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Simultaneous Teaching of Basic Architecture Courses: A Factor Affecting Students' Academic Motivation; Case Study: The Contents of Practical Geometry*

Babak Motiei[a]- Fatemeh Mehdizadeh Saradj[b]- Qader Bayzidi[c]**

[a] Ph.D. Student of Architecture, Department of Architecture, Islamic Azad University, Sanandaj Branch, Sanandaj, Iran.

[b] Associate Professor of Architecture, Department of Architecture, School of Architecture and Urbanism, Iran University of Science & Technology, Tehran, Iran (Corresponding Author).

[c] Assistant Professor of Architecture, Department of Architecture, Islamic Azad University, Sanandaj Branch, Sanandaj, Iran.

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ABSTRACT

Due to the various courses prerequisite for architectural design education, lack of coordination amongst professors and their arbitrary choosing of exercises, architectural education faces various problems, resulting in students' demotivation. Motivation is one of the most-talked-about concepts in educational issues. One of the important reasons attributed to problems such as academic failure is the learner's motivation. Because of changing the academic level from the continuous Master's degree to the continuous Bachelor's degree in 1999 in Iran, architecture education has been changed and the "Composition" course was divided into courses such as practical geometry, perception and presentation of environment and building materials workshop. The present study aims to investigate the impact of studio-based teaching methods (integrated and disintegrated) on the architecture students' academic motivation. In this study, a combination method was applied as follows: in the practical geometry course, it is considered how to draw the plan and cross-section of the two-way staircase. The statistical population consists of two groups of 18 first semester students of Islamic Azad University (Urmia branch). The quantitative data are collected using Valrand Students' Academic Motivation Questionnaire. Qualitative data are collected through observation of students' works and the qualitative data through observing students' works and interviewing with architecture students and professors of architecture. The quantitative data analysis is performed using independent-sample T-test and qualitative data analysis based on the grounded theory and finally, a kind of meta-deduction is obtained. The results show that teaching basic courses such as practical geometry in the field of architecture using an integrated method increases architecture students' interest, intrinsic and extrinsic motivations and thus improves the quality of education.

Keywords: Architecture Education, Basic Courses, Practical Geometry, Academic Motivation, Simultaneous Teaching.

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** E_mail: mehdizadeh@iust.ac.ir

1. INTRODUCTION

Given the difference between architecture and other disciplines in nature, it is undoubtedly required to apply a different teaching method in architecture and related disciplines. One of the main courses in architecture is an architectural design course, in which students are expected to be familiar with the design process of simple buildings and spaces (their plans, forms, etc.) and be able to present technical structural drawings, build scale models, and generate the RANDO images of the project, based on the lessons learned in previous semesters. But given some professors' arbitrary choice of exercises in some courses prerequisite for the architectural design course and variety of teaching methods, which are not sometimes without mistakes, some negligence is observed in teaching the courses prerequisite for architectural design course, which results in poor design process presented by the students in the architectural design course. Complex and comprehensive teaching methods including architectural education requires a preparatory course for students (Erbil, Arın, Öztank, & Cankurt, 2014, p. 40). Design studio requires an integrated heading to ensure an ideal learning process for architecture students. All auxiliary subjects in the architectural design course should be appropriately synchronized to ensure beneficial and desirable learning in the design studio (Lukman, Ibrahim, & Utaberta, 2012, p. 35). The courses of practical geometry, building materials workshop, and perception and presentation of the environment are of the most important courses prerequisite for the architectural design course, that are presented as "Composition 1" course in the continuous Master's degree. In "Composition 1" course, due to the simultaneous attendance of professors in the studio and considering the same exercise for all students, education has a high quality, but in the current education system, i.e. the continuous bachelor's degree of architecture, due to using different teaching methods and exercises, there is an incompatibility in teaching of basic courses, resulting in students' weaknesses in the upcoming semesters and ultimately a decrease in the motivation for qualitative promotion of design among students. In the first part of this article, educational motivation and studio education are defined and in the second part, the topic is examined on the architecture students who were studying in the first semester of the academic year of 2016-2017 at Islamic Azad University, Urmia branch, and taught practical geometry, building materials workshop, and perception and presentation of environment courses with the two combination (At the same time teaching Basic Courses) and disintegration (Independent teaching Basic Courses) methods, and the results of statistical analysis are presented.

2. METHOD

This study was carried out using a combined (mixed) research methodology. The term "mixed research" refers to studies in which both quantitative and qualitative research methods are applied. In the quantitative section, a descriptive, causal-comparative research method was used. Quantitative data analysis was performed using independent-samples T-test and SPSS software.

