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Lifelong Learning in Architectural Design Studio: The Learning Contract Approach

B. Hassanpour[1], A. I. Che-Ani[2], I. M. S. Usman[2], S. Johar[2] & N. M. Tawil[2]

[1] Architecture Department, Faculty of Architecture, Eastern Mediterranean University, Cyprus

[2] Center for Engineering Education Research, Universiti Kebangsaan Malaysia (UKM), Malaysia

Correspondence: A. I. Che-Ani, Center for Engineering Education Research, Universiti Kebangsaan Malaysia (UKM), 43600 UKM Bangi, Selangor, Malaysia. Tel: 603-8921-5386. E-mail: adiirfan@gmail.com

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Abstract

Avant-garde educational systems are striving to find lifelong learning methods. Different fields and majors have tested a variety of proposed models and found varying difficulties and strengths. Architecture is one of the most critical areas of education because of its special characteristics, such as learning by doing and complicated evaluation and assessment methods. A learning contract is an alternative way to track students' progress and evaluate their achievements while serving as an agreement on learning goals. Results from studies in other fields have confirmed the positive impact of learning contract on students' learning needs, confidence, and motivation, and thus prompting us to implement this model in architectural design studio. In an implemented contract with the studio, students were asked to use the existing possibility of a contract to perform self-assessment, examine their progress, and identify whether the learning contracts were deficient or whether they would like to continue developing more expertise by using same method. Results show the students' positive feedback on the use of learning contract and how it accommodates their individual learning needs.

Keywords: lifelong learning, learning contract, architecture education

1. Introduction

Architecture education is historically known as an apprenticeship system, which means that instructors create objectives and learning activities, and deliver them to the studio members. Only one project or work may be provided, or more than one project of a smaller scale may be given sequentially to students. Students expose themselves to professional critiques or peer reviews to gain skills and acquire knowledge. This process means that, through controlled conduct, students will learn what they are expected to do. During critique sessions, students are informed about both their wrong and correct decisions and are prepared to make a self-critique before presenting their projects to the jury. Therefore, critiques in the studio should help students develop their own critical faculties. The problem arises when students try to fulfill the tutor's demands to improve their projects and receive better marks. At first glance, this reaction does not seem problematic because students get to identify the problems in their projects and find ways to solve them. However, what actually takes place is passive didactic learning. Students make designs unconsciously, become unprepared, and make coincidental decisions in their future experiences. As a result, students would not know how to start, develop, and find solutions for multilayered project requirements and manage the inevitable consequences of their decisions in new projects.

On the other hand when these students graduate from the school they will find the job seeking atmosphere intense and competitive. Fresh architects are in need of special skills called soft skills; such as diligence, independence, effective communication skills, team spirit, strong leadership skills, creativity, and critical thinking (Che-Ani et al., 2014a). As Hassanpour (2013) mentioned, architecture education tends to be didactic because of the passive role of students in the learning process. However, it is expected to shift from didactic to interactive teaching and learning education (Hassanpour, 2013).

To change the roles of students in design studios from passive to interactive, researchers have studied a broad spectrum of important factors and critical points, and have presented different types of design studios and methods of teaching. A considerable number of studies on the architectural jury system and design review processes have discussed the merits and demerits of the jury system, explored its underlying communication

mechanisms, and suggested possible ways to improve the current critique and assessment models. The classical writings of Schon (1983, 1985, 1987), Anthony (1987, 1991), and Dutton (1987) appear to be the most cited and most influential, with a strong influence on other publications. Overall, all publications offer insights into a better understanding of the learning process and a better assessment of students' performance. Most studies have examined the roles of students and tutors as the main actors of architecture education and critique sessions as a predominant means of teaching and learning while least studies have examined new practical alternative models in architectural education. However the obvious thing is that educational sectors and institutions are increasingly getting involved in improvement in terms of curriculum development, teaching strategies, self-assessment methods, enhancing student engagement and providing range of opportunities for lifelong learning.

The goal of lifelong learning is to increase people's self-awareness, self management, understanding of the learning process, and self-monitoring. Therefore, architecture education needs supportive programs and methods to transmit lifelong learning skills to future architects. This change tends to orient students toward a more self-conscious education, which is more than the acquisition of structured knowledge. This shift also involves equipping students in a manner by which they can adapt and include innovation into their obtained knowledge and use such an innovation in their future works.

