Evaluating the Educational Curriculum in Architecture Department According to ABET Criteria

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Abstract:
Developing the educational curriculum is an important process to improve the quality of education in architecture. This paper analyzed and assessed the current situation in the Architecture department at Al-Nahrain University to determine the future plans for curriculum development. It relied on a questionnaire methodology conducted by the department's students. The questionnaire is an assessment form of ABET (Accreditation Board for Engineering and Technology) criteria to evaluate the curriculum by the students. The results showed that the lacks in the current curriculum could be seen at its philosophical base, formulating, classification and achieving the objectives, the educational context, the insufficient educational exercises and activities and the lack in the evaluation tools and methods. The research concluded that the future developing plan should concentrate on the educational context, exercises and the evaluation tools.

Keywords: educational curriculum, Architecture Department, ABET criteria, educational context, evaluation tools.

1. Introduction

The educational curriculum is the main base of the educational process. It presents the quality of education in the educational institutions. Globally, universities have been ranked according to their quality of education. Many classification organizations have established criteria to rank these universities. One of these organizations is ABET. Iraqi universities have relied on ABET criteria to classify these universities. Al-Nahrain University has ordered its colleges especially the college of engineering to achieve ABET criteria to rank them with other Iraqi universities. The Architecture Department has applied ABET criteria in its annual quality report for the study year 2013/2014. This report involved the students' opinion in the curriculum of the architecture department in all subjects taught from the first to the fifth year. This paper relied on the students' opinion as a questionnaire form in its case study. The results and conclusions of this paper could be seen as main drivers to establish the future plans to develop the educational curriculum in Architecture Department.

1.1. Literature review

Ralph Tyler defined the educational curriculum as a summation of educational experiences planned by an educational institution to achieve named educational objectives (Stenhouse& Lawrence , 1978, pp. 43) but Laural & Tanner saw that curriculum is a group of educational experiences planned by an educational institution directed by the teaching staff (Laural & Tanner ,1980, pp. 27). On the other hand, Partt & David defined it as wide goals that expected to meet (Partt& David ,1980, pp. 65). The literature has classified the educational curriculum into three main types which are hidden curriculum, common curriculum and real curriculum. On the other hand, Walton has classified the educational curriculums into five classes which are Ideological curriculum, official curriculum, practical curriculum, visual curriculum and empirical curriculum (Walton,1997, pp. 78).

Many studies have been conducted to develop the educational curriculum according to the continuous improvements in different fields of knowledge. These studies have various points of view in how to develop the named curriculum. In architecture, the task is more complicated as it is related with the most fields of life, societies and technology. The design studio is the center of the educational curriculum in the departments of architecture.

Architectural program and the practice of architecture round the design studio for achieving sustainable built environment (Ijatuyi, 2013, pp. 1). The teacher and the student are the contributors of the architectural design course. They come to the studio with prejudices about the student's work and they take time to make changes. Implementing a new experiment is the exploring unknown sections of the education process. Thinking outside the limits is an attempt to reverse the usual habits of the design studio. After the 1950s, architectural education and practice has been influenced by pedagogical experiments dramatically. The way of building the social and physical environment is an interpretation of skills and abilities of architecture education outcomes (Ciravoğlu, 2014, pp. 12).

Many teaching methods have been conducted in the architecture education curricula such as lecture method, group discussions, brainstorming, individual presentations, conferences, assignments, seminars and workshops

(Uzunoglu, 2012, pp. 94). The group discussions and brainstorming activities demonstrated the best participation by the students. They expressed their ideas freely and they listened to others' opinions respectfully. They indicated that these sessions very useful for ideas exchanging on architecture. The philosophy of aesthetics and its importance in architectural design will extend the students' architectural knowledge. The students consider the aesthetics values in their projects in architectural design (Uzunoglu, 2012, pp. 97).

