

Practical Training in Architectural Education: The Case of King Saud University

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(Received 4/12/1426H.; accepted for publication 24/5/1427H.)

Abstract. Many experts consider practical training as an integral part of architectural professional qualification. In many parts of the world, including the United States of America, training is required in two distinct stages of young architects' professional qualification. Students are required to participate in a short training period during the academic program, and they take part in a second longer period of training after graduation and before professional qualification. These required training periods are set by professional organizations such as the National Architectural Accreditation Board (NAAB) in the US and the Royal Institute of Architects (RIBA) in the UK.

Since most of the five architectural programs in Saudi Arabia were initially created in the western traditions of architectural education, the practical training requirements follow these traditions, but they only adopted the short training period in school training model (lasting from 8 to 16 weeks) and did not require the longer training period required before qualification by international professional organizations. Saudi architectural schools usually set out three main objectives for the practical training requirements; namely, the student is offered valuable field experience, he/she learns how to apply theoretical knowledge to practical problems, and the student is introduced to a diverse building industry where he/she can choose and be chosen by the institution or office with which he/she is most compatible. However, most of the studies, which have assessed architectural education programs in Saudi Arabia, describe the application of the practical training requirements as being inadequate and do not achieve the original objectives. Three main reasons are pointed out for the practical training requirement shortcomings namely, the duration of time is not sufficient, the guidelines for training are not clear, and supervision of the students is almost non-existent.

This paper discusses the historical background behind the practical training requirements in Saudi architecture schools. It highlights difficulties in current practices and then it presents a comparative analysis with other international practices. A field study was carried out at the College of Architecture and Planning at King Saud University (the oldest and largest architectural program in the country). The field study assessed the current requirements from the point of view of students, faculty members, and building industry practitioners, and it discusses and suggests methods for improving the current programs.

Introduction

The role of practical training in architectural education

Architecture is not a commodity measured by the result of a functioning product and taught by a task-oriented educational system with no time for liberal informative general courses. It simultaneously functions on several levels. It should be a response to the needs and aspirations of the student while providing for the contextual, emotional and symbolic needs of society. It should be an instrument of training and socializing new professionals, and it

should provide new modes of education that correspond to market and development demands (Crimson, 1999; Knult, 2005).

According to Mennier (1993), there are at least three stages to students' response to new information. These stages are awareness, accommodation and application. Education, or the awareness and accommodation stage, is the activity that suggests developing new responses in composing variations on the standard patterns, while training, the application stage, is the activity that suggests normative responses to standard patterns composed of an agreed and discreet set of phenomena. Society usually

emphasizes training in some fields and education in others according to the nature of the profession and its relationship to the public. For instance, societies prefer to emphasize training for police officers and fire fighters because they want to ensure the health, safety and welfare of its citizen; they prefer systematic reactions and cannot afford inappropriate actions in these fields.

The question is then which direction should be emphasized in the preparation of architects, is it training or education? Many argue that architects are also responsible in some aspects for the health, safety and welfare of society and therefore their preparation should emphasize training. They argue that professional programs should produce well-trained architects who are reliable and can act responsibly within the profession and its interaction with the rest of society (Gutman, 1988).

While Saudi practitioners and public officials' value university based education, and they want students to be creative, and intellectually rigorous, what they really demand through hiring practices are graduates with a narrowly defined vocational role. They expect schools to train students with a degree of dedication and confidence for an informed practice that will allow them to join the workforce without any further training. Most of the complaints voiced by practitioners center around training in pragmatic commercially specific areas such as the use of CAAD, project document production, knowledge of materials, construction management, client relations and marketing (Al-Marzoqi, 1999).

On the other hand, educators strive for informed, imaginative, critical and socially responsible students of architecture. They want to graduate individuals with the following skills and characteristics: a deep understanding of the entire human experience, tolerance of other cultures, ability to express themselves clearly, apply knowledge critically, driven to continually learn and understand crucial ethical and moral standards and the ability to live by them, and producers of architecture that is more than a functional commodity wrapped in pleasant facades. They want individuals concerned with providing creative responsible architecture rather than with the production of buildings; as well as, critical students that can distinguish irrelevant or undesirable practice, and who are able to experiment and contribute to the knowledge base in the field (Clarke, 2004; Dutton, 1992).

