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COMPATABILITY BETWEEN ARCHITECTURAL EDUCATION AND PROFESSIONAL PRACTICEIN EGYPT

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COMPATABILITY BETWEEN ARCHITECTURAL EDUCATION AND PROFESSIONAL PRACTICEIN EGYPT

Abstract

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Keywords

Architecture Education, Professional practice, laws, regulations.

COMPATIBILITY BETWEEN ARCHITECTURAL EDUCATION AND PROFESSIONAL PRACTICE IN EGYPT

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ABSTRACT

The impact of education on countries urbanism is clear as much as culture, economy, and politics are. In Egypt, although urban education is usually appended by architectural education; the current educational methods, and content in architecture schools do not grant the needed convergence between educational institutions and the needs of professional practice regulations.

This paper focuses on curricula of architectural education for under graduate engineering programs in Egypt. It analyzes various programs of architecture in higher education referring to the practice regulations. As well as investigating if they are reflected clearly on the architecture education or not. Case studies will include four main Egyptian undergraduate architectural engineering programs. The study uses the qualitative approach in which descriptive analysis of different disciplines ratios, and study hours taught to students during undergraduate phase is done. As the qualitative approach in the exposure to the rules and regulations presenting Egyptian professional practice.

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1. INTRODUCTION

The field of architecture education has been developed along decades. There was always a contribution added by the field of education(Mostafa, 2014). The city forms and patterns were changing by architects according to people's needs. Current educational methods, tools and techniques in architecture engineering programs do not grant the needed convergence between academia and the professional practice needs(Yousry & Mekawy, 1999). This paper is trying to investigate if the current architectural practice regulations and education are compatible to each other or not. It focuses on architectural education for under graduate engineering programs in Egypt. The main objective is to analyze the current situation of architectural education at engineering schools to be more compatible starting with literature review about architectural

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education in Egypt. Followed by the different elements of the educational process generally, and then it focuses on the point of curricula studied by architectural student during undergraduate stage.

The methodology used consists of three stages. The first stage is a qualitative analysis of current regulations of architecture and urban profession practice issued by Egyptian Engineering Syndicate. Second stage is through quantitative analysis of curricula bylaws in different case studies. It investigates the current situation of different programs of architectural engineering in Egypt using both detailed courses and their study hours/ weeks and different discipline percentages. An accumulative comparison between different examples is held for all study with a special attention to each of urban and architecture based courses. The last stage is testing compatibility between different programs and regulations of practice. Through comparative analysis between regulations of practice and educational curricula. The discussion ends with proposing two alternatives to increase compatibility between real practice and education.

2. LITERATURE REVIEW

Literature in the field of architectural education tends to improve the quality of education is huge and frequent. In his book "*New trends in Architectural education"* A. Salama addressed the issue of educational process development Salama, A. (1995). It focused on teaching methodologies and problems related to design studio and how to induce creativity of architecture student. A.yosry and H. Mekkawy addressed the gap between what is taught on planning education and skills needed in the real practice(Yousry & Mekawy, 1999).

The way of how architect thinks is also very important, and how they grow towards a level that is required of the professional world(Mostafa & Mostafa, 2010). Another important factor was about the role of university. Standard definitions of a university as for example "An institution of higher learning providing facilities for teaching and research and authorized to grant academic degrees,"(Frank, 2005). In a trail to reach a basic international architectural education program, karim kesseba proposed an accredited program which include more applications to environmental and information technologies tested by both RIBA and UIA accreditation matrices(Kseba, 2004).

3. PROFESSIONAL PRACTICE LAW AND REGULATIONS

According to Egyptian law (Egptian government, 1974) Egyptian Engineering Syndicate is the organization having the authority of organizing all engineering professions including architecture. The regulations of architecture engineering branch, professional practice regulations, where first article stated that the role of architect includes eight main points.(Syndicate, 2013) Starting with Architectural design development, Working drawing, and conducting contracts, Tender documents and implementation supervision. Secondly, rural planning and city planning, designing land usage plans and land budget, all issues related to urban planning, roads and traffic design. Third role is related to infrastructures, urban design, interior design, acoustics and illumination.

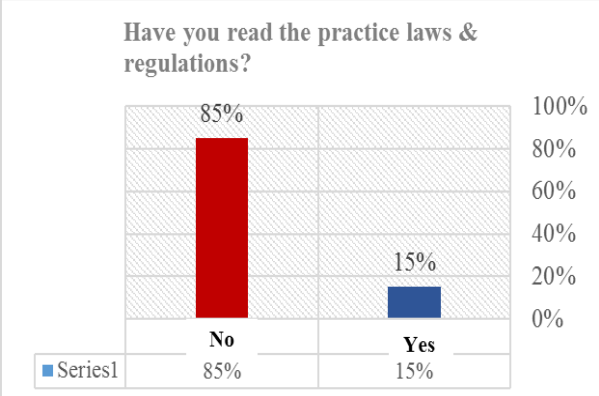

Fig. 1 Percentage of professionals read the practice regulations
Reference: researcher 2014

The role of architect according to Egyptian Syndicate of Engineering professions include all duties related to the built environment (Syndicate, 2013).without referring to neither what the architect has studied during his undergraduate studies- the authorized degree to join the Syndicate, and get professional practice license, nor his experiences in these missions.

