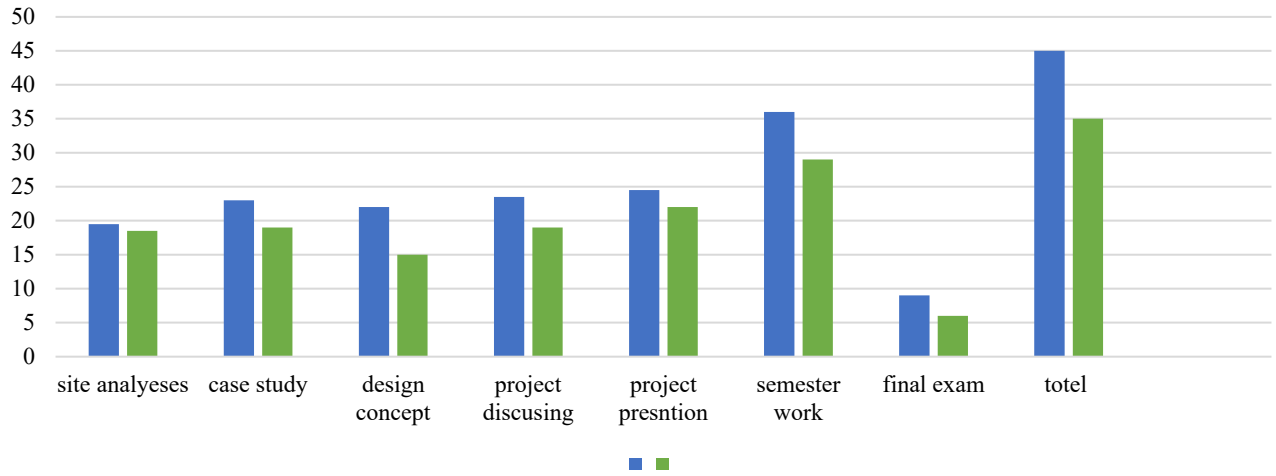


Fig. 2. shows the grades for the semester work and the final exam for both categories.

(The highest-achieving students- The lowest-achieving students)

The distinction of the highest-achieving group was reflected in their grades during the semester, and this appeared clearly in Figure (2), which shows the difference between the two groups in studying and analyzing similar examples and locations of projects. In addition, there is a substantial difference between them in dealing with the idea of design, discussing the elements of the project, and how to deal with it and present it.

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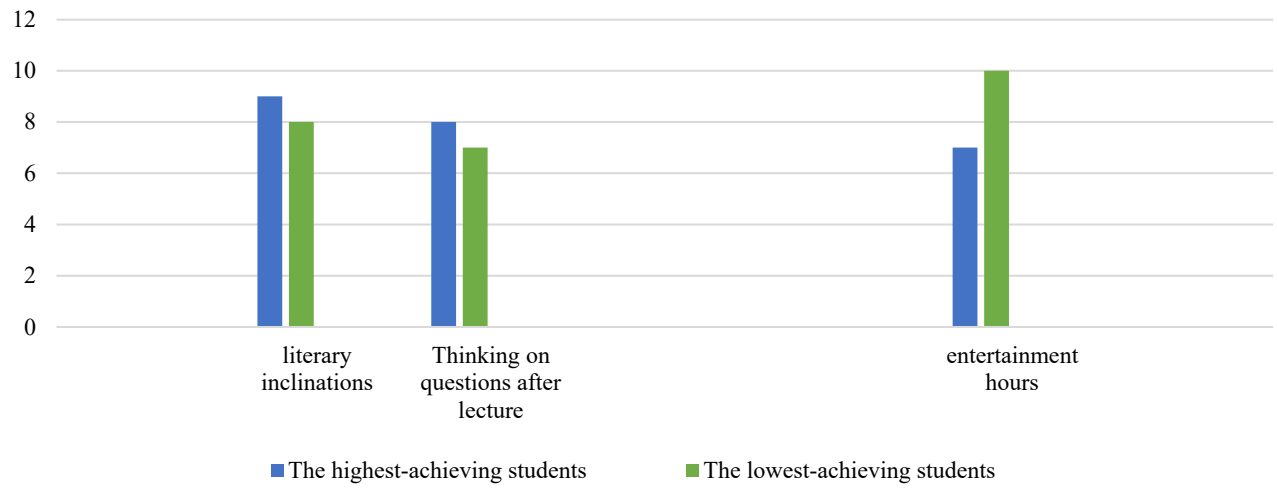


Fig. 3. shows literary tendencies, working on questions after lecture and entertainment hours.

Figure (3) shows the large disparity between the two groups with the highest and lowest achievement in literary Inclination and the use of entertainment time in artistic and intellectual aspects, which had a clear impact on academically distinguished students due to its positive effect on renewing energy and changing the academic routine with various hobbies that benefit the mind and body and develop skills. However, entertainment time had a negative effect on the students with low achievement due to lack of devoting and managing their time for study and activities that develop their academic achievement. In addition, paying attention during the lecture, focusing, and asking questions are among the characteristics that distinguished the highest-achieving students and helped them excel in the final results. The two groups agreed on some subjects that were considered the best for them, such as free drawing, perspective, and history. While completing the questionnaire, the researcher noticed an especially important factor, which is shyness, with a percentage of 70%. This shyness factor was revealed in the answer to the question, "What is the reason behind not asking questions?" "Shyness" was the common answer for both groups.