This dichotomy between architectural education and practice is evident in many parts of the world, but

it is especially noticeable in Saudi Arabia. This can be attributed mainly to an emphasis on academic education by the higher education authorities and inadequate practical training in the field.

When developing higher education strategies, developing countries sometimes fall into a trap where they stress certain objectives and overlook others. For instance in the early 1970's, India succeeded in its objective to reduce illiteracy drastically and to increase higher education graduates, but it failed to specify and to steer students to specializations needed by the country and the international markets. India later changed strategies from theoretical programs and concentrated on vocational ones. It became one of the leading nations in exporting people with expertise, and many companies started to relocate to India to take advantage of the available specialized manpower market. The Indian experience has proven the importance of matching higher education objectives with international market needs. Hence, higher education should not be isolated from the needs of society. It should not just fulfill the hopes of individuals, but rather make them productive components of society (King, 2003; Lewis, 1994).

Higher education in the developing world is usually used as a tool for social, cultural, and economic change. However, in Saudi Arabia, the higher education system has been criticized as being ineffective in providing a workforce with appropriate education for the country's development objectives. Local development advocates argue for a clear strategy that specifies the country's needs in project design and construction and their sub fields, and to match these needs with a strategy in assessing and developing local architecture programs, their curriculum, and the number of students they should accept and graduate (Wagner, 2005).

Since the main objectives of architectural programs are to graduate adequate professionals who strive for society's interest, and who can take overall charge of the built environment and lead the building project team, this cannot be achieved except through a justified balance between academic tasks and practical training activities. To prepare effective graduates, architectural programs need to lead the profession while justifying their expenses by being sensitive to the present and future needs of society. These programs must develop, change and respond to the society's stage of development, as well as individual and personal needs of their students (Aylin, 2002).

Background

The role of practical training in architectural education in the developed world

In western societies, architecture professionals did not create an established route of qualification for the profession and they did not define their role among building craftsman until the 19th century, and they did not lead the building project team until late in that century. Before that time, their preparation was mostly apprenticeship training. Architectural education was initially started in two different spectrums, one in the traditions of vocational training and the other in fine arts. In Europe, the first schools teaching architecture as a discipline were started in the late 18th century both in Russia and in France. The Ecole des Beaux-Arts in France consisted of theoretical course work and design studio. It also required a period of practical training at the end of the program (Pfhammer, 2004; Quinn, 2003).

In the U.K. after the establishment of the Royal Institute of Architects (RIBA) in 1834, several architectural programs were started, but it was not until 1882 that formal professional education was mandatory for license qualification. In the mid 20th century, the present system of three plus one plus two was passed by RIBA whereby students were given a year out in the middle of the program to spend on practical training in the field.

In the U.S., architectural education started in the 19th century, and it took the fine arts route. It was not until 1938 when modernism offered a new vision of public service in the field and the application of technology to human benefits. Early in that century, education policies changed from an even handed balance between beaux-arts and modernist tendencies to a firm commitment to modernism. They controlled the entry into the profession by making full time college based education a must, and by abolishing courses for professional qualification through pupilage or apprenticeship; thereby excluding the tradition of inherited bodies of knowledge and practice and perfecting academic and university level programs. They defined education parameters for the profession, and concentrated on design and included in their curriculum the knowledge of building materials, structure and management which meant longer more comprehensive education (Pfhammer, 2004).

Later on, in the 1960's, the American Institute of Architects (AIA), a national association organizing

the architectural profession in the US, initiated a mandatory two-year professional internship program. The program's primary objectives were to prepare students for entry into the profession. The student can enroll in the program after finishing his/her second year of a professional degree. Each intern has to be exposed to at least 14 main activities in a pre-specified time frame. Intern logbooks and reports are the tools for review and evaluation (AIA, 2003).

The professional association for British architects (RIBA) requires a similar practical training period before qualifying for professional certification. The training takes place at two intervals, in the middle of the academic program and after its completion. The training program mandates participation in specific training activities similar to those specified by the AIA, and it requires mentors in the training organizations, and specific supervision and follow up procedures. Evaluations are done through the review of the trainee's logbook and reports (RIBA, 1999).