The alternative model of preparing students as independent practitioners by developing their motivations and abilities is the use of a learning contract. It is a self-directed framework that requires students to play an active role and create a flexible learning experience for themselves. Architecture design education is process oriented rather than product oriented (Hassanpour, 2013). Instructors communicate design knowledge within frames that can be classified into categories depending on the stage of the studio, but studio members, who are the students, are all unique and have different ranges of abilities. Instructors encounter difficulties in finding a moderated teaching model based on students' individualized needs.

For instance, some students are reliant on their tutors' instruction to the extent that taking their own decisions and design solutions to the next level is difficult for them. Some students tend to form convergent thoughts, whereas some form divergent ones. Therefore, architecture education should be adaptive to students' individual profiles. If a student tends to be convergent, the tutor has to stress divergent thought processes, and vice versa. Biggs (1989) pointed out that students need to become involved in learning as much as possible and that a synergistic relation between students and teachers should be promoted. Active student participation indicates a high level of learning to meet learning needs (Martin & Balla, 1990). A learning contract is a two-way negotiable agreement between students and instructors. It outlines what is expected to be learned in a specific period of time and the assessment model. In this model, teachers are no longer the learning controllers. A learning contract encourages students to assume more responsibility for their learning. Learning contract enables the students to consult with their teachers, individually or in small groups, to determine their activities (Selamat et al., 2011), have a constructive discussion about learning outcomes, strategies, and resources they need to achieve their goal (Che-Ani et al., 2014b). This will provide students flexible and individualized learning by establishing meaningful goals that reflect their own strengths and weaknesses (Knowels, 1996). A learning contract includes personal learning objectives and the general objectives of specific education stages; it proposes tactics and required materials, identifies evidence of attainment, and provides means to evaluate students' performance (Anderson, 1996).

A learning contract needs to be reviewed regularly for changes in case of developing objectives or achieving the precedent goals. The benefits will be achieved by continuously revisiting the learning objectives to confirm that learning is a dynamic process. Furthermore, a learning contract has the potential to provide evidence to support the learner, thus aligning the students' learning objectives with the project objectives (Windsor, 1991).

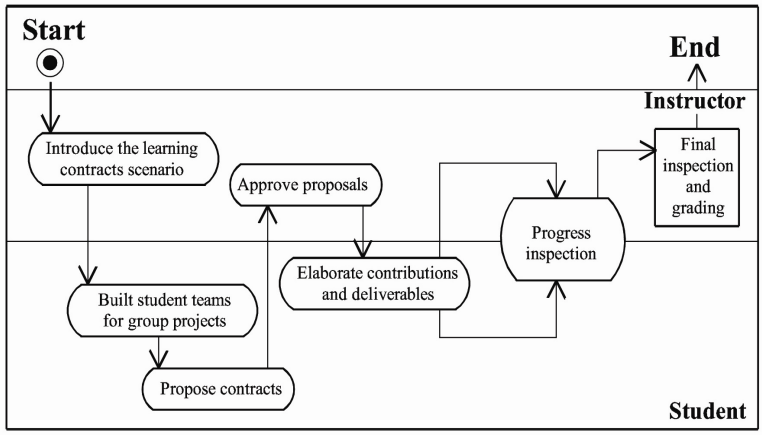

Figure 1. Learning contract process (Windsor, 1991)

Figure 1 illustrates a general scheme of the learning contract process. The model clarifies the distribution of responsibilities between instructors and students in the whole process. Unlike the conventional model, which delegates maximum responsibility to instructors, the learning contract method gives students the greatest amount of control over the mechanism. Architecture students are provided with the experience of critique sessions and dialogic feedback, which will enhance their working relationship and facilitate the achievement of their learning objectives. In this method, students learn to combine the necessary objectives for practice education with their personal learning goals (Knowles, 1986). If applied during the early years of education, the learning contract will play a more supportive role.