In questionnaire conducted on fresh graduates and employers in the field of architecture in Egypt, a question was asked about being aware with professional practice regulations; it was found that 85 % of random sample have never read the regulations shown in Figure 1 (El khouly, 2014). This percentage reflect clearly the relationship between regulations and real profession field, in which graduates and employers work together accordingly. The next point will discuss the compatibility between Egyptian architectural education and professional practice regulations

4. ARCHITECTURAL EDUCATION IN EGYPT

The real role of education is to fulfill needs and requirements needed by community it serves(Salama & O'Reilly, 2002). Architectural education in Egypt is mainly presented as an engineering program in different universities. Although each program has its own weights of courses, they are almost all architectural engineering programs. Even Urban education programs are appended by architectural engineering schools except the two cases of faculty of regional and urban planning, Cairo University and the urban planning department, faculty of engineering, Azhar University (Yousry & Mekawy, 1999).

The practice regulations are encouraging generalization of the urban field, where the architect role includes almost all the duties of an urban planner, landscape architect, urban designer, and interior designer as well.(Syndicate, 2013) While the Egyptian laws and regulations is not considering urban planning as an independent profession. The education tend to be very specific and specialized.(Safey Eldeen, 2000)

4.1 History of Architectural Education in Egypt

Internationally, the architecture education started in early beginning of 19th century like in France where there was the Beaux-Art stablished on 1803,then Bauhaus in Germany 1906 (Boyer & Mitgang, 1996). By this era architecture, urban design and planning belong to same profession, where architects like Le Corbusier and Frank Lloyd Wright, had theories in both architecture and city planning. In Egypt the architectural education started on 1858 when "Elmohandes khana" Faculty of Engineering, king Fouad University currently (Cairo University) (CUFE, 2014). During the first half of 20th century there was no specialized education for planning separated from architectural education. While urban education was separated from architectural issues on 1964 when 1st Department of Urban Planning was established in the faculty of engineering, Azhar University. Today Egypt has almost 17 departments of architecture in addition to private sector education(El khouly, 2014).

4.2 An Overview of Architectural Education in Egypt

When analyzing different undergraduate programs of architecture education in Egypt, we can identify three main types of bachelor degrees are offered. These three types are: specialized faculties, separate departments in same faculty, and majors in the same department. Those programs could be presented through three universities- Cairo University, Ain-shams University, and Al.Azhar University- having six different under graduate programs. (Figure1). All of these programs produces junior architects who are supposed to work in the field of architecture and urbanism.(El khouly, 2014). All architects having same rights and duties.

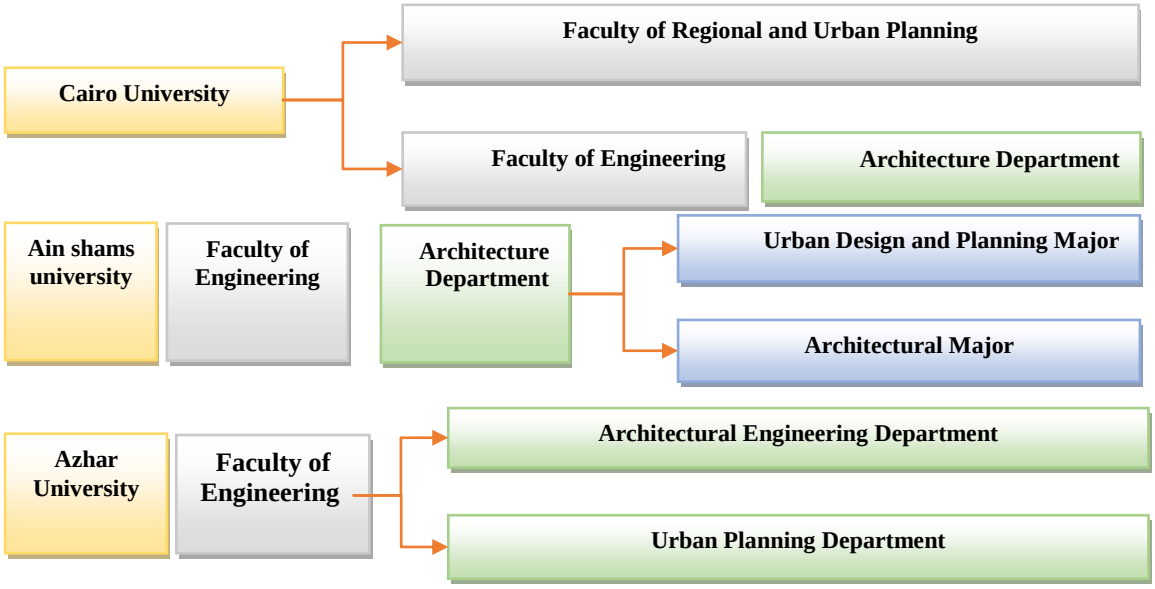

Fig. 2 Main modules of Egyptian urban and architecture education

4.3 Educational System Components:

Despite focusing on the curricula in architectural education in Egypt, it's very important to know that the curriculum is one main components in the educational system however, it is not the only component to deal with in the process of development. The educational system in Egypt consists of four main components which are; students, professors, technical supplements, in addition to curricula shown in (Figure3)