The Association of International Architects (UIA), based in Switzerland, is an association that represents the interests of international architects and protects it through international treaties and organizations such as the World Trade Organization. Its members drafted and approved a document specifying the international standards for architectural professional practice in the late 1990's. The document requires a two-year training period during or after graduation with similar requirements to the earlier mentioned professional associations, mainly mandatory exposure to specific activities, and documentation of experience through logbook, and reports that determine performance and professional certification (UIA, 1998).

The role of practical training in architectural education in the developing world

Even though the aesthetics and language of design in the U.S. and Europe are appropriate to the levels of technology, climate, heritage and identity of these western countries, many of the architectural programs in the developing world are based on similar principles. Saudi architectural programs are not different. They are either based on similar programs in the west or were developed by western consultants.

There is an ongoing debate in architectural education between those who favor a broad liberal education and those who argue for a specific systematic design approach that stress practical and technical issues. Saudi national authorities lean

towards the latter approach. They stress the development and nationalization of local expertise, as well as the preparation of students to be ready for the workforce right after graduation. These goals usually specify the number of students in each field for each stage of development, and they try to direct the program curriculum to serve development goals (Ministry of Planning, 2005).

In the past four decades, higher education goals in Saudi Arabia have been targeting the needs of the public sector. However, with the recent saturation of public sector jobs and the opening of the markets to global competition, there is a real need to shift policy to correspond to the private sector and international markets needs (Alnamee, 2001).

In the developing world, including Saudi Arabia, academic education is not a substitute for actual work experience. In fact, training might be the facet of education that needs to be stressed further and integrated into academic education to accomplish development goals. Training local expertise in the design and the building construction industries is essential to developing nations such as Saudi Arabia to relieve the national economy from relying on expatriate expertise and to utilize essential local resources for an independent stable local economy.

The qualification requirements for practicing architecture in the west usually require a minimum of five-year professional degree and two to three years of practical work experience followed by a qualifying exam. In the developing world, the requirements are substantially diverse. Practical training is usually tied to the level of protection reached by the country's architectural professional association. For instance, in Morocco the practical training period is two years after the successful completion of a six-year academic program. During the two years, the trainee is required to accomplish a program of predetermined activities at a pre-specified work environment, and with strict guidelines for follow up and supervision. Failing trainees are usually given another chance for qualifying after a third year of training.

In India, the academic qualification for the title of architect is three years of education followed by six months of practical training and then two years of education with a final qualifying exam. There isn't a specific program of activities to be followed during the training period. The only requirement is for the training to be carried out under the supervision of a pre-specified qualified training organization. In Egypt, the title of architect is not protected. The

academic requirement for architects is a five-year degree with no training period requirements (Alsuwayeh, 1985; Fathi, 1988).

Practical training in Saudi architectural programs

In the early 20th century, construction in the Arabian Peninsula depended on master builders who prepared for their craft through a ranking system of craftsmen specialties and apprenticeship programs. In the middle of the century, expatriates and Saudi architects educated abroad started to practice in the country. However, it was not until four decades ago that architectural education took roots in the kingdom, and it did not take very long to spread to five public universities covering most of the Arabian Peninsula with a variety of sub-specialties.

The first program was initiated at King Saud University, with the help of UNESCO, as part of the Engineering School, and later as an independent college. The initial program was modeled after the US system of architectural professional education that was influenced greatly by the German architect Walter Gropius of the Bauhaus school. The professional degree offered by the program requires five years of academic preparation with the design courses as the backbone of the curriculum. The program tries to tie the design courses with all the other theoretical, technical, management and professional courses.

Although the KSU program recently went through a self-assessment and development review, the practical training program was not given much weight in the development objectives. The program currently requires 60 days of practical training at a training organization that meets a preset criterion. Trainees are required to document all activities engaged in during the training period. Even though the program sets high value for the training, it provides little guidelines or incentives for its management (KSU, 2005).

Four other Saudi universities followed the King Saud University (KSU) lead by establishing architectural programs in their institutions of higher learning. The first to follow suit in 1974 was King Faisal University in the city of Dammam. It adopted a similar program to the one offered at KSU. The program was then evaluated and developed by a visiting team from Rice University in Houston, Texas. One of the program objectives was to train and prepare students and arm them with practical field skills and the ability to apply theoretical knowledge

and to participate in professional practice through a minimum of eight-week practical training period.