The architecture education curriculum should teach the students how to make architecture and what is the purpose of making it (Salama, 1995, pp. 9). The architecture discipline depends on the architectural design as a core in its education. It contains very different knowledge forms of other disciplines such as environmental and construction. This difference shows specific problems in teaching architectural design (Williams, 2007, pp. 8-9). The difficulties could be seen in the disagreement on measuring the capacity or potential for design studios and the curriculum materials associated (Williams, 2007, pp. 10).

Hand drawing could be seen as time consuming and the cause physical tiredness. On the other hand, students believe that it brought more enjoyments and it contained warm feelings better than in computer drawing. It gives students a sense of authorship. They see that hand drawing requires specific skills. Computer drawings keep up with the times and technology in the labor market (Williams, 2007, pp.14).

Present the information as it related to the design project is very important for the students to apply technology in their projects and derive meaningful design. It is better than information given as a support courses (Olweny, 2007, pp. 247). Using new analysis tools and equipment enhances the teaching of technology in architecture (Olweny, 2007pp. 253). The separation of subjects in teaching the built environment supports the lack of relevance to the design projects (Olweny, 2007, pp.253).

Developing the curriculum is very important as it is the heart and soul of the all educational institutions (Khan, 2014, pp. 66). The curriculum development should be conducted continuously after a specified period by these institutions. Educational institutions defer in their size, type and nature of programs and they require strategic, future oriented, socially inclusive and maintain high ethical standards. The process of curriculum development should be participative, highly inclusive and democratic involving all interested stakeholders (Khan, 2014, pp. 73). The development strategy should achieve the following goals; improve the learning experience and the learners' success, improve learners' progression at risk of educational disadvantage with special educational needs, build stronger bridges between education & the wider community and improve national planning and support services (Foghlo, 2016, pp. 9). Higher education curricula offer experiences to develop graduate attributes of self-efficacy, limits of effective advocacy and interdisciplinary collaboration. It raises awareness of social and moral responsibilities associated with professional practice (Sibble, 2009, pp. 68).

To assess an educational curriculum, many points should be considered; the curriculum's courses should contribute to its outcomes as planned. The courses should meet their purposes in the curriculum. The program's sub-categories such as distributive requirements in education should contribute to the overall purposes. The designed program has to be resonated with its expected outcomes. The courses should be organized in a coherent manner to allow students for learning. The program advance institution-wide goals as planned (Miller, 2005, pp. 9). It can be concluded that assessment determines students' approach to learning and facilitates learning provided that a number of conditions are created in the process of planning, designing and conducting assessment.

New attitudes in curriculum developments occur nowadays as a result to the new requirements such as sustainable curriculums. The educational institutions will play the main role in planning to a more sustainable future., higher education will have to provide college and university graduates with the skills, background, knowledge, and habits of mind that will prepare them to meet the challenges presented by climate change, loss of biodiversity, a world population of 9 billion in 2050, limited water resources, global health issues, and extreme poverty (AASHE, 2010, pp. 1). The Curriculum Leadership Workshops provided by the Association for the Advancement of Sustainability in Higher Education (AASHE) provide faculties with the knowledge, tools and resources to develop education institutions for sustainability. Many participants have returned to their campuses have taken the leadership for the development of sustainability curriculum.

The higher education students face new ideas and thinking methods because of the interaction with other students. Those students have different levels of knowledge and development. Ethics and moral development are important to be taught rather than rules and principles. Supporting gaining the virtues for the students encourages the holistic student development. Good character and good morals including virtues produce right behavior, reliability, tolerance, care of others and integrity (Quinlan, 2011,pp. 8). Service and collaborative learning with experiential education are effective both in supporting academic teaching and learning moral and civic engagement (Quinlan, 2011, pp 10).

The education planners should influence the organizational processes, supporting the social and cultural environment of the institutions. They should feel as students and consider their needs and requirements to cope with continuous developments. They should perceive their role in promoting the students' communities and focus on the education process, the content of learning and its purpose to create holistic student development.

