

**ASSESSING THE CURRENTLY-USED METHODS
FOR IMPROVING CONTINUED-EDUCATION SKILLS
IN THE ARCHITECTURAL ENGINEERING DEPARTMENTS
IN EGYPT**

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Abstract. *The present study is concerned with assessing the currently used methods for improving the skills of continued education in the architectural engineering departments as well as the architectural market in Egypt. The main hypothesis of this study is that: the concept of continued-education in architecture is absent in Egypt, the current mechanisms of supporting continued-education are neither active nor effective, and the architectural education is not enough alone to build a professional architectural character.*

Survey forms have been distributed for practitioners, and interviews have been conducted with stakeholders for the sake of assessing the role of the universities in Egypt in supporting the graduates' skills development. The study compared the collected data about these universities through three main points: continued-education, graduates' follow-up and environment & community services.

At the end, this study suggests some mechanisms based on the data analysis of the collected information. These mechanisms will help improving the practice of architecture in Egypt. In addition, the study proposed some recommendations regarding practicing architecture in Egypt for architecture's practitioners, Egyptian Engineering Syndicate, and Egyptian executive entities such as ministry of higher education & prime minister office. These recommendations will be delivered as well as a copy of this research to all stakeholders in order to be taken into considerations.

Key words: *Continued Education, Self-Learning, Architectural Education, Skills Development, Architectural Career, Professional Practice*

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INTRODUCTION

The knowledge-based economy indicators in societies are real indicators of building a professional career and making money out of the gained knowledge through the university education; which indeed increases the economy of these societies. The World Bank's report of knowledge-based economy indicators stated that the top countries in order are Sweden, Germany, Norway, Canada, Australia, Denmark, UK, and USA. (5) Egypt in that report came in the 67th place! The Egyptian scientists in these developed societies are well paid and they achieve high economic status, which does not happen inside Egypt; and this is an important indicator that there is a big gap in Egypt between Knowledge and Economic Return.

Architects play an important role in the well-developed societies, where one can find some professional entities specialized in supporting and sponsoring the development of the architectural career, as well as enhancing the skills of the architects themselves. In order to effectively develop and positively influence the environment around us, we have to activate the role of the continued-education, and also, we have to do periodical tests for the practitioners to assess and evaluate their knowledge about all updated architecture-related issues such as materials, applications, construction techniques, ...etc. This will make the practitioners themselves keen to practice the self-learning, the continued-education, and the effective development of their skills; in order to satisfy the local market needs. (4) (11) (12)

For example, the Royal Institute of British Architects (RIBA) -which is one of the oldest organizations in the field of architecture- is concerned for: enhancing the architecture career's environment, encouraging the architects' continued-education, and developing the architects' professional skills; in order to create the suitable prosperous environment for the architecture practice. In USA, the American Institute of Architects (AIA) takes the same role. The AIA has three main objectives, which are: improving the current practitioners of architecture, finding qualified practitioners for the future, and representing the architectural career in front of all organizations or entities. (17) (18)

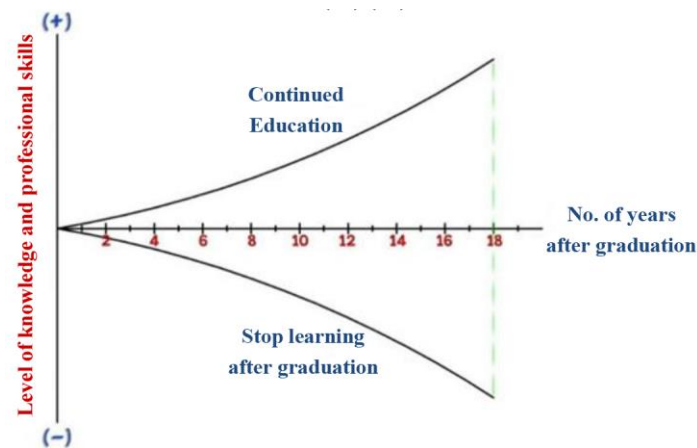


Fig. 1 The Effect of Continued-Education on Architecture Practitioners
(Source: Al-Erian, Ahmed, The Continued Education of Engineers)

1. PRACTICING ARCHITECTURE IN EGYPT

There are many organizations in Egypt take the responsibility of taking care of architecture career as well as architects themselves, which are listed in figure (2).

