STUDENTS' FEEDBACK & ARCHITECTURAL ENGINEERING EDUCATION DEVELOPMENT IN COVID-19 ERA.

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ABSTRACT:

Architecture education and dealing with a special type of students in a practical faculty like the faculty of engineering are considered a dilemma that need a high range of opinions and various researches to find an optimum solution to create a special Architect in Covid-19 Era. This research presents a pragmatic approach within various pedagogical theories to high light the influence of students' feedback on Architecture education. Furthermore, the author presents how the students' evaluation to various courses can have an impact on the development of the entire curriculum to create more effective course to the undergraduates who cohabited with the hybrid system in education. On the other side, the author presents the pros and cons of such process using educational theories and empirical practice on urban design course in one of the architecture departments in Egypt. Moreover, the students' feedback is examined within two sequential years, showing how the curriculum was changed according to the results. Finally, the research concludes the advantages and drawbacks of such process and presents a number of recommendations to approve quality enhancements to develop the Architecture courses.

KEY WORDS: Architecture education, Hybrid educational system, Quality enhancement, Students' feedback, pedagogical theories.

تقييم الطلاب و تطوير التعليم المعماري في عصر وباء كورونا

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الملخص

يعتبرالتعليم المعماري والتعامل مع نوعيه خاصه من الطلاب في كلية عملية مثل كلية الهندسة معضلة تحتاج إلى مجموعـة كبيرة مـن الآراء والبحوث المختلفة لإيجاد الحل الأمثل لإنشاء مهندس معماري خاص. يقدم هذا البحث نهجًا عمليًا ضمن نظريات تربوية مختلفة لتسليط الضوء على تأثير تقييم الطلاب في الدورات المختلفه على تعليم الهندسة المعمارية. علاوة على ذلك ، يقدم المؤلف كيف يمكن أن يكون لتقييم الطلاب للدورات المختلفة تأثير على تطوير المنهج بأكمله لإنشاء دورة أكثر فعالية للطلاب الجامعيين. من ناحية أخرى

، يعرض المؤلف إيجابيات وسلبيات هذه العملية باستخدام النظريات التعليمية والممارسة التجريبية في دورة التصـميم الحضـري في أحد أقسام الهندسة المعمارية في مصر. علاوة على ذلك ، يتم فحص ملاحظات الطلاب في غضون عامين متتاليين ، مما يوضح كيف تم تغيير المنهج وفقًا للنتائج.وأخيراً يستنتج البحث مزايا وعيوب مثل هذه العملية ويقدم عدد من التوصيات لضـمان الجـودة فـي التعلـيم وتطوير مقررات الهندسة المعمارية.

الكلمات المفتاحية: التعليم المعماري ،النظام الهجين في التعليم، تحسين الجودة ، تقييم الطلاب ، النظريات التربوية**.**

1. INTRODUCTION

There is no doubt that Education of our architects to move the entire industry is a highly crucial issue throughout the hybrid system of education. That's why it is highly believed in the importance of the students' feedback and its relevant impact on the educational process as a whole. Thus, the evaluation of teachers practice needs evidence-based reports, which is presented in the documents of the students' evaluation; in addition, students' views are presented to enhance their role as partners in the education procedures (J. Brennan, R. Williams, 2004).

Despite all benefits and the high control of different institutions to assure effective results of student's feedback for quality enhancement, some drawbacks appear to hinder the actual benefits of learner's contribution. Therefore, this paper shed lights on procedures of Design studios in the hybrid system of education, the advantages and disadvantages of students' feedback, the methods of feedback, the used questionnaires and the impact on the author's courses as an instructor, which are, **Urban** design and Planning (ASE363) and **Architecture Design VII (ASE 551).**

2. BENEFITS & DRAWBACKS OF STUDENTS' FEEDBACK

No one can deny that student's satisfaction surveys are highly crucial in monitoring the quality of learning. Brennan et al. (2004) claims that students' feedback ensures the effectiveness of course design, contributes to the instructor's development, and improves the students 'learning and empower their awareness.