Qualitative data analysis was performed based on the grounded theory. Grounded theory is an interrogative, problem-based, qualitative method, that is implemented by encoding qualitative data. Using this approach, first, three steps of open coding (extraction of initial concepts), axial coding (extraction of major categories) and selective coding (determination of the core category) are carried out. Then, the data-based theoretical model is presented. Finally, the quantitative and qualitative analyses are combined with each other, and a kind of meta-deduction is obtained.

The statistical population included the two architectural studios, each of which consisted of 18 architecture students who were studying in the first semester of the academic year of 2016-2017 at Islamic Azad University, Urmia branch. The main focus of this paper is on the "Composition1" course that is currently taught as the three courses of practical geometry, building materials workshop and perception and presentation of environment. To this end, how to draw the plan, cross-section, and perspective of a two-way staircase, and build their model scale was considered to be taught. In the first architectural studio, using the disintegration method, the topic of "stair" was taught separately in three courses of practical geometry, building materials workshop and perception and presentation of environment by three separate professors, and in the second architectural studio, using the combination method, the same exercise was considered for all the three classes. After teaching how to draw the perspective, plan, and cross-section of a staircase, students built their model scales. In the next step, students were asked to fill out the Valrand Students' Academic Motivation Questionnaire.

This scale was designed based on the self-determination theory. It consists of 28 five-option questions based on the Likert scale (from 1= strongly disagree to 5=strongly agree). After confirming its content validity and localizing it by experts, its test-retest reliability was confirmed for a two-week interval ($r = 0.75$) and its internal consistency was confirmed by Cronbach's alpha coefficient of 0.88. It should be noted that this questionnaire was localized and used with Cronbach's alpha coefficient of 0.74 and 0.85 by Jamshidi and Rouhi. This questionnaire has three components, including instinct motivation (12 items), extinct motivation (12 items) and demotivation (4 items) (Roshan Milani, Aghaei, & Kheradmand, 2011, p. 359). In the present study, the two components of "intrinsic motivation" and "extrinsic motivation" were considered and the "demotivation" component was removed, Cronbach's alpha of 0.85 was obtained for the new questionnaire.

3. REASEARCH BACKGROUND

Mahmoudabadi and Nadimi argue that teaching using caricatures increases students' academic motivation and students' satisfaction with the teaching method (Mahmoudabadi & Nadimi, 2015, pp. 243-251). Nikkar and colleagues, in their study entitled "Investigating the Purpose Structure and Its Application in Motivating Architectural Innovation", argue that for the realization of proper education in basic architecture courses, paying attention to and applying existing theories and topics in education sciences can lead a knowledgeable and intellectual trainer. Since motivating learners is one of the main factors contributing to the improvement of the quality of education, it is necessary to address the main factors causing demotivation of architecture students and to try to motivate them (Nikkar, Hojjat, & Izadi, 2013, pp. 85-106).

Mehdizadeh & Farsi, in their article entitled "Adjusting the Curriculum for Teaching the Basics of Architectural Design on the Basis of Future Requirements of Students in Architectural Design Studios", examined the exercises presented in basic architectural design courses held at various universities in Iran and the world and presented a list of projects done in the authors' design workshops. Then, based on the results of a survey of graduates of this course, who were studying architectural design courses 3, 4 and 5, they prioritized the curriculum for the "Basics of architectural design" course based on the needs of the students in architectural design courses at higher level (Mehdizadeh Saradj & Farsi Mohammadi Pour, 2013, pp. 70-61). Mozaffar and colleagues, in their study entitled " Grouping Architecture: The Missing Link in Architectural Design Education", examined the concept of group and teamwork in architecture and aimed to move along the basic thinking principles in group design (Mozzafar, Khakzand, Changiz, & Farshadfar, 2009, pp. 337-349). Yousefi and colleagues investigated the relationship between academic motivation and academic achievement of medical students in Isfahan University of Medical Sciences and concluded that students' academic achievement requires coordination and interaction between different aspects of motivation (Yousefi, Ghasemi, & Firouznia, 2009, pp. 79-85).

Although many studies have been done on the topic of academic motivation, there have been no studies on the impact of teaching methods of basic courses on the academic motivation of architecture students.