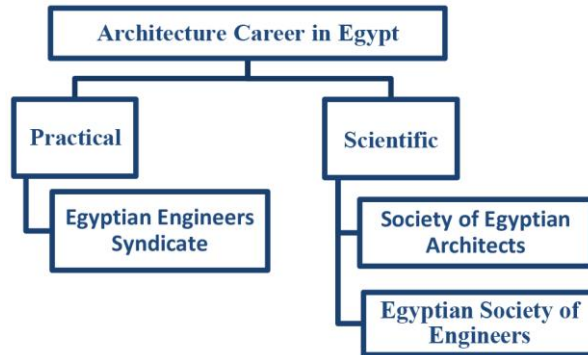


Fig. 2 Classification of practical architectural organizations in Egypt
(Source: By Researcher)

The Society of Egyptian Architects and the Egyptian Society of Engineers are responsible for the scientific part (Conferences, publications, competitions,etc). On the other hand, the Egyptian Engineers Syndicate is responsible for the professional practices.

1.1. Society of Egyptian Architects (SEA)

The Society of Egyptian Architects has been established in 1917 in Cairo by pioneers of architecture. It is a founder member of the International Union of Architects (UIA), which has been established in 1948 in Paris. (18)

SEA cooperate and participate with international and/or regional organizations to implement international and regional projects and researches in architecture, urban planning and engineering fields. It also organizes conferences and workshops in order to develop the profession of architects and urban planners, through dissemination of technical experience and to preserve the physical environments of human settlements.

1.2. Egyptian Society of Engineers

The Egyptian Society of Engineers has been established on Dec. 1920 when its administrative board gathered for the first meeting. The main purpose of establishing this organization was to work in the scientific and cultural field of engineering by following the engineering studies and researches, in order to achieve the scientific developments in different engineering fields. It encourages the publication of lectures, seminars, researches thesis,etc. Not this only, but also making connections with other organizations outside Egypt to create an effective scientific cooperation.

1.3. Egyptian Engineers Syndicate

The Egyptian Engineers Syndicate has been established in 1946. It represents all engineers with their different majors for the sake of achieving the engineering practice targets. It is the responsible organization for taking care of the engineers as well as organizing the professional practice of the engineering career. (14)

2. THE ROLE OF EGYPTIAN ENGINEERS SYNDICATE IN SPONSORING THE ARCHITECTURAL CAREER IN EGYPT

2.1. Evaluation of Practicing the Architecture Career

To evaluate the role of Egyptian Engineers Syndicate in sponsoring the architectural career, the researcher attended one of the meetings of Architecture Division Council in the Egyptian Engineers Syndicate's main branch in Cairo to explain what have been reached so far for the members, and to take their feedback, suggestions, and comments about the current situation of practicing the architectural career in Egypt; in order to complete this research in its most significant way. The head of the council board stated that: "there is neither effective evaluation system for architects nor following-up system for architects' continued-education and skills development, that is why -by time- the gap between architects and the syndicate increases".

On the other hand, the researcher interviewed some of the stakeholders inside the syndicate's head branch in Cairo in order to measure the effectiveness of the rules that control the professional practice of the architectural career in Egypt. The administration responsible for practicing architecture stated that: "the rules are really existing but not activated, and that the syndicate gives any architect the needed practice license ones he/she pays the stated fees".