Although Student's evaluation can be an enhancement tool to the educational processes it can also be a double-edged weapon, where researchers claimed that negative feedbacks may lead to unsuccessful alterations to teaching in order to please students (Flodén, 2017). Another study reported that students' feedback is unreliable and invalid (Felton, J., Mitchell, J. & Stinson, M, 2004), where students tend to give lower scores to instructors when they get low marks. As a result of the latter study, the students' evaluation may not give clear evidence of the teacher's performance and can hinder the development procedures as a whole.

Researchers like Murray (2005), suggested that students' feedback could be more reliable by acknowledging professional observers to observe the classroom behavior and present a performance indicator within the students' relation, which might be a supplement document to the students' evaluation. In case of Architecture education, the researcher as an instructor claims that Murray (2005), presents a balanced solution to avoid the problems in students' feedback, however it is not currently used the observers' solution in our University.

It's worth mentioning, that students' satisfaction surveys is highly used in the author's University as a tool of promotion and tenure for the lecturer, where Richardson (2005) claimed that if the satisfaction surveys were used as an appraisal tool, that might have negative impact on the lecturer. The researcher

claims that this issue will be highly critical, if the lecturers tried to give high grades to gain positive feedbacks.

3.   HYPOTHETICAL CONCEPTUAL FRAMEWORK

The researcher presents the hypothetical conceptual framework of this research, which is built upon the literature presented in this research, in addition to preliminary case study findings, which is examined in two sequential urban design courses. It is presented here in order to make the purpose of the research clear. The aim of this framework is to aid in the understanding of the students' feedback dynamics and and the development procedures of a certain course, therefore a development base can be concluded to perform a pedagogical framework for curriculum development.

4.   THE FEEDBACK METHODOLOGY

At MSA University student feedback occurs regularly within the end of the course including staff / module evaluation online survey. Consequently, external examiners visit our faculty every term to revise the educational process and listen to students' representatives in a routine meeting. That's a part of our University's compliance with the international quality assurance (QAA), in addition with the Egyptian national authority of quality Assurance and accreditation (NAQAA).

In this research, the author is focusing on the students' feedback using the online tools, which proved, according to Zimbardi et al. (2017), to enhance the investigation of the learning impact efficiently with accuracy and definite rationale. At MSA University, an online survey is carried out online using **Moodle**, where the program ensures their confidential evaluations; as they don't have to enter their names to feel safe while writing their comments and answering the questionnaires. In addition, students are informed before the survey that instructors cannot access their evaluation until the final percentage is done.

4.1 Online Questionnaires And Paper Survey

Despite the advantages of the online questionnaires, some researchers like Handwerk et al. (2000), pointed out that online surveys had a lower participation rate among students, than the hard copies questionnaires. However, this latter study didn't mention the reasons that students preferred the paper surveys. Despite the debate, it's worth mentioning, that the author made an informal students' feedback in course "Architecture Design VII" using paper surveys in fall 2019, the author found out that about **80% of** the students participated. However, at the end of the term in the formal online survey, only **60%** participated (Quality Unit at MSA University, 2020),which is considered, not appropriate enough to assure the quality enhancement in the course.

Despite the criticism and according to the studies, the online surveys' advantages outweigh its drawbacks, in terms of cost, time and participation. Furthermore after Covid-19 pandemic it's considered more rationale to use the on line surveys. That's why universities should find ways to increase the participation percentage of students and encourage reluctant students to express themselves.

4.2 THE SURVEY TIMING

The time of the feedback survey is an important issue to think about which has a direct impact on the quality enhancement, where Brookhart (2008), mentioned that the efficacy of students' feedback comes from the ability to hear it and use it by linking to action. That seems reasonable, as traditional students' survey is constructed at the end of the term in our University and any further development would benefit the next term students.