Universiti Kebangsaan Malaysia (UKM) aims to produce an independent education process and lifelong learning that will provide us with a platform to evaluate the efficiency of learning contracts in an architectural design studio through action research. This paper documents the implementation of such a strategy in a design course and studies the positive and negative outcomes. As an action research approach enables the researcher to be an active party in the experience, facilitate the procedure, and collect reliable data, this method is considered proper for the current research. The study begins with contract making then implements the created contracts. By analyzing the feedback and findings, the effectiveness of a learning contract is evaluated.

2. Learning Contract Implementation

The participants of the study were 24 second-year design students from the architecture department of UKM. The number of instructors was four. A briefing session for students and instructors was conducted in the first week of the studio commencement to familiarize them with the learning contract. Samples were distributed using a parallel strategy to guide the participants in preparing their own drafts for the succeeding week. Figure 2 shows the format of the implemented contract.

Name of Instructor: Name of Student: Period: Learning Contract			
Learning Objectives	Learning recourses and strategies	Evidence of accomplishment	Means of validating evidence

Figure 2. The implemented learning contract format

During the initial phase of proposing the contract content, students were given the responsibility of defining and explaining their own learning goals. This process included the activities that the students would undertake,

timelines, and types of evidence, such as products and portfolios, to show if the students reached their expected goals. The students also stated the criteria for assessment and the value of each criterion.

These criteria have different characteristics of a product or quantified levels of attainment. The proposals were reviewed by the instructors to ensure congruence with the curriculum requirements and course objectives. The students were guided to revise their identified learning objectives based on realistic and possible goals within the time frame and define them in a measurable manner. A range of activities and outcomes was identified by students, from graphic presentation to critical presentation and logical development, among others.

In addition to regular discussions about learning progress between students and tutors at the middle and end of the term, the instructors assessed the students based on predefined criteria in individual learning contracts. By the end of the experience period, the effectiveness of the learning contracts was evaluated through a questionnaire and interview. The questionnaire consisted of eight questions, including those on the usability of learning contract, influence of the learning contract on the students' learning autonomy, its impact on student motivation in learning, and the difficulty of using the method. Students were asked to rate each article in the questionnaire from "strongly disagree" (1) to "strongly agree" (4).

	Very disagree.....very agree			
Q1	LC increased your **motivation** to learn			
	1	2	3	4
Q2	LC was easy to **make.**			
	1	2	3	4
Q3	LC was easy to **use.**			
	1	2	3	4
Q4	LC increased your **interest** in the subject.			
	1	2	3	4

	Very disagree.....very agree			
Q5	LC helped to learn deeply and **permanently**.			
	1	2	3	4
Q6	LC increased your **responsibility**.			
	1	2	3	4
Q7	LC increased your **confidence**.			
	1	2	3	4
Q8	Do you prefer to learn with LC?			
	1	2	3	4

Figure 3. The distributed questionnaire

All students participated in the learning contract experience, but only 18 students returned the distributed questionnaire. An interview with five students who volunteered was conducted to obtain feedback about the difficulties and advantages of using the learning contract method. The interviews were tape-recorded and subsequently transcribed.

3. Findings

Students were asked about their feelings in creating a learning contract and the challenges of using it. The responses were analyzed to find the mean or average of the responses. Figure 4 illustrates the diversion and dispersion of the obtained results. On a scale of one to four, the average response of students to the question on how much using a learning contract increased their motivation to learn was 2.83. As Figure 4 reveals, students found making a learning contract more difficult than using it. The average of the students' agreement with the statement "the learning contract was easy to make" was 2.1, and that for "the learning contract was easy to use" was 2.3.