Therefore, the discussion will focus on two main factors, as these factors support each other. Physical hobbies stimulate blood circulation necessary to enhance memory and are a crucial factor for intelligence. It is smart to use leisure time in aspects that serve the academic program, enhance focus and attention, increase knowledge, and strengthen intelligence. As for shyness, it is an obstacle to achievement. Therefore, we will study and analyze these two factors: intelligence and shyness.

8. INTELLIGENCE

Many scientists have addressed the topic of intelligence from different points of view, the most important of whom are two scientists of Austrian origin, Sternberg (2012) and Freeman (1925). Sternberg (2012) defined "Intelligence is the ability to learn from experience and to adapt to, shape, and select environments"[4]. Sternberg agreed with Deary in defining intelligence, who also defined it as rapid learning from firsthand experiences or learning from the experiences of others. In addition, intelligence involves the person's ability to think deeply to solve problems that are based on the careful analysis of all the data of the problem. This depends on the mental ability to plan, organize, and deal with complex ideas. Deary stressed that intelligence does not depend only on traditional education through books or passing systematic tests. Rather, it is a broader and more comprehensive concept that includes a person's development of his or her abilities in all the aspects that he or she sees, lacks and works to develop[5].

Whatever the definition of intelligence, what concerns us is how it can be cultivated and developed. American scientist Carol Dweck (2006) was interested in the causes of failure among students. After an in-depth study of student behavior, Dweck produced her book titled Mindset, which focused on some basic beliefs about learning and intelligence. Students put in a lot of effort when they want to be smarter, and this gives them strength, self-confidence, and great achievements. The book concluded that IQ can be developed using scientific methods through a healthy life that helps develop it and enhance its performance. In her book, Dweck proposed many methods to improve IQ, including self-care, rest, lack of stress, and self-confidence. The student must enhance his/her self-confidence and his/her ability to develop his/ her physical, mental, and scientific abilities and develop his/her intelligence. In addition, contemplating the nature of things helps in the growth of brain cells. As well, reading across various disciplines is necessary to expand the student's perceptions and increase scientific knowledge. The student must set a program and timetable for reading and reviewing new

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books. Sports and physical exercises are very important, as physical activity develops mental abilities and helps improve memory by 30%. Recreation and laughter lighten the heart, break boredom, and relieve the soul's burdens and worries. Choosing a positive environment by surrounding oneself with people who are like-minded, ambitious, and enthusiastic may affect the development of one's sensory and mental abilities. Humans were not created alone in this world, so a person may need the help of others. Therefore, Dweck advises that a person should not hesitate to ask for help, which is one of the most important steps to being an intelligent person. Always challenge oneself in order to be able to face difficulties and overcome them, and this makes the body and mind ready to renew brain neurons[6].

These points, as we see, were present in the results of the questionnaire, distinguished by the highest-achieving students, and were absent or weak among the lowest-achieving students, confirming the validity of the results of extracting the data from the questionnaire, which is important for the accuracy and validity of the research results.

The factor that affects inversely and weakens students' academic achievement is shyness to ask for help in finding answers to the questions that the student receives in his or her mind.

So, what is shyness, and what are its causes?

Shyness And Its Causes

Shyness is a psychological state that a person experiences and feels many conflicting emotions while interacting with others, such as confusion or anxiety, stuttering, and the inability to communicate his feelings to others. Many psychologists and sociologists diagnose shyness as a social and psychological disease that afflicts a person, affecting his behavior and frustrating his creative abilities because of the fear he displays from contact with others[7].

One of the most important characteristics of a shy person is his tendency toward loneliness and preference for not participating socially with others due to his lack of self-confidence. Shyness has several causes, including marginalization and exposure to persecution in the family, which results in weak self-confidence, a feeling of failure, and weakness in expressing feelings[8]. The American scientist Zimbardo (1996), who conducted a study on shyness, concluded that 80% of Americans had reasons for their shyness due to some social problems they were exposed to, whether in childhood or adolescence[9]. It is worth noting that there is a close relationship between shyness and psychopathological symptoms such as anxiety, depression, and fear among adolescents, and this was proven by the study conducted by Ali (2001)[10].

It is not normal to find university students in advanced years who are ashamed to ask questions to the professor, which of course leads them to a lack of understanding. Shyness is a negative factor that hinders academic achievement, in addition to hindering behavior that enhances intelligence. Shyness does not enable a shy student to ask for help from others, including asking questions to professors when they come to the student's mind during or after a lecture or exercise. Likewise, a student cannot actively participate in the discussion and expression of one's ideas (Author,2023).

From the above, it is clear that shyness is a broad and important topic. It is a topic that has a significant impact on the educational process and educational institutions. In addition, it has a negative effect on the development of intelligence levels and thus on the academic achievement of students at various educational levels (Author,2023).

9. CONCLUSION

The most important results of the research on the subjective reasons for the disparity in academic achievement among students of the Architectural Design subject in the Department of Architecture, College of Engineering, University of Tripoli, were as follows:

- There was a disparity in the IQs of the students in terms of intelligence that deals with arithmetic and form, which is an essential factor for the student's superiority over his/her peers in academic achievement.
- Students' habits, behavior, and daily programs contribute to the development of their abilities and raise their level of intelligence.
- Spending free time reading and pursuing hobbies that are useful to the specialty, taking care of oneself and not stressing, organizing time and paying attention to psychological comfort and physical exercise, and allocating time for meditation and concentration have a positive impact on the student in improving his or her personal and educational level.
- Shyness is a factor that negatively affects the development of intelligence and academic achievement.
- Focusing solely on free drawing skills does not support academic achievement in the Architectural Design subject.

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