All these statements are against the syndicate's original regulations, and obviously this happened because of neglecting the activation of these regulations, as well as absence of needed mechanisms to control practicing architecture in Egypt. Table 1 shows how far practicing architecture in Egypt meets the practicing architecture authorization requirements that are set by the Union of International Architects (UIA). (3) (14) (15) (20)

Table 1 International Union of Architects UIA Authorization Requirements

Item	Egypt	UIA
1. Studying duration in architecture departments (in years)	4-5	4-5
2. An effective evaluation system for the curriculums to be approved	√	√
3. Obligatory practical training duration before getting the license to be an architect (in years)	×	3-2
4. Existence of evaluation system for graduates to be certified	×	√
5. Existence of practicing licenses	√	√
6. Periodical renewal of practicing licenses	×	√
7. Ethical code for the practice of architecture	√	√
8. The title of 'Architect' is protected by laws	×	√
9. Continued education	×	√

(Source: By Researcher)

2.2. Evaluation of Training Systems

As a trial to evaluate the training system of the Egyptian Engineers Syndicate, the researcher coordinated with the head of training committee in the syndicate's head branch in Cairo to attend the training workshop that was held by the committee to discuss the obstacles and challenges that face the engineer's training programs, and also to discuss the needed mechanisms to develop and to improve these training programs.

Regarding the continued-education issue, -in addition to observations and writing minutes- during the interview with the vice president of the Egyptian Engineers Syndicate he stated that: "the syndicate was dealing -for a long time- with the training as income source only" and that: "the certificates given by the training centers reflect only the attendance of the trainees not the gained training skills or knowledge". Also, during another interview with the head of the training committee he said that: "the current training and evaluation mechanisms are neither effective nor applicable; because training is not obligatory for engineers, and that's why they are not keen to pass training and preparation requirements unless they need the certificates to work outside Egypt". (10)

As a conclusion, the problem of the lack of continued-education culture in Egypt is not because the requirements and regulations are not existing, but because they are neither activated nor effective, and because we do not have the needed mechanisms to apply these regulations. (1) (2)

3. THE ROLE OF THE EGYPTIAN UNIVERSITIES IN SPONSORING THE ARCHITECTURAL CAREER IN EGYPT

There are about thirty departments of architecture in the Egyptian public universities, and more than thirty departments of architecture in the Egyptian private universities in addition to about thirty-five departments in institutes in Egypt. From the lists of the Egyptian Engineers Syndicate -all over Egypt- the Egyptian universities -which are connected with the syndicate's committee of training are only four universities (American University in Cairo, Helwan University, Ain Shams University, and Banha University). (7) The rest of universities in Egypt are not collaborating with the syndicate in training and preparing the engineers for the professional practice; which means that there is lack and insufficiency in the role of the Egyptian Universities in sponsoring the architectural career in Egypt.

This study is investigating and analyzing the universities in Egypt which are registered in the Egyptian Engineers Syndicate in order to: figure out their mechanisms for supporting the practitioners of architecture in Egypt, assess their communications with the graduates, point out the mechanisms of serving the surrounding environment and community, and to measure their consideration to improve the skills of both students and graduates.

The factors of choosing these universities were:

- Diversity between public and private universities.
- Different locations all across Egypt.
- Reputation and importance for Egyptian high education.
- Availability of information and data.

The collected data has been analyzed and compared with each other through three main points: continued-education, graduates' following-up, and environment & community services.

Table 2 The role of Egyptian Universities in Supporting the Architectural Practice

Universities	Community Services	Graduates' Follow up	Continued Education
1 Cairo University	√	√	X
2 American University in Cairo - AUC	√	√	√
3 Mansoura University	√	√	X
4 Banha /university	√	X	√
5 Alexandria University	√	√	X
6 Zagazig University	√	X	X
7 Asyout University	√	√	X
8 Kafr El Sheikh University	√	X	√
9 Suez Canal University	√	X	√
10 Helwan University	√	√	√
11 Ain Shams University	√	X	√
12 Tanta University	√	X	X
13 Monofeya University	√	X	X
14 Arab Academy for Science and Tech. - AAST	X	√	√
15 Fayoum University	√	X	X
16 German University in Cairo - GUC	X	√	√
17 British University in Egypt - BUE	√	√	X
18 Al Azhar University	√	X	X
19 Al Menia University	√	X	X
20 Bani Sweif University	√	X	X
21 Misr International University - MIU	X	√	X
22 Pharous University	√	√	X
23 6 October University	√	√	X
24 Modern Academy	X	√	X
25 Delta University for Science & Tech.	√	√	X
26 Future University in Egypt - FUE	√	√	√
27 Sinai University	X	X	X
28 Al Nahda University	√	X	√
29 Misr Academy for Eng. & Tech. - MET	X	X	X
30 Modern University for Tech. & Info. - MTI	X	X	X