In addition, Brennan et al. (2008), added that constructing two feedbacks at the mid-point and at the end would be the best solution to link the feedback into action points, however that needs to set committee meeting to take action points at both times which might be a heavy burden on quality committees.

For the author to examine this dilemma, she initiated an interview with three instructors at MSA University and they confirmed that an informal feedback at the mid-term time other than the formal one at the end should be constructed, to discuss the students' opinion in the course to ensure their satisfaction and initiate certain action points if needed.

5.   THE USED QUESTIONNAIRES

The used questionnaires in the students' feedback should be designed in a way to produce valid information, which contributes to the teaching and learning enhancement. That's why Fry et al. (2009), mentioned that the questionnaires are a direct access to the "learners' eye view", who are uniquely qualified to judge, the teaching materials, presentations' clarity, assignments' deadlines and the helpfulness of tutors. Thus, other issues like the structure, curriculum, and resource materials should not be intruded in the students' evaluation in order to reach the idea of "capitalizing the good things" (Ramsden & Dodds, 2003).

As a result, the questionnaires should be arranged in a system to be applicable to the "learner", who can be from different disciplines, various cultures, diverse levels, and also from different institutions (Brookhart, 2008). For example, Fry et al. (2009), experienced in *Queensland University of Technology*'s survey questionnaires presented to 1st level students was completely different than questionnaires' typology of those in the 4th level, with different weights according to the students' level.

5   STUDENTS' FEEDBACK IMPACT ON URBAN DESIGN COURSE

As an instructor, the author experienced the idea of self-development after the feedback of her students in urban design and Planning (ASE363), the feedback survey was examined as shown in table 1.

As the instructor decided to apply the students' evaluation procedure in spring 2019 on the project development of the following year, she began to implement the techniques mentioned in table 1. It's worth mentioning that, the constructed questionnaire is mainly based on the comments and the discussion of the students all over the lectures' period and was a direct application to the written hard copies questionnaire (appendix 1) to fulfill a high percentage of participation.

Consequently, after the application of the paper survey, it was applicable that a high percentage would participate in the survey. That's why 92% of the students participated and presented their opinion in the course. The questionnaire was a clear evidence of certain constraints the students faced in the course concerning the term project, where 46% where nearly not satisfied with the project land and 49% where not satisfied by the term project. They also mentioned in their comments that the problem

was the huge area of the project, which reached 70 acres and the non-sufficient time to practice their own designs (figure 1).

Table 1: shows the techniques and explanations of the research procedures to reach the results. (source, Author,2020)