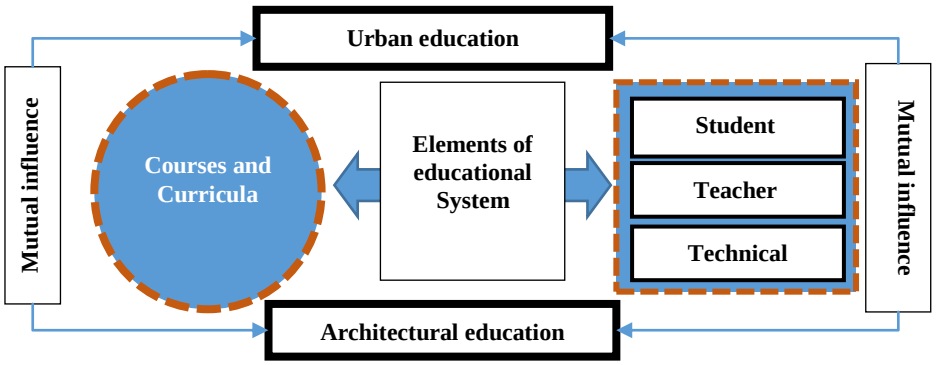

Fig. 3 Showing Elements of educational system

5. CHALLENGES FACING ARCHITECTS IN EGYPT

As all of developing countries, rapid urbanization has forced planners to respond to escalating demand for housing, infrastructure and services – from both formal and informal sectors(UN Habitat, 2009). One of main problems in Egyptian community is fair cooperation among different organizations what makes the role of architect is miss defined(El khouly, 2014). The lake of coordination between syndicate and educational institutions and real profession requirement(Kseba, 2004). The role of architect according to Egyptian syndicate of engineering professions is including all duties related to the built environment (Syndicate, 2013). Without

referring to neither what the architect has studied during his undergraduate studies- the authorized degree to join syndicate, and get professional practice silence-, nor his experiences in these missions. What makes architecture education has to deal with a wide range of sciences related to the built environment (as shown in Fig. 4).

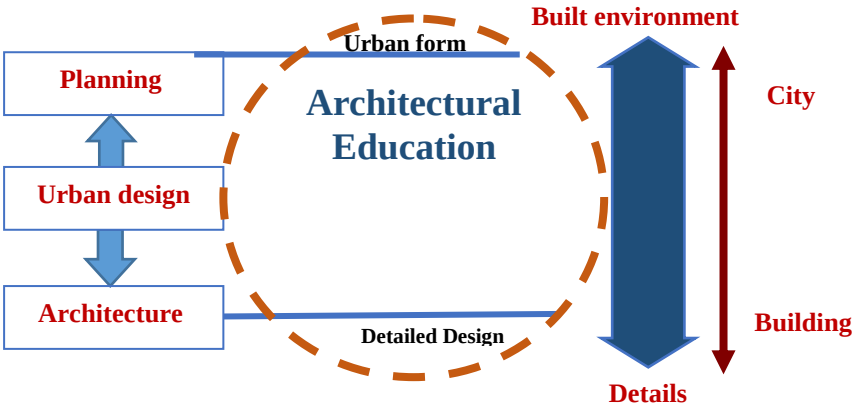

Fig. 4 Showing different scales of architectural education.

Another problem is that the laws and regulations are not supporting the specialization strategies of education. For example in the Faculty of Regional and Urban Planning which includes 8 different specialized majors in planning. Those students will work by the end of 5 years study as architects, no matter they studied almost nothing about architecture.

Another issue is the sequence of process itself. In most of developed countries to be an architect you have to go through the **"Three Es"** presenting, *Education*, *Experience*, and ending with *Examination*(NCARB, 2015). This exam ensures the quality of graduate, no matter what is his educational background. In United Kingdom the same three stages are presented but in a different way as examination is a main part in the different stages, it takes around 7 years to be a junior architect(Chappell & Willis. Andrew, 2010). In Egypt, student starts with undergraduate studies, bachelor degree, then get registered in the Syndicate directly without any need to go through real practice experience, and no examination needed to ensure candidate fulfillment to his/her role as an Egyptian architect.

The main common aim of each of architecture and urban planning is making cities better places to live in. The idea of generalization verses specialization has always been argumentative as sciences tend to be specialized while real Egyptian practice is going towards generalization.

6. CASE STUDIES ANALYSIS

The journey of architecture or urban planning schools differs, yet the end product seems to be the same. In this section of the research detailed curriculum studied by student during 4 years of architectural education, in addition to a preparatory year will be reviewed as students study basic sciences of engineering.

The descriptive analysis divides the courses of undergraduate architectural curriculum into four main groups authorized by Egyptian Supreme Council of Universities(SCU, 2007).As well as the Electives and Basic sciences. These four disciplines are:

1. Architecture design, history and theories.
2. Building technology, structure systems.
3. Urban planning.
4. Environmental design and planning.