(Source: By Researcher)

This study studied in great detail sixteen public universities and fourteen private universities shown in table 2, which have been put in this order according to the "Webometrics Ranking of World Universities". Webometrics is an initiative of the Cybermetrics Lab, a research group belonging to the Consejo Superior de Investigaciones Científicas (CSIC), the largest public research body in Spain. The original aim of the Ranking was to promote Web publication. Supporting Open Access initiatives, electronic access to scientific publications and to other academic material are our primary targets. However, web indicators are very useful for ranking purposes too as they are not based on number of visits or page design but on the global performance and visibility of the universities. (16)

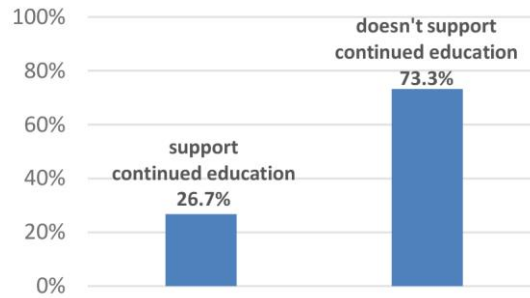


Fig. 3 Percentage of Egyptian Universities Supporting Continued-Education
(Source: By Researcher)

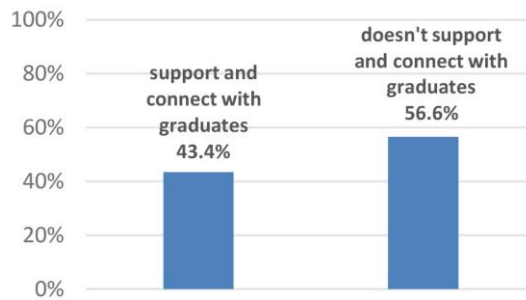


Fig. 4 Percentage of Egyptian Universities Supporting the Graduates' Professional Skills
(Source: By Researcher)

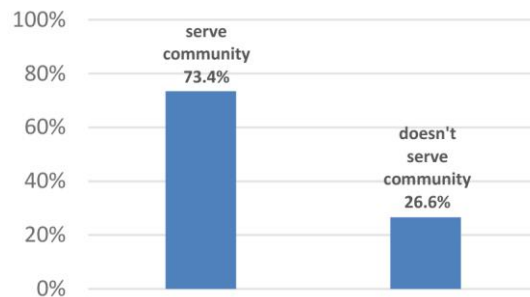


Fig. 5 Percentage of Egyptian Universities Serving the surrounding Community
(Source: By Researcher)

As a conclusion, by comparing universities with each other this study found out that all universities in Egypt are considering giving their students a high-quality education, but most of these universities unfortunately have no role in communicating with the graduates and following up their career path. Also, most of the universities do not care effectively about graduates' continued-education and skills development. This study also found out that the public universities are more concerned with environment & society services than the private universities. On the other hand, the private universities are more

concerned with both graduates' continued-education & following up the graduates than the public universities. In addition, both public and private universities are equal when it comes to the preparation for national and international accreditation, as well as when it comes to improving the quality of education itself.

4. DOCUMENTATION OF THE CURRENT SITUATION OF PRACTICING ARCHITECTURE IN EGYPT

Survey forms have been designed and published among the registered practitioners of architecture in Egypt with their different age group and different categories. The questions of these survey forms have been designed based on the already done theoretical study in the preparation of this research in order to reach real results which lead to achieve this study objective.