4. ACADEMIC MOTIVATION

In order to train successful and capable graduates in the use of what they learned in solving real-world problems and challenges, those teaching and learning methods stimulating their academic motivation, must be applied (Mahmoudabadi & Nadimi, 2015, p. 244). One of the most common problems of educational systems in many countries, whether developed or undeveloped) is the reduced academic motivation, which results in many scientific, cultural and economic losses for governments and families (Mazloom, Ehrampoush, Servat, & Askarshahi, 2010, p. 185). Therefore, the promotion of individuals' academic motivation is of great importance. The motivation is fundamental for all human actions and the dynamics of his behavior, including needs, desires, and aspirations (Khadivi & Vakili Mafakheri, 2011, p. 46). Motivation is a powerful force to guide human behavior, and an individual's various motivations lead to a variety of his needs, and make him try to meet these needs, and this is so deeply involved in human life and happiness that a man has been defined as a being with a set of needs (Bakhshi Jahromi & Shahidi Zandi, 2009, p. 90). In general, motivation can be defined as the driving force of human activities (Ebrahimi Ghavam & Khaghanizadeh, 2008, p. 90).

Scholars have divided motivation into two main groups: intrinsic motivation and extrinsic motivation. Intrinsic motivation factors are the internal and personal reinforcing factors that make enough attraction for any activity. While extrinsic motivation refers to external reinforcing factors that under their impact, an individual is trying to achieve an independent goal. For students, academic motivation is of particular importance. Academic motivation refers to the pervasive intrinsic tendency that drives their behavior toward learning and academic achievement and is influenced by both internal and external factors. Students with academic motivation find the stimulus needed to successfully complete each task, achieve a goal, or achieve a certain degree of competence in their work so that they can ultimately achieve academic achievement (Beirami, Hashemi Nosrat Abadi, Farhadi, & Movahedi, 2014, p. 188).

5. ARCHITECTURE EDUCATION

Architecture education is one of the key issues in the growth and development of architecture (Mirriahi, 2015, p. 107) and it can be said that the professional deficiencies in designers' works may be attributed to the quality of education they received (Gholamalizadeh & Mokhberi, 2015, p. 82). Architecture education has social, intrapersonal and ethical aspects (Nazidizaji, Tome, & Regateiro, 2014, p. 1640) and comprehensive and proper architecture education is a combination of skills training and valuable information (Dua & Chahal, 2014, p. 185). Constant and continuous creativity and innovations in educational approaches have always been required (Kranthi & Valliappan, 2016, p. 113) to see rational training in the design process. Design education helps students to discover new ways to understand the world, regardless of the constraints of their profession. In fact, this process reveals the creative ways of searching, analyzing, and interpreting real life (Torun, Tekçe, & Esin, 2011, p.749). Design

education must undoubtedly be innovative, dynamic, and developed (Ozorhon, Eryildiz, & Aysu, 2012, p. 325). It can be said that most architecture education takes place in the design studio (Dayaratne, 2013, p. 315) and the design studio is considered the core of architecture education (Karslı, 2015, p. 1090). The design studio is considered as the main pillar of the architecture education process and plays the most important role in the development of this process (Mohammed & Elbelkasy, 2016, p. 20).

In the architectural design education, the design studio is a process, which is created according to the different methods related to the teacher's goals for learning, and where the knowledge learned from other courses is synthesized (Uysal, Aydin, & Siramkaya, 2012, p. 53). Traditional design studio method, that has been very common since the past, has been based on education through practice. In this method, there are usually 10 to 12 students per teacher, and each student discusses his design, model scale, ideas and attitude with the professor, all of whom are involved in solving the design problem in parallel. In the studios, before the design begins, the professor explains the goals, expectations, and how to judge the works. During the semester, the students' works are progressed through single or group corrections, and at the end of the semester, a judgement group of the related professor will evaluate and rank students' works. In general, three specific tasks can be mentioned for architectural design studio: (a) teaching and practicing some skills such as drawing and presentation; (b) simultaneous education of image and word languages; and (c) teaching how to think on problems with an architectural attitude (Mehdizadeh Saradj & Farsi Mohammadi Pour, 2013, p. 62).

Since in architecture schools, architectural education is divided into two parts: theoretical foundations and practical applications, it can be said that in the studio environment, students are able to ask, shape, discuss, explain and transfer their theoretical knowledge during the process of education (Ustaomeroglu, 2015, p. 1897). Among these courses, the first-year design courses are the most important part of design education and the main foundation for the education presented in the next years. The knowledge students learn and experience throughout the course help them to find their way in the next studio courses (Ormecioglu & Ucar, 2012, p.1111). In the meantime, using the "simultaneous teaching method" is of great importance, and in other words, the combination method is very important in successfully accomplishing educational goals (Afacan, 2014, p.1599). In general, novice designers need to develop their personal emotions, values, and obsessions and gain confidence and ability required for presenting them in their designs (McDonnell, 2016, p.10).