| Techniques	Explanation
Observation	• Observing the reactions and discussions of students after each lecture.
Participatory observation	• Attending casual meetings with students • Taking certain notices during field trips. • Applying written questionnaires.
Analysis & Synthesis	• Comparison between feedback developments from a sketch to another. • Analyzing the development procedures between spring 2019 & spring 2020 • Synthesis of all results to perform the project development guidelines
Semi structured Interviews	• About 3 interviews were performed to 3 instructors who teach 5 different curriculums.
Photos	• Documenting before and after application of students' feedback impact
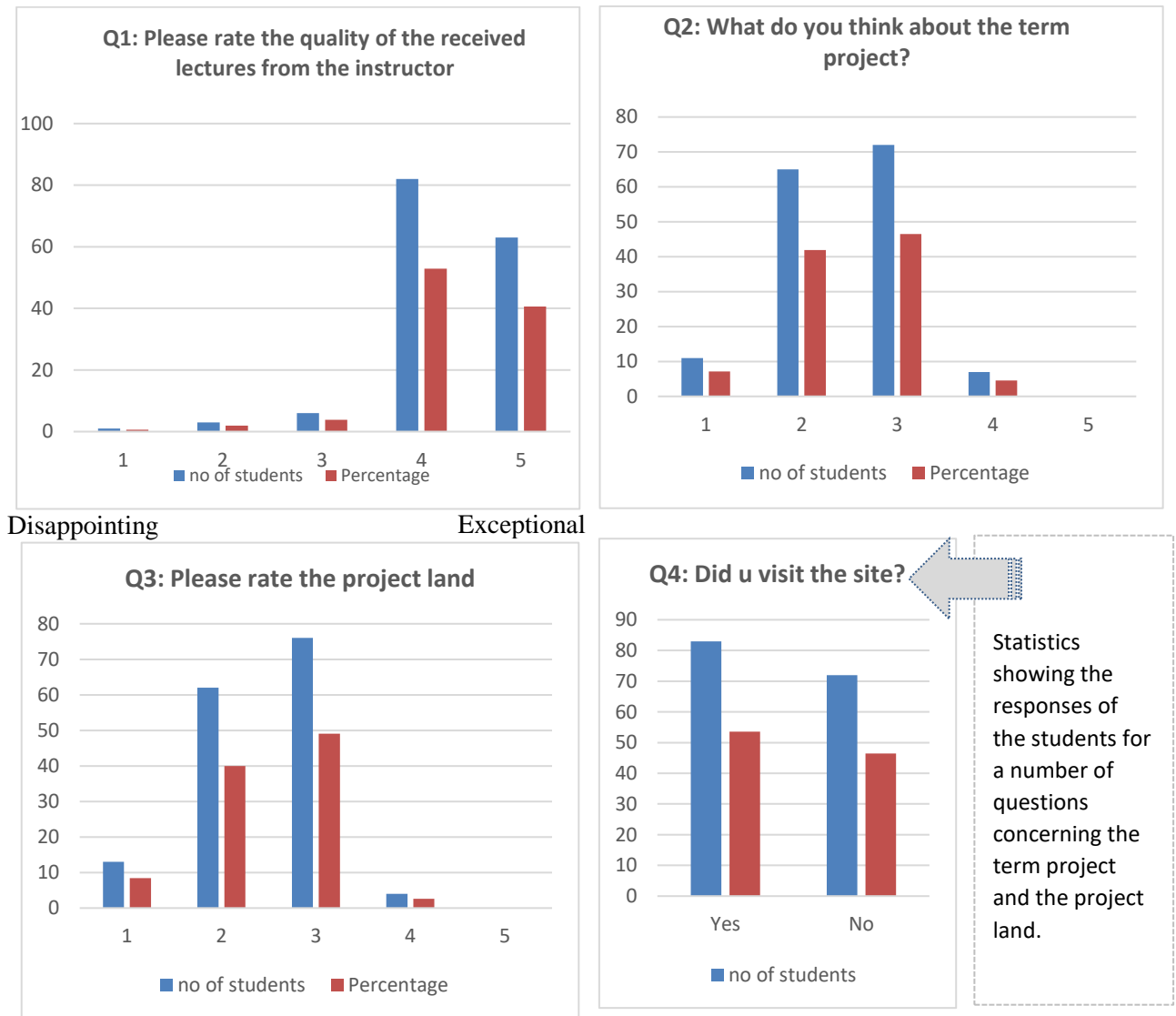
Figure 1: Statistics for the applied questionnaire , spring 2019 (source: Author,2019)

5.1 Fieldwork Procedures in Urban design course, spring 2020, during Covid-19 quarantine

In spring 2020 , in the same course, all the lectures and sessions were converted to be on line via zoom application. Before the quarantine, the lecturer decided to make some changes to the curriculum according to the previous statistics in figure 1. First, the project land was minimized to 30 acres, more feedback sessions were added to improve design procedures, and a summative report for the site visit.

The same questionnaire was presented to the students at the end of the course with an added question concerning the on line learning, if they preferred it or not. A percentage of 78% preferred the direct contact with the lecture, although they had more sessions than normal to give more chances to develop their own designs. Also, their opinion concerning the project land was changed, as 22%found it more exceptional than the previous year. Moreover, the summative report increased the percentage of the actual site visit from 81 % to 91%, which is considered a valuable learning enhancement.