The analysis will include four programs of architectural education which give a bachelor degree in architectural engineering, authorized by Egyptian Supreme Council of Universities. These four programs are: Cairo University, Faculty of Engineering, department of architectural engineering. , Azhar University, faculty of engineering, Architecture department. , and two majors of Ain Shams University in the Faculty of Engineering, Architecture Department.

6.1 Cairo University, Faculty of Engineering, Department of Architectural Education

The program of architectural engineering, Cairo University has started in the 19th century. In this program, students join Faculty of Engineering starting with a general preparatory year in which the study 60 hours of basic sciences. After this preparatory year students join the department of architecture for four other years (eight semesters) ended by doing a graduation project in the last semesters. In this program, students study 102 hours of architectural based courses, 61 hours of building technologies, 31hours of core urban courses, 10 hours of environmental courses beside what is taught in all previous disciplines, in addition to 31 hours of elective courses. They could choose from interior design, landscape architecture, community developments and more technological and environmental oriented courses. All these disciplines accumulate a total of 300 hours in five years. A bachelor of architectural engineering (with no majors) is obtained through this program. (Table1)

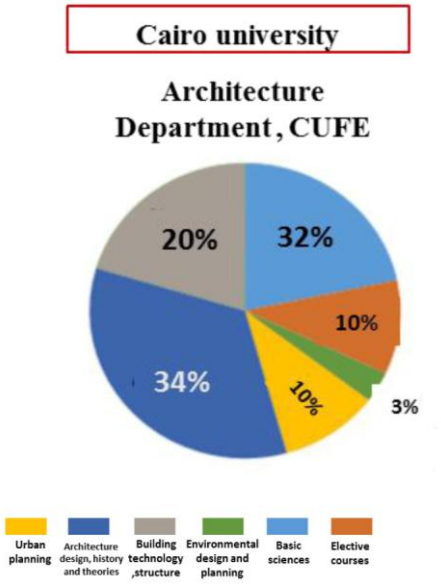

Fig. 5 Showing percentages of disciplines studied in CUFE, Arch. Dep.

6.2 Azhar University, Faculty of Engineering, Architecture Department

Al Azhar University has been established in 1964. It represents a special case of education as in addition to Architectural sciences, students study extra course of 26 hours in religion and 8 hours of languages are also added to the 60 hours of basic sciences. The students also join the preparatory year of faculty of engineering and then they can join either department of Architectural Engineering, or the Department of Urban Planning Engineering, each of them gives a bachelor degree in engineering, but in different disciplines.

It is very important to notice that both bachelor degrees give the graduate the right to join Egyptian Engineering Syndicate in the same specialization of architecture engineering.(Azhar, 2015).

In the Architecture Department students study 96 hours of architecture and another 96 of building technology courses, in addition to 23

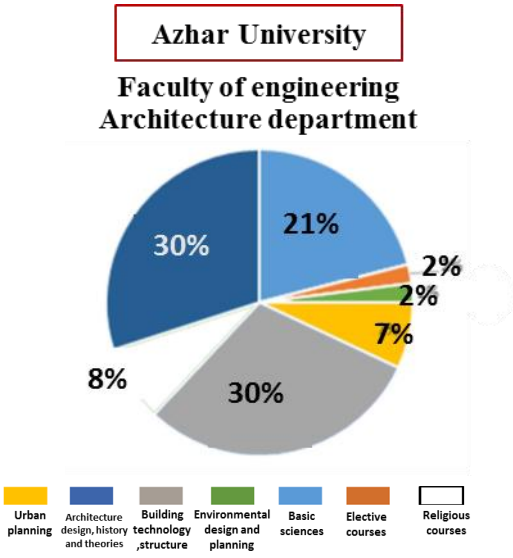

Fig. 6 Showing percentages of disciplines studied in Alazhar Univ., Arch. Dep.

hours of urban planning courses, 6 hours electives and 7 hours environmental courses. (Table 2) percentages shown in Fig.6

6.3 Ain Shams University, Faculty of Engineering, Architecture Department

Ain Shams university-Ibrahim basha, historically-was established as a school in 1839, and then developed through some phases(ASUENG, 2015). Department of Architectural Engineering started in 1950 with architecture major only. Then in 1986, the major of urban planning and design was also rewarded. Students enter the faculty of engineering for five years, first year is a preparatory year of basic sciences like each of previous two cases. After that students who join architecture department attend 2 years of basic architecture sciences. By the third year student is asked to join one of 2 majors mentioned before for another 2years. The graduation project is on the major field of study.

During preparatory year, all students study 60 hours of basic sciences, before they join architecture department. In the first two years of architecture, all students study 57 hours of architectural courses, 43 hours of building technology, 8 hours of planning cores, 12 hours of environmental courses and no electives courses at all. After this basic architecture study period, the architecture majors continue to complete a total amount of 111 hours architecture cores, 80 hours building technology, 16 hours of elective courses, 19 hours of urban planning. (Table 3), percentages shown in Fig.7.