The students should feel as whole people in their choice for making their way in the future (Quinlan, 2011,pp. 19).

The teachers should pay more attention to pre and post-observation programs. About 90% of teachers strongly agreed and 60% agreed that feedback during those two stages of the observation is very important. It is interesting to see that teachers are willing to receive feedback and suggestions and they want these periods to take more time and to be conducted in more details (Tetovo, pp. 92). Because of his/her role in making decisions about technologies, teachers are central actors in the process of technology rich curriculum integration. On the other hand, teachers' role decreases notably in the online training methods. Social interaction between learner-to-teacher and learner-to- learner has a dramatic motivating impact on the learner's achievements. It allows students giving and receiving an exchange feedback of ideas. The students see that course design, time management, understanding the objectives and IT skills have great impact on the educational development (Trepule, 2015pp. 849). In order to achieve positive learning results, it is important to support the technology enhanced learning. The variation between students depends on their attitudes, skills and the teacher's decisions. Building social presence of interaction with the teacher and other students enhance the discussion channels and develop the ways of communication. They provide tools for time management and achieving goals on time. It could be seen that gender differences of teachers have important impact in using the technology learning in their teaching (Trepule, 2015, pp. 852).

Deep learning and social interaction are two basic factors of assessing the quality of higher education institutions. These two factors could be achieved by good teaching practices and a supportive curriculum (Brockerhoff, 2015, pp. 16). Good teaching should simulate student interest and provides a quality explanation. On the other hand, the teacher should show respect for students and their learning process. It provides helpful assessment and feedback. It should have clear goals and provides students with an academic challenge. It recognizes that students must be engaged in the process of understanding. It is open to change and involves learning more about the effects of teaching on learning (Brockerhoff, 2015, pp. 17).

In order to achieve balanced assessment, it is important to apply a wide range of assessment practices. A combination of formative assessment such as feedback, classroom assessment and summative assessment such as tests, exams and quizzes will produce the best results. In addition, designing a method for course assessment, it is important to match its criteria with the learning outcomes. Thus, they should be planned and analyzed carefully in order to choose the suitable assessment methods to be followed. For instance, a suitable assessment which involves delivering oral or Power Point presentation to introduce presentation skills for the students and the outcome is to expect students to deliver an effective presentation not by having a mid-term/ final exam only. (Spirovska, 2015,pp. 11). Design assessment is not an easy task for teachers to support the learning process. On the other hand, using assessment methods will foster learning provided assessment in a more open minded and consider implementing adjustments. The adjustments will encourage students to perceive assessment as a process which will support them and encourage them to be more successful learners (Spirovska, 2015pp. 13).

The education concentrates for global sustainability in order to encouraging consumers modifying their patterns of resource consumption but it is not the right choice to relying on consumer action. Managing resources and designing options from which consumers make choices are much better to assess how social, cultural and environmental resources are used (Sibble, 2009, pp. 68). The traditional education has a clear lack in providing the training for the students to work towards developing their abilities in dealing with the new and complex real problems. These problems have many dimensions and cannot be addressed under a specific application of scientific, economic or social theory. So, sustainability depends on proactive responses by the users, they should be guided by the professionals and get the required understanding of dealing with problems they face. The new graduates will lead the role of conducted the sustainable trends in consuming resources by their societies (Sibble, 2009, pp. 79).

The Ministry of Higher Education and Scientific Research in Iraq controls the process of developing the engineering curriculum base on ABET criteria of quality. Therefore, this research relied on these criteria to evaluate the architecture educational curricula.

2. Case study:

The study involves the curriculum established by the department of architecture at Al-Nahrain University in terms of the subjective factors based on the decisions made upon the educational curriculum. These decisions may cause defectiveness in the curriculum. So, it is important to consider many objective factors to develop the curriculum. The research determines the subjective factors that affect the curriculum negatively. These effects could be seen in evaluating the curriculum by the students according to ABET criteria. The students address many weakness points in the curriculum as a part of the self-assessment report of the department of architecture. The research relied on the students' assessment of the curriculum as a questionnaire form.