5.1. Studio-based Architectural Education through Two Combination and Disintegration Methods

Academic and planned architecture education was launched in Iran since about 1940. Until 1998, the discipline of architecture was offered as a continuous master's degree and student admission was done through the entrance exam. Since 1999, the architectural education has changed due to the change in degree from Master to Bachelor. One of the problems faced by today's architecture education is the lack of motivation or reduction of it among architecture students over time (Nikkar, Hojjat, & Izadi, 2013, p. 86). In the past, those courses prerequisite for architectural design courses were presented as the courses of "Composition 1, 2, and 3", while today, the prerequisite courses are separated and including "Practical Geometry", "Geometry and Architecture", "Perception and Presentation of Environment", "Building Materials Workshop", "Architectural Communication I and II" and "Introduction to Architecture I and II).

Studio-based architectural education through combination method aims to simultaneously teach the courses of "Practical Geometry", "Perception and Presentation of Environment" and "Building Materials Workshop" in the same studio in the first semester; the courses of "Architectural Communication I", "Geometry and Architecture" and "Introduction to Architecture I" (along with teaching how to draw architectural drawings and make a model scale) in the same studio in the second semester; the courses of "Architecture Communication II" and "Introduction to Architecture II" (along with teaching how to draw architectural drawings and make a model scale) in the same studio in the third semester.

Studio-based architectural education through disintegration method aims to separately teach the courses of "Practical Geometry", "Perception and Presentation of Environment", "Building Materials Workshop", "Architectural Communication I and II", "Geometry and Architecture" and "Introduction to Architecture I and II" in separate studios by different professors (Similar to the method currently used in most Iranian universities).

5.2. Studio-based Teaching of Practical Geometry

Architectural engineering bachelor's degree program was approved at the 365th session of the Supreme Council on Higher Education Planning dated 15/11/1998 and according to it, the general outline, program, and syllabus of the courses of Architectural engineering bachelor's degree were identified. Objectives and subjects of the "Practical Geometry" course are based on the syllabus proposed by the Supreme Council on Higher Education Planning, as listed in Table 1. According to this table, the main priority of this course is to increase students' visualization and to teach how to draw the building plan maps.

In addition to practical geometry, two other courses are presented in the first semester: 1. the "building

materials workshop" course aimed at enhancing the student's ability to build objects and construct a variety of architectural models and model scales with different building details and at different scales; and 2. the "perception and presentation of environment" course aimed at enhancing students' ability to observe and perceive the environment and strengthening their hands-free design skills to draw environmental observations considering proportions, penumbras, volume and depth of spaces.

Table 1. Syllabus of Practical Geometry Course

	Practical Geometry
Objective	- To gain the ability to understand, visualize spaces and manipulate them
	- To be familiar with the signs and schemes of drawings
	- To be mastery in using the drawing tool
Topic	1. Exercises that give the student the ability to visualize a given space, face it, look at it from different directions, manipulate it and obtain a comprehensive perception of that volume and space. These exercises are based on the following syllabus:
	- To visualize and project the intersection of different lines, surfaces, and volumes; to project the volumes on the horizontal and vertical planes; to cut the volumes with different planes; to find the extended image of volumes, to generates volumes using their images
	2. Exercises that enhance the abilities to understand architectural drawing and to draw them accurately. They include the following syllabus:
	- To draw parallel lines, grids, circles, and tangents, to divide lines, to draw perpendicular bisector, and to draw similar shapes at different scales.
	- To find the unknown facade, to read drawings, to copy more detailed drawings, to complete the incomplete drawings, to completely draw the plan, facades, and sections of a building.

(Syllabus Approved by the Supreme Planning Council)

6. FINDINGS

According to the approved syllabus, in architecture, the main topic of the "practical geometry" course is the structural drawing. To this end, in the present study, teaching how to draw the plan and cross-section of a two-way staircase was considered. In the first studio, which included 18 first semester undergraduate architecture students of the Islamic Azad University (Urmia branch), the professors acted separately, each of which independently provided some exercises for the students, and there was no coordination between the professors. Moreover, how to draw the plan and cross-section of the staircase was exclusively taught in practical geometry and complementary exercises were not provided in two other courses. In the second studio, which included 18 first semester undergraduate architecture students of the Islamic Azad University (Urmia branch), the combination method was applied. In the practical geometry, technical drawing of a two-way staircase was taught, and how to draw its perspective and build its model scale was taught in the courses of "perception and presentation of environment" and "building materials workshop", respectively. The required coordination was made among the professors of the three courses in this exercise. Figure1 shows the photos of teaching a two-way staircase through the combination method at the Islamic Azad University, Urmia branch.