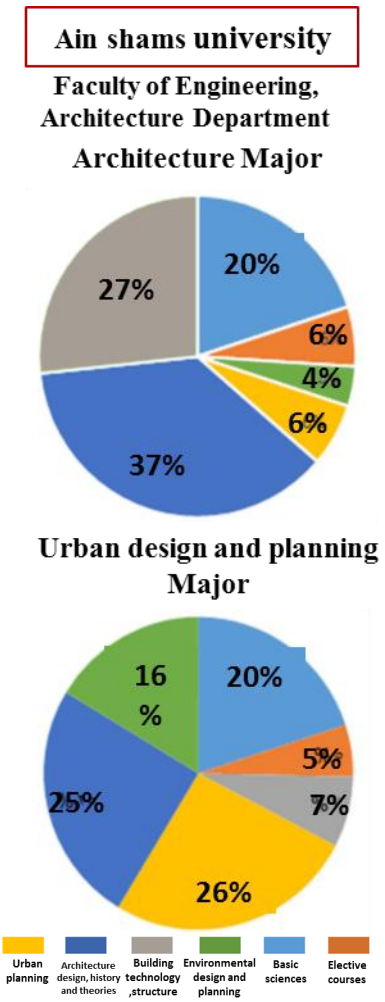

Fig7: showing percentages of disciplines studied in ASENG. Arch. Dep.

In urban planning and design major, students complete 75 hours of architecture courses, 49 hours of building technology, 78 hours of planning cores, 16 hours electives, and 22 environmental courses. Students finish 300 hours of both two majors; to get a bachelor degree of architectural engineering, with a major of architecture or urban planning and design. (Table 4), percentages shown in Fig.8.

All of these programs aim to present a good architect who is able to deal with real profession, despite the great difference found in core curriculum offered by each of them. (Table5) offers an accumulative comparison between the four programs.

Table 1: Cairo University, faculty of Engineering Architecture department.
Reference: Author from undergraduate's by-laws courses lists, Cairo University.

Curriculum disciplines	Courses	Hours/week					
		Prep	1st	2nd	3rd	4th	Total
Architecture design, history and theories	Architectural design		12	12	12	8	44
	Graduation project					15	15
	History and theories of architecture		8	7	4	4	23
	Visual skills and studies		12	4			16
	Humanities			4			4
Total			32	27	16	27	102
Building technology, structure systems	Architectural building construction and materials		9	8			17
	Working drawings and execution design				12	6	18
	Construction theory		5				5
	Materials		5				5
	surveying		4				4
	R.C and steel structure			8			8
	Foundations and soil mechanics				4		4
Total			23	16	16	6	61
Urban planning courses	Urban planning			0	0	6	6
	City planning and history			4	6	0	10
	Urban design and housing			3	6	6	15
Total			0	7	12	12	31
Environmental design and planning	Environmental control			10			10
Total			0	10	0	0	10
Electives	Elective 1				4		4
	Elective 2				4		4
	Elective 3				4		4
	Elective 4				4		4
	Elective 5					5	5
	Elective 6					5	5
	Elective 7					5	5
Total		0	0	0	16	15	31
Basic sciences	Basic sciences	60					60
	Math and statistics		5				5
Total		60	5	0	0	0	65
Accumulative		60	60	60	60	60	300

Table 2: Azhar University, faculty of Engineering Architecture department
Reference: Author from undergraduate's by-laws courses lists, Azhar University

Curriculum disciplines	Courses	Hours/week					
		Prep	1st	2nd	3rd	4th	Total
Architecture design, history and theories	Architecture drawings		5				5
	Theories		3	3	3	3	12
	Computer applications in architecture		5				5
	History of arts and architecture		4				4
	Shades and perspective		8				8
	Architectural Design		10	10	11	8	39
	History of Islamic architecture			2			2
	Architecture and humanities				3		3
	Graduation project					16	16
Total			35	17	17	27	96
Building technology, structure systems	Introduction to architectural building		8				8
	Surveying		4				4
	Construction theory and steel structure		5	6			11
	Materials		4				4
	Architectural building			10			10
	Working drawing			11	10	5	26
	Reinforced concrete			6	6		12
	Soil mechanics and foundations				6		6
	Sanitary Engineering				4		4
	Architectural regulations					2	2
	Quantities and specifications					6	6
	Project management					3	3
Total			21	33	26	16	96
Urban planning	history						
	Introduction to city planning				6		6
	City planning				6		6
	Urban planning					5	5
	Housing					6	6
Total			0	0	12	11	23
Environmental design and planning	Environmental control			2			2
	Acoustics and illumination			2			2
	Air conditioning				3		3
Total			0	4	3	0	7
Electives	Elective course 1					3	3
	Elective course 2					3	3
Total		0	0	0	0	6	6
Religious courses	Religious courses	8	6	6	6		26
Total		8	6	6	6	0	26
Basic sciences	Basic sciences	60	4	4			68
Total		60	4	4	0	0	68
Accumulative		68	66	64	64	60	322

Table 3: Ain shams University, faculty of Engineering Architecture Dep. Major urban planning
Reference: Author from undergraduate's by-laws courses lists, Ain shams University.