5.2.1 Drawbacks of remote learning

Basically, the lecturer used the online questionnaire according to Fry et al. (2009) to examine the course curriculum due to the quarantine. One of the drawbacks that appeared after using the questionnaire, was only 65% of the students participated in the required survey. Furthermore, the students preferred the direct interaction with the instructor to manage the developments in their projects. They even mentioned in their comments that they needed the direct interaction in the practical sessions and they have no problem to practice on line lectures. That agrees with (Masdéu, Marta & Fuses, Josep, 2017) , who constructed a framework of Architecture teaching and highlighting the importance of direct interaction in the practical sessions.

6. COMPARATIVE ANALYSIS BETWEEN TWO PROJECTS AT SPRING 2019 & SPRING 2020

The author presents two sample projects from two different years in Urban Design course, after minimizing the projects' area from 70 acres to 30 acres as a synthesis from the students' feedback .Furthermore, several tutorial were presented to students based on urban theories of (Alexander, 1987) and a rubric (manasmurthy, 2020) was the base of assessment of each project.Figure 2 ,shows a clear evidence of how the students' feedback had an impact on the project of the following year.

If a comparative analysis is initiated between two chosen clusters as shown in figure 2, it will illustrate the difference between the two "A" Grade projects throughout two different terms after the student feedback in Covid-19 quarantine period.

Project A19	Project A20
Spring_2019 Urban Design project presenting Residential Neighborhood of area 70 acres	**Spring_2020 Urban Design project presenting Residential Neighborhood of area 30 acres**

Figure 2: shows samples of Master plans and models of two urban design courses' projects in two different semesters (source : Author, 2020)
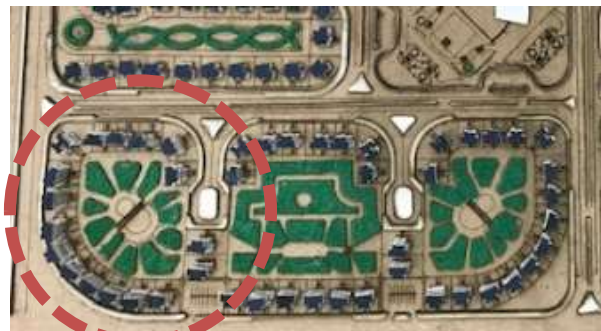

Figure 3: shows the difference between two clusters in two "A" grade students , source: Author, 2020

It's clear from figures 2 & 3 that students in the term Spring_2020 were more organized, and the clusters were more creative with well-designed landscape. This means that the smaller land enhanced the better control of design and created more time to Aesthetical parts in the model and the landscape.

Table 2: Shows rubric for the urban design projects' assessment fpr project A19 and project A20. Source: (Masdéu, Marta & Fuses, Josep, 2017),edited by Author.

	POOR D	AVERAGE B	VERY GOOD A
Knowledge - Macro Networks **30%** Demonstrate factual and interpretative knowledge of layers of urban networks	POOR Has not gathered sufficient data on existence and spatial distribution of network.	AVERAGE Has gathered reasonable data on existence and approximate delineation of network.	VERY GOOD Has gathered significant data on existence of network and detailed knowledge of spatial distribution.
Knowledge - Typology **30%** Document instances of critical elements within networks at architectural scale	POOR Has not managed to gather sufficient instances and has either none or only photographic evidence of the same.	AVERAGE Has managed to gather sufficient instances but has only photographic evidence of the same.	VERY GOOD Has captured variety of types and has recorded architecturally.
Skills & Communication **30%** Utilise variety of architectural representation, diagrams, infographics to effectively communicate / narrate data gathered graphically	POOR Has shown poor skills in drawing and representation or is unable to clearly communicate intended information graphically	AVERAGE Has shown adequate skills in drawing and representation but presentation is unstructured or unclear	VERY GOOD Has shown prowess in drawing and representation and presentation is coherent and lucid
Skill - Research **10%** Demonstrate ability to verify and authenticate data received from multiple sources	POOR Is unable to provide any evidence for information gathered or source is unverifiable	AVERAGE Offers limited evidence for information gathered and information is only true in parts	VERY GOOD Successfully integrated authentic information from reliable sources