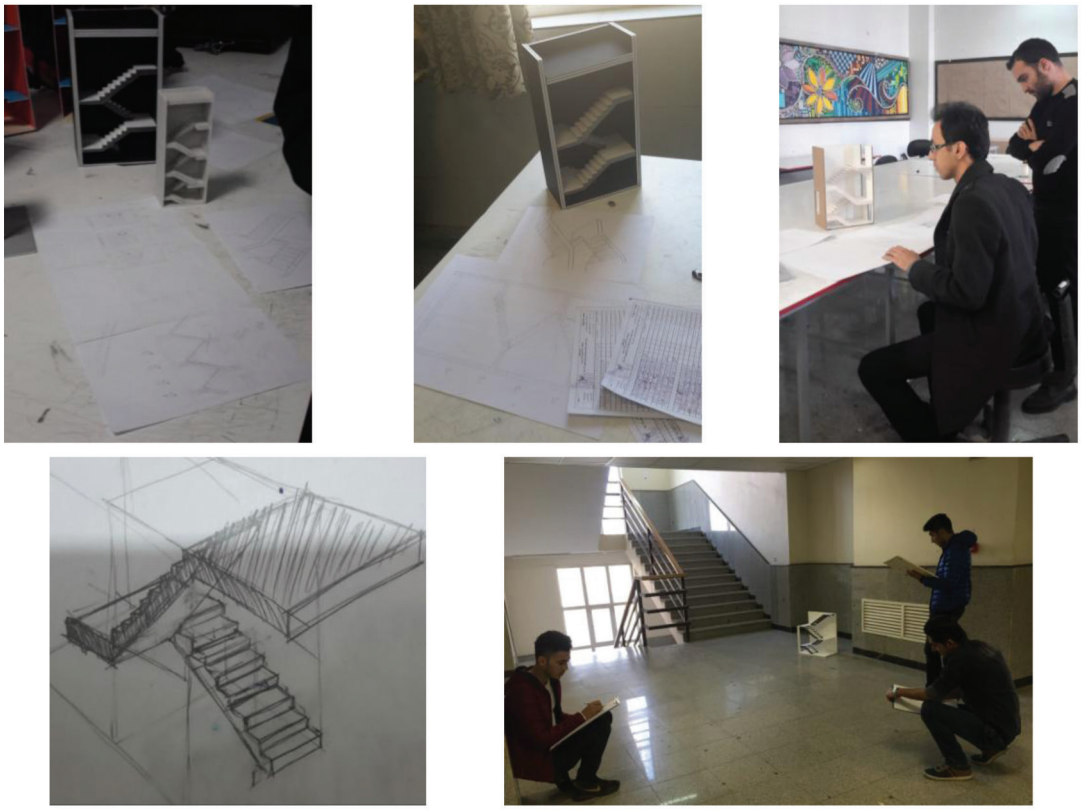

Fig. 1. Teaching of Two-way Staircase Drawings in Three Practical Geometry, Perception and Presentation of Environment, and Building Materials Workshop Courses through Combination Method at the Islamic Azad University, Urmia branch

After teaching the topic "two-way staircase", the students of both studios were asked to fill out the Valrand Students' Academic Motivation Questionnaire. This questionnaire measures two components of intrinsic motivation and extrinsic motivation.

H_0: According to respondents, there is no difference between the means of the two combination and disintegration methods.

H_1: According to respondents, there is no difference between the means of the two combination and disintegration methods.

To test this hypothesis, an independent-samples T-test is used if the variables have a normal distribution. To examine the normality of the observations, the Shapiro-Weil test is performed (Table 2).

Table 2. Testing the Normality of Observations Using the Shapiro-wilk Test

	Shapiro-wilk		
	Statistic	**Df**	**Sig.**
Intrinsic motivation	0.949	36	0.099
Extrinsic motivation	0.947	36	0.085

In this test, the null hypothesis implies the normality of the data and the alternate hypothesis is the opposite. Given that the significance values obtained for the two variables of intrinsic motivation and extrinsic motivation are significant and greater than 0.05, the data for these two variables can be assumed with a normal distribution. Now, for normal variables, their means are compared. To compare the means, the assumption of equal variances is tested (Table 3).

Table 3. Equal Variance Test

Levene's Test for Equality of Variances		
	F	**Sig.**
Intrinsic motivation	0.659	0.423
Extrinsic motivation	0.276	0.602

To test the equality of variances, the Levene's test is used. The null hypothesis implies the equality of variances and the alternate hypothesis is the opposite. Given that the significance values obtained for the two variables of intrinsic motivation and extrinsic motivation are significant and greater than 0.05, for the two variables, variances are equal. Therefore, a T-test can be applied.