Curriculum disciplines	Courses	Hours/week					
		Prep.	1st	2nd	3rd	4th	Total
Architecture design, history and theories	Architectural Design		7	16	12	6	41
	History and Theory of Architecture			4			4
	Graduation Project		8	8			16
	Computer applications		7				7
	Architectural Design		7				7
Total			29	28	12	6	75
Building technology, structure systems	Building construction and Finishing materials		10				10
	working Drawings			12			12
	surveying		4				4
	structure theory		5				5
	Foundations		6				6
	Concrete structure			6			6
	Legislation and contracts				3		3
	Infrastructure and facilities					3	3
Total			25	18	3	3	49
Urban planning	City planning and housing				11		11
	History and theories of planning			4			4
	Urban landscape			4			4
	Urban Design				14	10	24
	GIS				4		4
	Landscape				4		4
	Roads and Traffic Planning				4		4
	Urban planning					7	7
	Graduation project					16	16
Total			0	8	37	33	78
Environmental design and planning	Environmental control		2				2
	acoustics and illumination			2			2
	Shades and perspective		4				4
	Environmental design & planning					6	6
	Environmental studies				4		4
	Technical insulations			4			4
Total			6	6	4	6	22
Elective courses	Elective course 1				4		4
	Elective course 2					4	4
	Elective course 3					4	4
	Elective course 4					4	4
Total			0	0	4	12	16
Basic sciences	Basic sciences	60					60
Total		60	0	0	0	0	60
Accumulative		60	60	60	60	60	300

Table 4: Ain shams University, faculty of Engineering Architecture Dep Major Architecture
Reference: Author from undergraduate's by-laws courses lists, Ain shams University

Curriculum disciplines	Courses	Hours/ week					
		Prep.	1st	2nd	3rd	4th	Total
Architecture design, history and theories	Architectural Design		7	16	16	10	41
	History and Theory of Architecture		8	8	8		24
	Architectural presentation and drawing					16	16
	Computer applications			4	4		8
	Principles of Visual composition architectural Des.		7				7
	Graduation Project		7				7
Total			29	28	28	26	111
Building technology, structure systems	Building construction and finishing materials		10				10
	Execution design			12			12
	Working drawings				12	8	20
	Surveying		4				4
	Construction theories		5				5
	Foundations		6				6
	Projects Management and feasibility studies					3	3
	Report writing					2	2
	Laws and practice regulations					3	3
	Steel structure				4		4
	Concreate structure			6			6
	Pills of quantities				5		5
Total			25	18	21	16	80
Urban planning	History and theories of urban planning			4			4
	Landscape			4			4
	Urban planning and design				5		5
	Housing					6	6
Total			0	8	5	6	19
Environmental design and planning	Environmental control		2				2
	acoustics and illumination		0	2			2
	Shades and perspective		4				4
	Technical insulations			4			4
Total			6	6	0	0	12
Electives	Elective 1				4		4
	Elective 2					4	4
	Elective 3					4	4
	Elective 4					4	4
Total			0	0	4	12	16
Basic sciences	Basic sciences	60					60
Total		60	0	0	0	0	60
Accumulative		60	60	60	60	60	300

Table 5: Accumulative Comparison between different case studies of architecture planning education in Egypt.
*Bold color represent maximum percent of disciplines offered in which program of case studies.

Curriculum disciplines	Departments of comparison			
	Cairo Arch Department	Ain Shams Arch	Arch. Azhar	Urban Planning Ain Shams
Architecture design, history and theories	102	111*	96	75
	34%	37%	30%	26%
Urban planning	31	19	23	78
	10%	6%	7%	25%
Environmental design and planning	10	12	7	22*
	3%	4%	2%	7%
Building technology ,structure systems	61	80	96*	49
	21%	27%	30%	16%
Total credits of core courses	204	222	222	224
Elective courses	31*	18	6	16
	10%	6%	2%	5%
Total credits of core courses	235	240	228	240
Basic Sciences	65	60	68*	60
	22%	20%	21%	20%
total credits of study program	300	300	296	300
Religious courses	0	0	26	0
	0%	0%	8%	0%
total credits of study program	300	300	322	300

It is found that CUFE offers the highest amount of elective courses, Architecture program of ASUENG offers the maximum amount of architectural courses, although it is almost equal to Cairo University .Al Azhar University architecture program offers the highest amount of building technology courses. While the maximum amount of environmental, and urban courses is in urban planning major, ASUENG. It is also noticed that it offers almost three equal portions of architectural sciences.