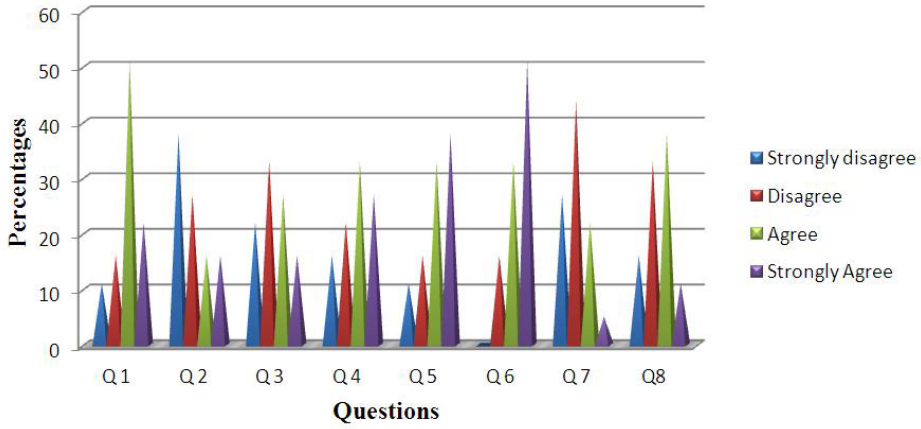

Figure 4. Obtained result from the distributed questionnaire

Moreover, 60 percent of the students believed that the learning contract increased their interest in the subject and that they enjoyed this type of learning. The average for this question was 2.7, and that for the students' agreement on learning thoroughly and permanently by using the learning contract was 3 over 4. As shown in Figure 4, 38 percent of the students strongly agreed, and 33 percent agreed that they learned thoroughly and permanently using the learning contract. About 84 percent of the students agreed that the learning contract increased their responsibility in the subject, and only 16 percent disagreed.

Confident is a well- known problem among students as many scholars in architectural education fields have done many researches to find a way to cope with it and increase the level among students, but the essence of jury sessions; standing in front of expert people who are finding faults in the final outcome, explaining the ideas and responding the mostly negative comments, makes a Gordian Knot that many psychologist, educationalist are needed to come together for solution and still they are trying.

Knowing that increasing the confident level was not the main goal for use of learning contract in the design studio; students were asked about did learning contract increase your confidence? The average level of agreement was 2 out of 4. Furthermore, Figure 4 shows that 71 percent of the students agreed that the learning contract did not significantly improve their confidence. This result had the lowest rate among all items. This result was expected and the questioning reason was only to check the method's effect on different aspects, so it wouldn't be considered as a weakness for the method nor its strength.

Generally students were positive about the use of the learning contract and preferred to learn using it than the conventional method.

The interview results can be used to describe the advantages and difficulties of using learning contracts. Students identified increased motivation, increased individualized learning, and increased learning effectiveness as advantages of this experience. Moreover, the students asserted that their degree of involvement increased and that they experienced close communication among themselves and their instructors. Thus their integration of theory with practice was more effective. On the contrary, the students named lack of time and lack of information to arrange the contract as the difficulties. The students also believed that time is an important factor because they need a specific amount of time to discuss the learning objectives and progress, but the ratio of students to studio time is not enough. Lack of experience and knowledge about using learning contracts was a common challenge expressed by the students. Preparing the learning contracts made the students feel anxious and confused because they were uncertain of the correct manner of doing it. Moreover, the students mentioned the support of tutors and believed that they could use learning contracts with confidence.

4. Discussion

Over the past decades, architecture schools have increased their student intake and reduced the number of tutors while retaining the same academic standards in a shorter academic year. The studio culture traditionally involves one-to-one teaching, and the design focus is self-absorbed and time-consuming, which many schools can now ill-afford (Nicol & Pilling, 2000). Teachers are expected to reduce contact time with students to maintain a cost-effective staff–student structure, and the staff members are expected to teach more students in less time. In this environment, evaluation involves assessing the designed product rather than the students' academic progress.

Interestingly, the present study found that by using learning contracts, instructors spent more time with each student. This methodology has a significant impact on student achievement. An analysis of student results in a design studio, which was conducted in a period of seven submissions, including the internal and final submissions over a year, is shown in Figure 5.