Table 4. Independent-Sample T-Test Using SPSS Software

	T-test for Equality of Means						
	T	df	Sig. (2-tailed)	Mean difference	Std. Error difference	95%Confidence Interval of the Difference	
						Lower	Upper
Intrinsic motivation	-3.418	34	0.002	-12.66667	3.70567	-20.19750	-5.13583
Extrinsic motivation	-3.005	34	0.005	-11.88889	3.95642	-19.92929	-3.84848

In this study, the first group is considered as the "education through a disintegration method" and the second group as the "education through a combination method". According to Table (4), about the effect of the disintegration and combination methods on intrinsic motivation, it is observed that Sig. (2-tailed) is 0.002 and less than 0.05, so, there is a difference between the means of two disintegration and combination methods, and the null hypothesis is rejected at the 95% confidence level. Since the mean difference between the two groups is less than zero, the mean of the disintegration method is less than the combination method.

About the effect of the disintegration and combination methods on the extrinsic motivation, it is observed that Sig. (2-tailed) is 0.005 and less than 0.05, so, there is a difference between the means of two disintegration and combination methods, and the null hypothesis is rejected at the 95% confidence level. Since the mean difference between the two groups is less than zero, the mean of the disintegration method is less than the combination method.

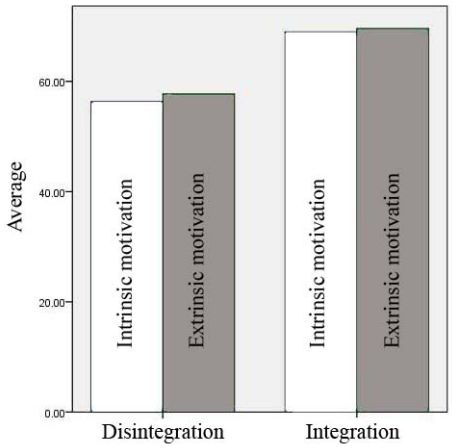

Fig. 2. Means of Intrinsic and Extrinsic Motivations in Both Combination and Disintegration Methods

Figure 2 shows the mean difference between the two intrinsic and extrinsic motivations in the two combination and disintegration methods in the form of a bar chart. According to this chart, the mean of intrinsic and extrinsic motivations in combination method is higher as compared to them in the disintegration method.

Based on the qualitative data obtained by interviewing with the students of the two studios, noting their reasons for doing or not doing their exercises, examination of the students' answers by professors, examination of the relevant exercise by professors, and performing in-depth semi-structured interview with the architectural professors, based on theories obtained from the review of archived documents, 14 initial concepts, 5 major categories, and 1 core category were extracted using the grounded theory and implementing open, axial and selective coding, as listed in Table 5.

Appropriate teaching style generates the dynamics and tendency for individual development, and eliminates the student's weaknesses in the drawing and construction of model scale, and makes the student continue the learning path more enthusiastically. At the same time teaching basic courses enables the student to gain a greater mastery of the primary design elements, to be able to convert ideas into architectural designs in the form of architectural drawings, model scales, and 3D drawings, and to achieve more confidence and motivation for doing

exercises, increasing students' self-esteem. Increased self-esteem makes the student more aware of his or her ability to participate in studio activities individually and in group activities and he/ she will have more tendency to compete with other students and show greater flexibility in group activities. Students' increased tendency to work hard to do exercises to demonstrate personal abilities and their desire to learn new content indicates their willingness for student progress and purposeful actions. The abovementioned categories obtained in the process of grounded theory lead to the formation of a simultaneous and combined teaching style with an approach to the enhancement of the academic motivation of architecture students.

Table 5. Concepts and Categories Derived from Qualitative Data Based on the Grounded Theory

Concept	Major Category	Description	Core Category
1. Doing tasks to learn more	Tendency to work and tasks	To make the student interested, the required motivation must be created in him/her, so there is a need for the driving force and this driving force is the appropriate teaching method to develop the dynamics and tendency for individual development.	Motivation: According to this category, simultaneously teaching basic architecture courses with a combination method enhances students' academic motivation and results in the nurture of efficient architects.
2. Performing exercises without the need for encouragement			
3. Performing favorite exercises with no awareness of the passage of time			
4. Being satisfaction with academic performance	Self-esteem		
5. Having a tendency to supervise student groups			
6. Having high confidence in own personal performance			
7. Performing hard tasks for personal interest	Goal-orientation		
8. Greatly attempting to do exercises to show personal abilities			
9. Greatly attempting to ensure own good performance			
10. Attempting more when facing hard exercises			
11. Trying to be the best	Competitiveness		
12. Having a tendency to compare with others			
13. Trying to have a good life in the future	Tendency to progress		
14. Trying to learn new things			

Figure 3 shows the paradigm model of the relationship between major categories of academic motivation based on the combined and simultaneous teaching method. The logical and semantic relationship between the major categories represents the core category. The core category, which is the result of the positive impact of simultaneous and combined teaching method on the components of academic motivation, was called motivation. Accordingly, simultaneous teaching of basic architecture courses in the first semester increases students' academic motivation.