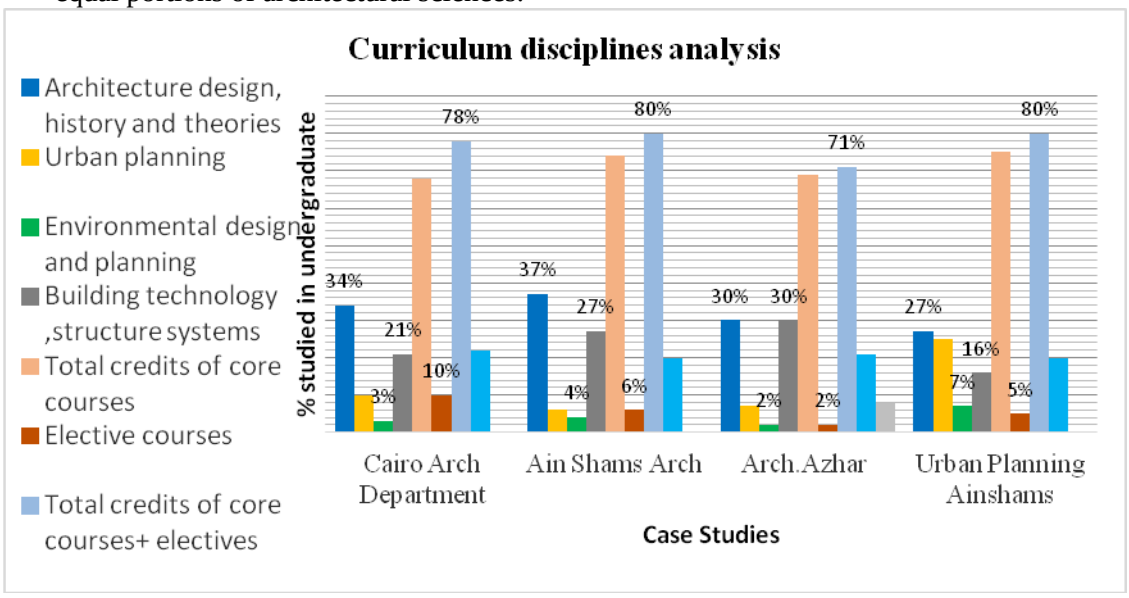

Fig . 8 Showing comparison between different percentages of architectural education branches

7. COMPATABILITY BETWEEN EDUCATION AND PROFESSIONAL PRACTICE REGULATIONS

Through the analysis of different curricula, it is obvious that even if the ratios of main disciplines are close to each other, the detailed course lists are showing that not all topics are addressed. It differs from one module to another. This observation is important to be considered during discussion of duties related to detailed structure and whether the graduate has studied courses related to different issues or not (Table 6). One main major problem is the balance between each of architecture and urban disciplines, which present 2 main cores in both architectural education and real profession needs.

Most of architectural undergraduate programs are not fulfilling basic requirements according to the Syndicate regulations. The most relatively program is urban planning major on architecture department Ain Shams University; in which student is almost studying equal portions of Main Disciplines.

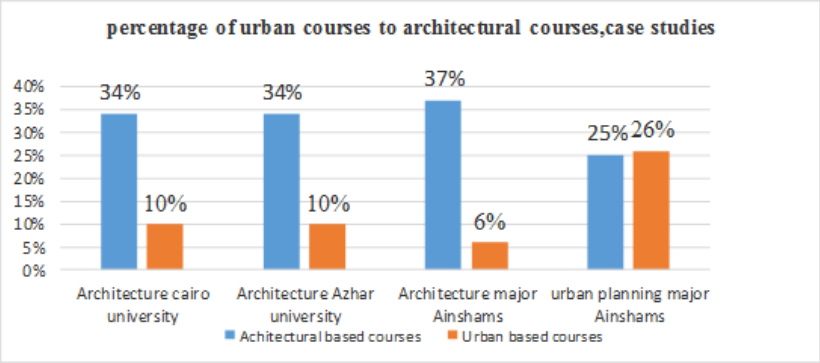

Fig. 9 Showing percentage of architecture core/ urban core studied by students in case studies of architecture programs

Table 6: Egyptian architectural education undergraduate programs - the duties entrusted to architect **

Points of comparison (according to syndicate regulations) Role of Architect	Cairo Uni. Faculty of Engineering Architecture Dep.	Azhar Uni. Faculty of Engineering Architecture Dep.	Ain shams Uni. Faculty of Engineering Architecture Dep. Arch. Major	Ain shams Uni. Faculty of Engineering Architecture Dep. Urban design and planning Major
Architectural design development	✓	✓	✓	✓
Working drawing	✓	✓	✓	✓
Conducting contracts and implementation supervision	X	✓	✓	✓
Tender documents and revising construction process	X	✓	✓	✓
Rural planning and city planning	✓	✓	X	✓
Designing land use plans and land budget	✓	✓		✓
All issues related to urban planning	X	X	X	✓
Roads and traffic design	X	X	X	✓
Governing built environment, Planning and Landscaping piazzas and roads.	✓	X	X	✓
Interior Design	X	X	X	X
Acoustics and illumination in public buildings	✓	✓	✓	✓
Manufacture of construction materials, precast buildings	X	X	X	X
Building and construction Previews and technical reports	X	✓	✓	✓

***This comparison is based on core courses taught to architecture student during undergraduate study, it ignores electives like landscape, interior design and environmental courses.*

Previous comparison shows that most compatible program to practice regulations is urban planning major in ASUENG in which most of architectural sciences are covered with same weights. Second most compatible program is Azhar University in which building technology courses are almost equal to architectural courses, their shortage in topics related to urban planning and urban design. Both architecture programs in CUFE and ASENG are almost equal in cores, but CUFE has an extra advantage of high elective content which may compensate the shortage in some roles.