🔵 **Project A19 Graded: A- 90%**   🔴 **Project A20 Graded : A 97%**

6.1 Discussions on results

According to the interview (Galal, Shawky, & Amer, 2020), the instructors had some concerns about the distribution of weights for evaluation aspects, for instance, if the students are evaluating their instructor in a course, and the used aspects to evaluate are 10 aspects, then each criterion is weighting 10% of the overall survey. As a conclusion to the interview the instructors agreed that it's completely unfair to compare an aspect like "Has the ability to deliver the subject material" with "Communicating easily with diverse students outside the class", may be both are important, however, being in the same weight does not present an accurate result of the instructor's performance.

That's why the used questionnaires with its non-studied weights, would not effectively contribute to the quality enhancement, which appears in the unfair measurement of the teacher performance (Murray, 2005). Thus, it is highly recommended to design the used questionnaires according to the

target learners –to be variable for each level– and to redistribute the weights of each questionnaire to ensure the efficacy of students' feedback on the instructor's development.

6   THE IMPACT OF STUDENTS' FEEDBACK ON URBAN DESIGN COURSE CURRICULM

In course Urban design and planning (ASE363) a number of students had a comment that they lost a number of points in the first quiz, because they were not trained enough on the questioning technique. After investigation, it was found that what they mentioned was true and about 35% of the students had very low marks. That's why the author decided in the next term to construct a number of interactive learning sessions using games to train them to answer that type of questions easily.

After application in the next term, the author had a positive impact for those interactive sessions and their marks were actually higher in the first quiz.

CONCLUSION & RECOMMENDATIONS

To conclude, although universities are trying to monitor quality enhancement using students' feedback, a number of disadvantages appear to hinder this crucial process. Thus, the research recommendations to empower the feedback procedures:

- Assigned trained observers are recommended to evaluate the teachers and to present their reports attached with the students' feedback to be able to investigate the efficacy of the results.
- Enhancing the students' awareness of the importance of their voice and how they are partners in the educational process is also recommended in order to increase their commitment and participation in surveys.
- The students' feedback should not be an appraisal or tenure tool for lecturers.
- The questionnaires' weights should be variable according to the importance of different evaluation criterions, which would probably contribute to an effective evaluation.
- Increasing the teachers' awareness of the importance of informal feedbacks from students, which will benefit the current courses.
- Covid-19 pandemic was a reason for the instructors and the students to be trained on e-learning and remote learning as a whole, however the students preferred the physical interaction in the practical sessions.
- Hybrid learning proved to be successful , especially for practical faculties like Engineering, where practical sessions are initiated mostly with a direct interaction with the instructor and the students' colleagues

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Appendix 1

MSA University
15.05.2019

Dr. Eman A. Saleh

Students' survey for Urban Design & Planning (ASE363)

Why we are doing this survey?

One of the contemporary roles of the students , is to be a part of the educational process not only a receiver. That's why we want you to be a part of the development of our curriculum

Q1: Please rate the quality of the received lectures from the instructor

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5

Disappointing   Exceptional

Q2: What do you think about the term project?

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5

Not satisfied   Satisfied

Q3: Please rate the project land

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5

Not Suitable   Suitable

Q4: Did u visit the site?

☐No   ☐ Yes

Q5: Did you face problems during the project design?

☐No   ☐ Yes

Q6: If you said "Yes" in Q5 please mention how many weeks did you face the problems

☐ Only from week1 to week3   ☐ from week 1 to week7

☐ from week1 to week5   ☐ from week 1 to the final Jury

Please share any additional comments or suggestions.

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