4.1. Survey Form Design

Two survey forms have been designed for the practitioners of architecture in Egypt. The first survey form is for the employees and the second survey form is for the employers. Both survey forms have common questions with each other, and each of them has a different group of questions addressing the survey targeted community. In the following sections the objective of every question will be explained, and the answer will be analyzed.

4.2. Collecting Data and Analyzing Results

The data of this study have been collected through the delivered hard-copies for the practitioners, and through the electronic data-base that has been created online in order to make the distribution of forms and the collection of data easier and more effective. The online data-base is accessible through the following URL:

https://docs.google.com/forms/d/151Cf1aWuNMZ_o1q1wJzb4Cu1YUSOKH5I3Sjy6Mheqc/viewform

Table (3) states the numbers of distributed forms, the numbers of collected-back forms, and the percentages of responses from the architecture practitioners' community.

Table 3 Percentage of Response for Different Age Segments

Age groups (in years)	Count of distributed forms	Count of collected forms	Percentage of response
20 – 30	131	114	87.0%
30 – 40	69	58	84.1%
40 – 50	24	16	66.7%
50 – 60	9	4	44.4%
60 – 70	6	1	16.7%
Total	239	193	80.75%

(Source: By Researcher)

4.2.1. The Purpose of Choosing Architecture as a Field of Studying

Objective of question: measuring architects’ awareness of the nature of practicing this career before choosing to join this community.

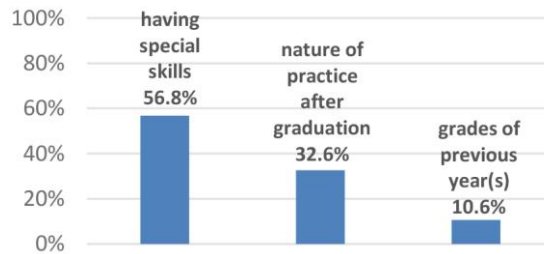


Fig. 6 Percentage of answers about purpose of choosing architecture as study field (Source: By Researcher)

Analysis of answers: the percentage of those who choose the department of architecture because of the nature of practicing it after graduation is very low; which indicates that the awareness of the professional practice is minimal.

4.2.2. Perception of Architects’ Career

Objective of question: evaluating the conviction of the needed and required skills and techniques for being an architect.

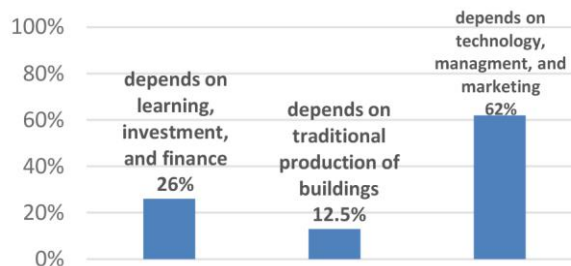


Fig. 7 Percentage of answers about the perception of architects’ career (Source: By Researcher)

Analysis of answers: large number of the surveyed practitioners believe that the architectural career depends on learning and investment indicates the lack of believing in the importance of both continued-education and skills’ improving. Some of the surveyed practitioners believe that architects’ career depends on traditional production of buildings, which indicate the deterioration in the general awareness of practicing architecture in Egypt.

4.2.3. Knowledge Level of the Fresh-Graduate Architects

Objective of question: measuring the current situation of the fresh-graduate architects' level of knowledge and the gained skills for both public and private universities' graduates.

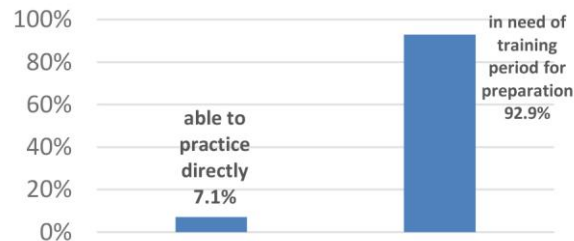


Fig. 8 Percentage of answers about the knowledge level of fresh-graduate architects
(Source: By Researcher)

Analysis of answers: choosing of the importance of the training period for fresh-graduates to prepare them for the professional practice from almost the majority of the survey community confirms the importance of activating the syndicate's systems of training and evaluation.