The Syndicate gives the consultation degree, after 15 years of professional practice according to applicant architect's portfolio in one of nine disciplines. (El khouly, 2014)

This paper is not proposing one main alternative to overcome the problem of lack of compatibility between education and professional practice duties authorized by laws and regulations. The solution must include improvement of coordination between each of the Syndicate, educational institutions, and professional practice institutions which present real needs and demands of practice. Solution could be through:

Fig. 10 Supposed interrelationship between architectural education, regulations, and professional practice.

1- Setting an educational base, in which all graduates will be able to fulfill real practice needs.

   Like many of international systems of Architectural education programs, education is divided into two stages. The first stage is a primary stage in which all students study a number of core courses in order to satisfy role of architects, then a more specialized stage in which graduates choose their specific profession. Then architects take a period of practice in a certified institution, before entering practice exam which gives architect the authorization to practice as a junior.

2- Separating the roles of architects from roles of urban planners in the Syndicate regulations.

Another model is compatibility through specialization, as the role of architects and urban planners should be more specific not general as in the current Syndicate regulations. These roles should be reflecting their educational backgrounds.

8. CONCLUSIONS

A. Analysis shows that there is almost no one main curriculum studied in the different case studies, which makes registration exam very important to set a bench mark of qualified practitioner architect.
B. The need to set a primary stage of architectural education to be compatible to regulations.
C. Most of architects are not aware of regulations governing their profession in real practice, which reflects the lack of compatibility between The Syndicate in both of real practice and education.
D. Lack of horizontal disciplines in The Syndicate of Engineering related to architecture, or even internal disciplines, according to educational background.
E. The professional practice institutions have a role of enhancing the real professional experience to students.

F. Developing architectural education system must include the four main components of students, professor, technicalities, in addition to curricula, and should not only be quantitatively, but qualitatively as well through encouraging researches and content.
G. Compatibility between education and practice regulations could be achieved through offering educational programs that ensure the quality of professional practice through regulations. In addition to encouraging continuing education by relating it to authorities of architect.

REFERENCES

- ASUENG. (2015). Faculty of Engineering, Ain Shams University. Retrieved from http://portal.eng.asu.edu.eg
- Azhar. (2015). AlAzhar university, faculty of engineering. Retrieved from http://www.azhar.edu.eg/bfac/eng_cairo
- Boyer, E. L. ., & Mitgang, L. D. (1996). *Building Community: A New Future for Architecture Education and Practice. A Special Report.*
- Chappell, D., & Willis. Andrew. (2010). *The Architect in Practice* (10th editi). Wiley-Blackwell.
- CUFE. (2014). Faculty of Engineering Cairo University. Retrieved February 9, 2014, from http://eng.cu.edu.eg/en/CUFE/History/EngineeringEducationHistory/tabid/82/Default.aspx
- Egptian government. Law of establishing the Engineers Association (1974).
- El khouly, A. (2014). *The interrelationship between urbanism and architecture in architectural education*. cairo.
- Frank, A. (2005). Guest Editorial A Need for Fluency across Boundaries, *2*(3), 1–4.
- Kseba, K. (2004). *architectural education between theory and application.* Cairo.
- Mostafa, M. (2014). "Learning from Cairo: What Informal Settlements Can (and Should) Teach Us." *ArchDaily*. Retrieved from <http://www.archdaily.com/486294/closing-the-loop-learning-from-cairo-s-informal-settlements/>
- Mostafa, M., & Mostafa, H. (2010). HOW DO ARCHITECTS THINK ? LEARNING STYLES AND ARCHITECTURAL EDUCATION Magda Mostafa and Hoda Mostafa, *4*(November), 310–317.
- NCARB. (2015). National Council of Architectural Registration Boards - See more at: http://www.ncarb.org/#sthash.illSPz8I.dpuf. Retrieved from http://www.ncarb.org/Becoming-an-Architect/Architecture-Basics.aspx
- Safey Eldeen, H. (2000). URBAN DESIGN BETWEEN UNDERGRADUATE EDUCATION AND PROFESSIONAL PRACTICE.
- Salama, A. M., & O'Reilly, W. (2002). *Architectural education today: Cross-cultural perspectives.* ARTI-ARCH.
- SCU. (2007). Supreme Council of Universities. Retrieved from http://www.scu.eun.eg/wps/portal
- Syndicate, E. E. Egyptian Engineers Syndicate,Regulation of practicing the profession of architecture. (2013).
- UN Habitat. (2009). *PLANNING SUSTAINABLE CITIES: POLICY DIRECTIONS GLOBAL REPORT ON HUMAN SETTLEMENTS 2009.*
- Yousry, A., & Mekawy, H. (1999). PLANNING FOR THE REAL WORLD: Bridging the Gap Between Planning Education and Practice in Egypt. *FURP, Cairo*.