2.1. ABET criteria:

The Iraqi universities have relied on ABET criteria to classify these universities and their colleges and departments. ABET criteria have an assessment form to evaluate the educational curriculum. The ABET criteria involved 18 indicators as listed below:

1. Overall, this Curriculum subject is good and useful
2. Lecture time is sufficient to cover the contents of the article
3. The content of article commensurate with the objective of Curriculum
4. Subject content is anointer dependent information
5. Text books and references are available and meaningful
6. available of References helpful for stimulate and thinking
7. The book is free of grammatical errors Printing
8. Contents of the book are of outdated information
9. The book contains a variety of examples and exercises
10. The evaluation of the subject system is appropriate (test method
11. Exams reflect the content of the subject
12. Number of exams be exhaustive of the content subject
13. Examinations and assignments helped to absorb the subject
14. Examinations and exercises are in line with the objectives of the subject
15. Examinations and exercises help to think of more conservation
16. Number of exams and the their recurrence are appropriate
17. The case of equipped lecture hall satisfactory
18. Capabilities and laboratories are appropriate and effective

Table11 Shows the results of a questionnaire conducted by the students in all years about their curriculum of all subjects. These results are extracted from the quality report of the department of architecture 2013-2014 (the researchers conduct of Aljumaily, H.,2014,Pp 9).

Score		1	2	3	4	5	the number of answers with No implementing the criterion 3,4,5	the number of participant students	the ratio of not implementing the criterion
No.	Question	Strongly Agree	Agree	I Don't Know	Disagree	I Don't Agree At All			
1	Overall, this Curriculum subject is good and useful	69	79	13	4	5	22	170	13%
2	Lecture time is sufficient to cover the contents of the article	59	80	16	11	4	31	170	18%
3	The content of article commensurate with the objective of Curriculum	54	77	21	14	4	39	170	23%
4	Subject content is anointer dependent information	58	81	16	10	5	31	170	18%
5	Text books and references are available and meaningful	45	64	39	17	5	61	170	36%
6	available of References helpful for stimulate and thinking	51	65	41	8	5	54	170	32%
7	The book is free of grammatical errors Printing	35	67	56	7	4	67	170	39%
8	Contents of the book are of outdated information	33	49	61	17	10	88	170	52%
9	The book contains a variety of examples and exercises	44	58	47	17	4	68	170	40%
10	The evaluation of the subject system is appropriate (test method)	44	89	21	9	7	37	170	22%
11	Exams reflect the content of the subject	55	88	12	11	4	37	170	22%
12	Number of exams be exhaustive of the content subject	54	83	17	10	6	33	170	19%
13	Examinations and assignments helped to absorb the subject	62	77	12	11	4	27	170	16%
14	Examinations and exercises are in line with the objectives of the subject	56	85	11	12	6	39	170	23%
15	Examinations and exercises help to think of more conservation	52	80	17	11	10	38	170	22%
16	Number of exams and the their recurrence are appropriate	50	69	16	24	11	51	170	30%
17	The case of equipped lecture hall satisfactory	45	70	15	27	13	55	170	32%
18	Capabilities and laboratories are appropriate and effective	41	63	22	27	17	66	170	39%

Table 2 shows the possible conforming between the self-reason to develop the curriculum with its secondary items and ABET criteria if it is qualified or not (the researchers).