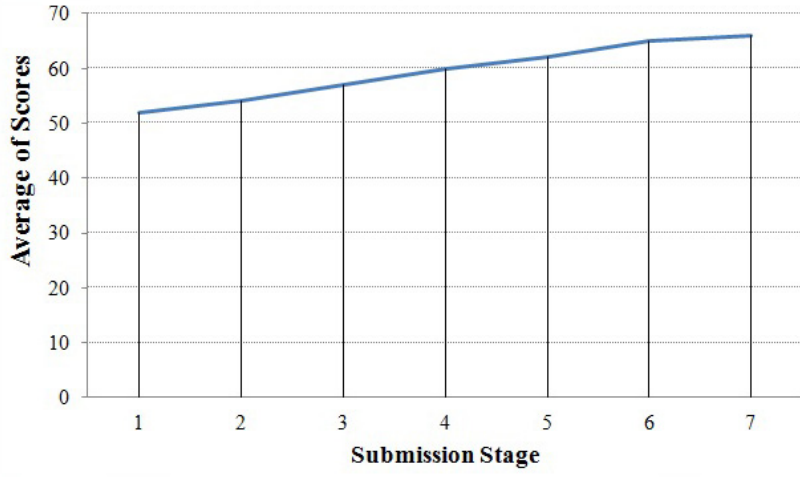

Figure 5. Analysis of students' marks through the period of using the learning contract

As Figure 5 illustrates, the mean of obtained marks by the students increased during the year, confirming the effectiveness of using the learning contract methodology. The questionnaire and interview results confirmed that the students had a significant sense of independence and control when using the learning contract. As one of the aims of architecture education is to develop independent architects through lifelong learning, students need to develop the ability to fulfill their own learning needs.

Rogers' study in 1983 produced the belief that a learning contract provides students an opportunity to learn about the things they are interested in within the boundaries of course requirements within the predefined and desired depth, time, and range (Richardson, 1987). In her study on nursery students, McAllister (1996) found that learning contract promotes enthusiastic learning and is clearly essential for educating lifelong learners as the next generation of professionals. The present study shows that learning has become more student-centered because the learning contract is designed based on the unique needs of students. Apart from the advantages mentioned by the interviewees, direct observation shows that learning strategies have become more creative as well. Therefore, learning has become more interesting, and the students have become more motivated to learn.

Students clearly have different experiences and levels of readiness for autonomous learning. To assist students who were not ready enough and those who experienced anxiety, the instructors tried to provide them a smoother transition from teacher-led to student-led learning by giving them extra discussion sessions and constant feedback to sustain their interest and commitment to the contract. Moreover, the instructors tried to help the students to appreciate the complexity of their objectives and set achievable goals within the available time frame. Anxiety about learning contracts may also be attributed to inadequate knowledge or insufficient information. Therefore, instructors can assure students about having room for improvement in the formation of the contract. As Knowles (1975) recommended, a maximum of 12 students per teacher for contract learning was used in this study, but time was still identified as a problem from both parties.

5. Conclusion

For the past decades, lifelong learning has become an indispensable principle for educational institutions as it enables students to face future challenges. However, the fact remains that no shared understanding exists about the implementation and usage of lifelong learning. Therefore, many universities and institutions tend to claim that they are equipped with such tools while forgetting that the importance of lifelong learning is not to obtain a high level of knowledge but mostly to educate active personalities, those who turn situations into opportunities to learn, those who are aware of what is needed to be learned, and those who know how to combine learned issues with other unique challenges.

The aim of implementing this strategy in the teaching program is to recognize students as individuals with different learning styles and backgrounds. As the study shows, a strong correlation exists between student attitudes to learning and success and the effectiveness of learning contracts. If students are not aware of the importance and exigency of the information delivered to them and how applicable they are, using learning contract as an auxiliary learning tool will be difficult. The other undeniable factor is the necessity of self-enthusiasm in both parties of a learning contract (student and instructor). The findings of this study indicate that although the method was not purely successful but students felt positive about the learning contract and consider the method to accommodate their individual learning needs.

Implementation of learning contracts to design studio is a new strategy and definitely this accompany by complicated essence of design process is the ultimate challenge in this field. This study tried to use learning contract as an awakening factor for architecture students to be a player in the field rather than being substitutions. But remembering the fact that designing faculties would be gained by reminding learned issues, data analysis and creativity in re-employing experiences and knowledge; creates new idea for better placement of learning contract in architecture education.

Learning contract could be used as a binder of design studio with theoretical courses which support the specific designing level in each semester. In this situation learning contract would make students more conscious about the profound link among the courses they take, help them find exact place for use of knowledge, enable them and their educators to more easily track their learning procedure until graduation. This is another method which could enable institutions to educate active citizens as lifelong learners and is the author's further studies. However, always the use of learning contract in individual courses in architectural education is possible and beneficial as well.

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