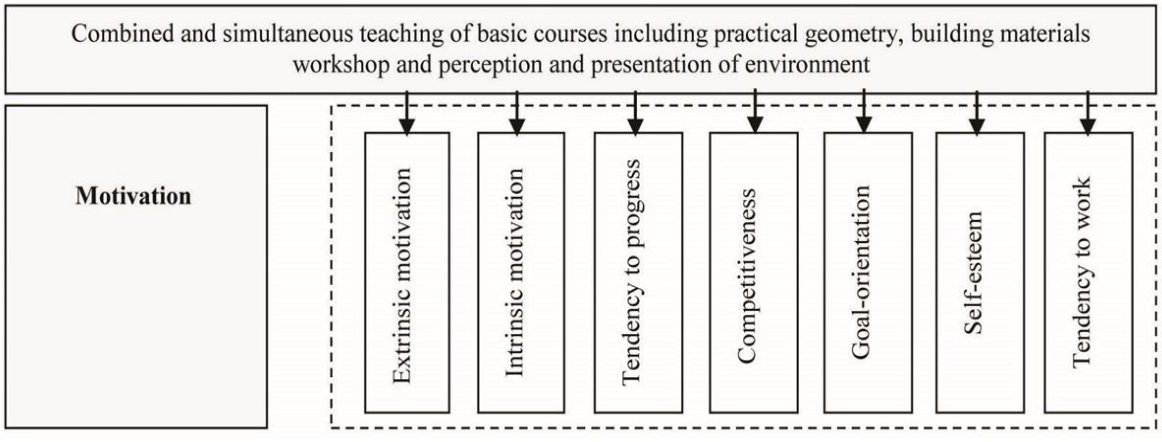

Fig. 3. Relationship between Major Categories of Academic Motivation Based on the Simultaneous Teaching Method

7. DISCUSSION AND CONCLUSION

According to the research findings, it can be concluded that teaching basic courses, including the content of practical geometry course in the discipline of architecture using a combination method (at the same time teaching basic courses) increases the students' intrinsic and extrinsic motivations and decreases their demotivation. Fig. 4, based on the present research, illustrates the analytical model of the main components of motivation, including intrinsic motivation, extrinsic motivation, and demotivation, as well as the studio-based architecture education through the two combination (At the same time teaching Basic Courses) and disintegration (Independent teaching Basic Courses) methods, in the courses of Practical Geometry, Building Materials Workshops and Perception and Presentation of Environment, as well as the effect of these two methods on the components of academic motivation.