4.2.4. Importance of the Training Period Before Giving the Title of an Architect

Objective of question: investigating if the architects in Egypt will or will not accept applying regulations of examining the graduates after an obligatory training period before being certified as architects.

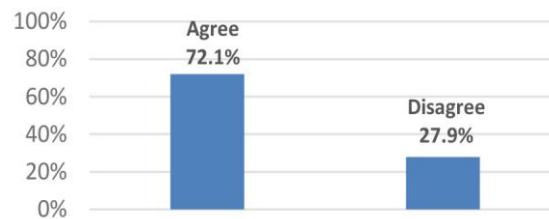


Fig. 9 Percentage of answers about the importance of the training period
(Source: By Researcher)

Analysis of answers: most of surveyed community admitted the importance of the training period and qualification exams after graduation; which means that if the needed mechanisms have been created to make these systems effective, the architecture community in Egypt will go for it with satisfaction.

4.2.5. *The Current Situation of Architectural Education in Egypt*

Objective of question: measuring how appropriate architectural education in is Egypt, and figuring out Egypt’s position compared with the international developments.

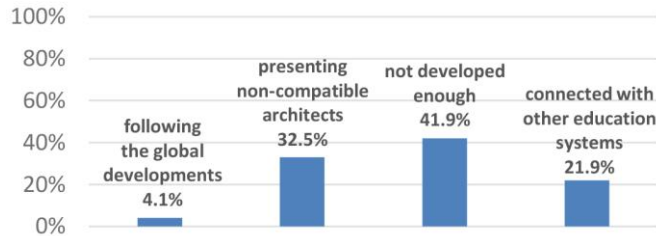


Fig. 10 Percentage of answers about the current situation of architectural education (Source: By Researcher)

Analysis of answers: the majority agreed that the Egyptian architectural education currently is not developed enough and produces architects with less-needed-qualifications. And also the survey community gave only 4.1% for the following of global developments and international lead; which indicates that there are real problems regarding practicing architecture in Egypt; which matches this study hypothesis.

4.2.6. *Problems of Practicing Architecture in Egypt*

Objective of question: investigating the opinions of the architectural community in Egypt about the existence of some problems facing the architectural career; for the sake of testing the hypothesis of the present study.

Analysis of answers: 100% of the survey community agreed that the architectural career in Egypt is actually facing some serious problems.

4.2.7. *The Current Mechanisms for Supporting the Continued-Education of Architecture Graduates in Egypt*

Objective of question: measuring the effectiveness of currently used mechanisms for supporting the continued-education of fresh-graduate architects and figuring out the common problems if any.

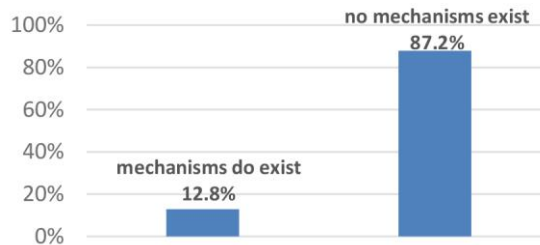


Fig. 11 Percentage of answers about the current mechanisms of supporting continued-education (Source: By Researcher)

Analysis of answers: the majority of survey community stated that there is lack of mechanisms supporting the continued-education of fresh-graduate architects in Egypt. Also, the current mechanisms are not effective enough because of existence of some problems. These responses affect directly the recommendations at the end of this study.

4.2.8. The Effectiveness of the Regulations Controlling the Architectural Career in Egypt

Objective of question: measuring the effectiveness of the currently existing mechanisms used for controlling the professional practice of architectural career in Egypt.

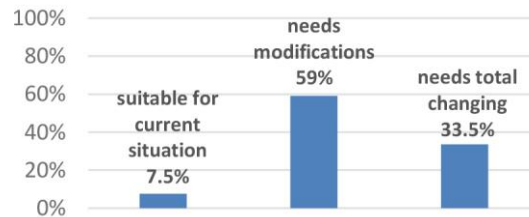


Fig. 12 Percentage of answers about the affectivity of current regulations
(Source: By Researcher)

Analysis of answers: the survey community is divided about the current organizing regulations between being insufficient and in need of additions & modifications and being in need of total changing. But large percentage goes for the first point -needs modifications-; and this indicates that this study's hypothesis is valid.