No.	The self-reason to develop the curriculum	The secondary items of the self-reason to develop the curriculum	ABET criteria
1	**The philosophical base of the educational curriculum is not clear.**	The philosophical base has an interactional and integrating relation with the elements of the educational curriculum which involved educational, context and teaching aims. So, unclear aims affect the curriculum's activity negatively.	11
2	**There is a lack in formulating the objectives and its classification and achievement.**	Formulating general and wide objectives that are hard to achieve	3,14
		Formulating educational objectives specialized for the study subjects of the curriculum that are not appropriate for the students characteristics, formulating ambiguous objectives need to be clear and accuracy.	2,14
		The objective's lack and inefficiency or their limits for a kind of objectives.	2,14
		The mix and interaction between the knowledge, emotional and psychological objectives and the mix between their levels	2,14
3	**There is a lack in the educational context**	The educational context is separated from the educational and teaching objectives	1,2,4,5,7,8,9, 10,11,12
		The educational context's lack to achieve its prospect objectives.	2,4,5,7,8,9,10,11,12
		The context's lack to cope with the psychological and logical base of selection, managing and presentation.	2,4,5,7,8,9,10,11,12
		The context's farness from the students' and society's needs and problems	2,4,7,8,9,10,11,12
		The context involves ambiguous, unclear and strange terms for the students and teachers.	2,4,7,8,9,10,11,12
		The context's farness from the good documented rules for the knowledge references.	2,4,7,8,9,10,11,12
		The context's lack to find the unity between the theoretical and applicable	2,4,7,8,9,10,11,12
		The context has no appropriate educational tools or they are not enough or not accurate.	2,4,7,8,9,10,11,12
4	**The educational exercises and activities are not enough**	The context has a lack in terms of direct the educational activities inside the study hall	11,12,13,14,15,16
		The context neglects direction to the outclass activities	
		The activities don't consider the necessary educational principles such as variety between the students in achieving their works.	6
		The educational environment criteria are not enough in terms of methods, management, strategies and tools.	17,18
		The insufficient performance of the teacher which affects the curriculum negatively such as inability to connect the educational subjects with life.	
5	**There is a lack in the evaluation tools and methods**	There are mistakes in formulating the exam in the subjects of the context.	11,12,13,14,15,16
		The objectives of evaluation are not clear	3,14
		The evaluation concentrates on some objectives not all of them	3,14
		The evaluation concentrates on measuring lower levels of the mental processes without considering the upper ones.	6,15
		There is no variety in the evaluation tools used to measure the achieved educational objectives of the curriculum.	17,18
		Neglecting the composing and constructional evaluation with attending the final exams.	11,13,15

2.2. The results:

The results show that 22% of the students see that the philosophical base of the curriculum is not clear base on the criterion number 11 of ABET criteria. The lack in formulating, classification and achieving the objectives appears in criteria 2,3,14 by 18%, 23% and 23% of the students respectively. The lack in the educational context has been indicated in criteria 1, 2, 4, 5, 7, 8, 9, 10, 11 and 12 by 13%, 18%, 18%, 36%, 39%, 52%, 40%, 22%, 22% and 19% of the students respectively. The insufficient educational exercises and activities could be seen in

criteria 6, 11, 12, 13, 14, 15, 16, 17 and 18 by 23%, 32%, 22%, 19%, 16%, 23%, 22%, 30% and 39% of the students respectively. It is indicated that there is a lack in the evaluation tools and methods in criteria 3, 6, 11, 12, 13, 14, 15, 16, 17 and 18 by 23%, 32%, 22%, 19%, 16%, 23%, 22%, 30%, 32% and 39% of the students respectively.

3. Conclusions

The most important lack in the educational curriculum could be found in the educational context. The second item is there is a lack in the evaluation tools and methods. The third is the lack in the insufficient educational exercises and activities. Penultimate, there is a lack in formulating, classification and achieving the objectives. Ultimately, the philosophical base of the educational curriculum is not clear.

The most repeated criterion is contents of the book are of outdated information by 52% of the students. The second most repeated criterion is the book contains a variety of examples and exercises by 40% of the student and the third one is the book is free of grammatical errors printing by 39% of the students. These criteria refer to the importance of improving the books both in the curriculum and the library. On the other hand they assure to develop the curriculum's context.

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