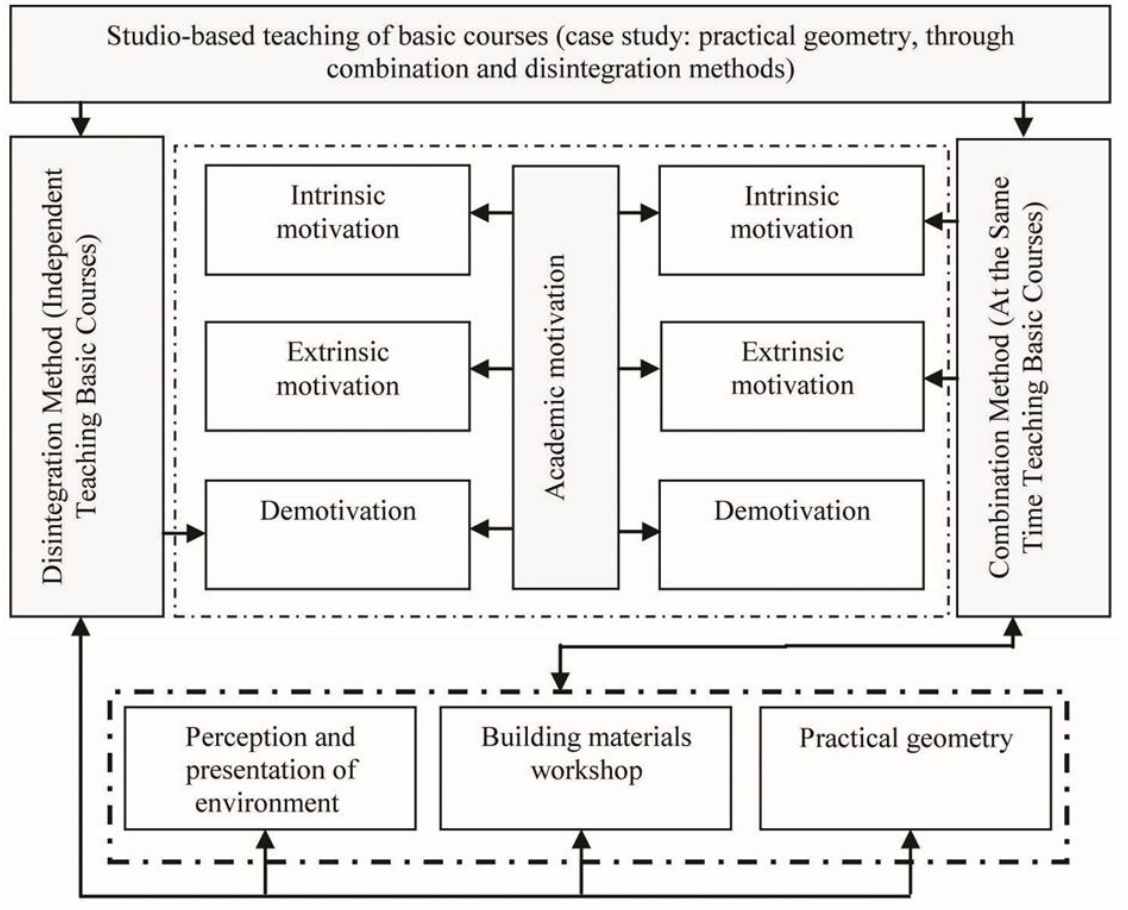

Fig. 4. Analytical Model of the Impact of Education of Architecture Design Basic Courses through the Two Combination and Disintegration Methods on Students' Academic Motivation

According to this analytical model, it can be found that at the same time teaching basic courses increases students' intrinsic and extrinsic motivations and applying the disintegration teaching method increases students' demotivation. Today, in architecture education, there are problems, such as students' demotivation that results in the reduction of students' creativity. Among various factors, those courses prerequisite for the architectural design, that play a major role in the student's perception of architecture and developing his or her abilities to gain skills, are of great importance. Due to the independent education of various courses prerequisite for architectural design education, lack of coordination amongst professors and their arbitrarily choosing of exercises in the disintegration teaching method, there are problems in learning basic courses such as incorrect visualization of the environment, lack of ability to draw the building drawings and lack of willingness to do their exercises, so there is a need for the strategies to develop academic motivation and increase students' creativity.

According to Fig. 5, at the same time teaching basic architecture courses, including practical geometry, building materials workshops, and perception and presentation of environment, in the first semester, cooperation of professors and choosing the same exercise increase the students' interest in architecture and enhances their academic motivation, resulting in enhanced quality of education and thereby nurture of efficient architects.

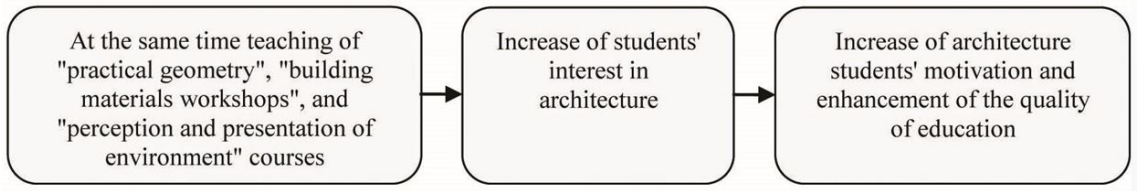

Fig. 5. Impact of at the Same Time Teaching Basic Courses on the Promotion of the Quality of Education

8. SUGGESTIONS

According to the results of the present study, the followings are suggested:

• To provide a common course plan for the basic courses of practical geometry, perception and presentation of environment and building materials workshop and to coordinate the professors to properly implement the course plan.

• To teach various components related to the architectural practices simultaneously as much as possible to carry out the real or objective and practical projects.

• To predict those exercises that enhance students' satisfaction with learning new things, satisfaction with communicating with others, and satisfaction with problem-solving.

• It is recommended to professors to emphasize on the positive features of architecture, enhance students' motivation to study and research architecture and properly guide students to identify and enhance their abilities.

• To invite experienced teachers to teach basic architecture courses.

• It is recommended to hold an introductory session for new students at the beginning of the academic year to emphasize the importance of basic courses and the impact of these courses on students' abilities in main and specialized courses.

• To hold an exhibition of students' works and to appreciate top students to increase students' motivation.

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