4.2.9. The Fresh-Graduate Architects

Objective of Question: measuring how much employers trust the graduates from architecture departments in Egypt.

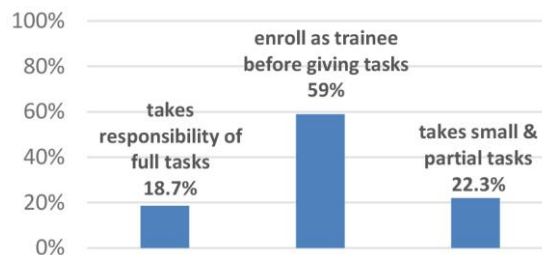


Fig. 13 Percentage of answers about the trust in fresh-graduates
(Source: By Researcher)

Analysis of answers: the majority of the surveyed community agreed that the fresh-graduates must be trained first, and could take partial responsibility of tasks not full tasks; which indicates that this study's hypothesis about the architectural education -being not enough to build a professional architectural character- is valid for architecture-graduates in Egypt.

5. THE GAP IN PRACTICING THE ARCHITECTURAL CAREER IN EGYPT

During the visit of professors of engineering -with different majors including Architectural Engineering- from University of Cincinnati to Future University in Egypt, some of them had been interviewed to investigate their opinions about the professional practice of engineering in Egypt especially architectural engineering. Architectural engineering prof. Zarka stated that: “applying the system of sub-majors inside architecture departments is one of the most important factors affecting the leading of the American practice of architecture among the whole world”. Prof. Zarka added that: “In USA you will never find one architect doing all the drawings and designs of one project by his own only like what is happening in Egypt”. Prof. Zarka mentioned one of the used mechanisms in architecture schools of USA which is having students choose a specific sub-major of architecture to be applied in their graduation projects, and involving graduation projects’ students in team-work groups to create one complete graduation project for each group. At the end of the interview, prof. Zarka notified that all architecture schools in USA have to be accredited from the National Architectural Accreditation Board (NAAB); which make them follow the NAAB’s stated regulations, such as: (Environment & society services, Practical-training for students & continued-education for graduates, Connecting graduates with newcomer students for the sake of experiences exchange, and Connecting the market & industry with departments in order to produce highly qualified graduates. (6) (8) (9) (13)

This study summed up the problems of practicing architecture in Egypt in the following points:

- Getting the license to practice architecture is a matter of being graduated and paying the fees, and this allows some of those who are not suitable for this career to join it.
- The continued-education is not obligatory, and being only a source of money for the syndicate.
- The classifications of architects in Egypt depends only on years of practice regardless of the qualifications level.
- The cooperation between the Egyptian Engineers Syndicate and (universities, public organizations, training centers) is weak and not effective.
- The syndicate has no control and does not have any rights to withdraw the educational license from any educational institute in Egypt; that is why the syndicate has no control on the graduates of architecture departments.
- Most of universities in Egypt take good care of their students in the undergraduate levels, but have no role with their graduates regarding continued-education and skills developments.

6. MECHANISMS OF DEVELOPING AND IMPROVING THE PRACTICE OF ARCHITECTURE IN EGYPT

This study is suggesting some mechanisms based on the data analysis of the collected information. These mechanisms will affect improving the practice of architecture in Egypt. These mechanisms are the following:

- Increase the effective communication between the syndicate, the universities, the public organizations, the ministries, the national entities, ...etc.
- Increase the public awareness of community about the importance of architecture and its value in serving the surrounding community and environment.

- Increase the awareness of the nature of practicing architecture in high schools before joining the architectural community.
- Increase the support of continued-education and make it obligatory.
- Activate the training programs' system for fresh-graduates to prepare them for the professional practice as a basic requirement to get the practicing license.
- Improve the curriculums and the mechanisms of architectural education to follow the lead of global developments.
- Make the license renewal a periodical process based on evaluating the improvement of professional skills.
- Modify and activate the regulations of the Egyptian Engineers Syndicate regarding the support of practicing architecture in Egypt.
- Activate the classifications of architects through the years of practice based on evaluation tests of their professional level.
- Support the private offices and companies and encourage them to improve the skills of architects who are working for them.

7. RECOMMENDATIONS

7.1. Recommendations for Architecture's Practitioners

- Consider continued-education as a basic process, and never stop learning after graduation.
- Publish the culture of continued-education among colleagues and connections.
- Participate in the architectural competitions.
- Follow up the architectural scientific magazines and publications.
- Try to attend the meetings of administrative board of architecture division in syndicates in order to effectively develop practice regulations.
- Keep connections with university through training services and experience exchange with students by visiting and communicating with the university after graduation.

7.2. Recommendations for the Egyptian Engineers Syndicate

- Give the practice license only after passing well-designed evaluation tests.
- Make the license renewal a periodical process based on evaluating the improvement of professional skills to ensure practitioners' self-learning and continued-education which will positively affect the architecture itself.
- Make an active and effective link between syndicate and universities to improve quality of the graduates and to match the market needs.
- Dominate the syndicate on practicing architecture in Egypt through activating the current regulations after modifying them.
- Organize the practice of private architectural offices and companies and check them periodically.
- Consider the training and continued education as a basic process not just as a source of money.

7.3. Recommendations for Egyptian Executive Entities (Ministry of higher education, Prime minister office, etc)

- Create laws and regulations to guarantee architects' rights (salaries, working environments, career path, etc) to encourage them to do their best in improving the quality of built-up environment which we live in.
- Prepare a strategic plan for training and continued education of graduates.
- Encourage the employers to hire only the certified architects by Egyptian Engineers Syndicate which guarantee their qualifications.
- Consider the opinions of syndicate's board regarding giving or withdrawing educational licenses from universities or any other institutes.

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ULOGA GRADITELJSKOG NASLEDJA U PLANIRANJU I RAZVOJU EVROCENTRIČNIH URBANIH PODRUČJA U 20. VEKU

Ova studija se bavi procenom trenutno korišćenih metoda za poboljšanje veština kontinuiranog obrazovanja na odsecima za arhitektonski inženjering, kao i na arhitektonskom tržištu u Egiptu. Glavna hipoteza ove studije je da: koncept kontinuiranog obrazovanja u arhitekturi nije prisutan u Egiptu, trenutni mehanizmi podrške kontinuiranom obrazovanju nisu ni aktivni ni efikasni, a arhitektonsko obrazovanje nije samo dovoljno za izgradnju profesionalnog arhitektonskog karaktera .

Obrasci ankete su distribuirani inženjerima iz prakse, a obavljani su i intervjui sa zainteresovanim stranama radi procene uloge univerziteta u Egiptu u podršci razvoju veština diplomaca. Studija je uporedila prikupljene podatke o ovim univerzitetima kroz tri glavne tačke: kontinuirano obrazovanje, praćenje diplomaca i usluge zaštite životne sredine i zajednice.

Na kraju, ova studija predlaže neke mehanizme zasnovane na analizi podataka prikupljenih informacija. Ovi mehanizmi će pomoći u poboljšanju prakse arhitekture u Egiptu. Pored toga, studija je predložila neke preporuke u vezi sa praktikovanjem arhitekture u Egiptu inženjera arhitekture, Egipatskog inženjerskog sindikata i egipatske izvršne vlasti kao što su Ministarstvo visokog obrazovanja i kancelarija premijera. Ove preporuke će biti dostavljene kao i kopija ovog istraživanja svim zainteresovanim stranama kako bi se uzele u obzir.

Ključne reči: *Kontinuirano obrazovanje, samoučenje, arhitektonsko obrazovanje, razvoj veština, arhitektonska karijera, profesionalna praksa*