King Abdulaziz University in Jeddah was next in establishing an architectural program in 1975. The program was developed by Harvard University as a six-year professional degree with less stress on the design studio and more on environmental and ecological issues. As was the case with the earlier programs, the King Abdulaziz University program stresses the importance of practical training, and it allocates the 16-week training period at two eight-week intervals during the program.

The program at King Fahad University for Petroleum and Minerals was established in 1979 under the guidelines of the U.S. National Architectural Accreditation Board (NAAB). The program allocates eight weeks for practical training, and it differs from earlier programs by assigning one credit hour for this activity. The credit hour acts as an incentive for the training coordination team. It allows them time to select appropriate organizations, conduct field visits, and assess the trainees' performance, as well as evaluation and assessment and modification of the program assigned tasks.

The last architectural program established in the Kingdom was in Um Al-Qura University in the holy city of Makkah in 1982. A group of local Saudi experts developed this program. Although it resembles the other programs established earlier, it stresses Islamic values, culture and principles as it relates to architectural education. The program focuses on the ideals of Islamic craftsmanship with eight weeks assigned to the practical training task.

The previous review indicates that all five Saudi architectural schools give high value to practical training in their mission statement and general objectives, but only assign 8 to 16 weeks to such an important activity. In addition, most of these programs do not set clear structure to the activities to be performed during the training period.

With the introduction of the local architectural university bachelor degree in Saudi Arabia, some professional protection was introduced. However, these protections were weak and did not offer a healthy environment for practice. Currently, the only qualification requirement for practicing architecture in Saudi Arabia is a bachelor degree in architecture (usually five- to six-year programs), and the Ministry of Commerce is the governing body who usually issues the practicing license. To deal with the globalization issue, the Saudi authorities initiated a

new Saudi architectural and engineering organization (The Saudi Engineering Organization). The new organization proposes new qualification requirements involving the licensing of architects and engineers through several requirements including a mandatory after graduation practical training period. However, these requirements have not been specified nor adopted as of now.

Currently, the only practical training activity experienced by new Saudi architects is an eight- to 16-week period required after the completion of the third year of the bachelors' degree. The requirements for this period vary according to the university program and its management. A few of the programs established clear requirements and strict guidelines and supervision. Other programs have very loose requirements and follow up procedures (Al-Marzoqi, 1999; Akbar, 1986).

Most of the goals set by the five Saudi architectural programs for the practical training period are vague and cannot be measured directly. These objectives can be summarized as follows:

- To gain practical professional experience, learn new practical skills, and gain experience and self confidence through exposure to the work environment.
- To apply theoretical knowledge to practical field situations and to document and record work experience through report writing.
- To gain the understanding of the architect's role after graduation, and to match students skills and aspirations with the right line of work and organization.

The activities to participate in and the skills to be gained during the training period for the five schools can be outlined as follows, the trainee should:

- Participate in the discussion and assessment of actual projects.
- Participate in the design process at all different stages.
- Prepare presentation drawings.
- Participate in the office and project management.
- Prepare specifications schedules and bills of quantity for actual projects.
- Supervise and participate in the construction process.

The few studies that have reviewed local training programs have concluded that the current objectives and outlined activities are insufficient. These studies called for the adoption of international professional organization activities list. They also suggested the

increased alignment of local training program goals with national development objectives and local market needs (Evin, 1986).

Problem Statement

Since the establishment of the first architectural school in Saudi Arabia four decades ago, practical training remains an integral part of the architectural curriculum. However, little research has been conducted to assess its value and effectiveness. The few local studies that touched upon this area confirmed the importance of training in professional preparation and raise important concerns. These concerns include the duration of time allocated to the program, the type of activities engaged in during training, the type of documentation required, the supervision and follow up procedures offered, and the evaluation and development of the program (and how it fits within the overall curriculum).

Several recent studies evaluating the contributions and readiness of the local Saudi architectural programs graduates have indicated a widening gap between the goals of architectural programs and the needs of the local work environment. This gap is due to either the educational institutions or the practice organizations. The main reasons behind the gap on the education side can be attributed to differences in the perception of educational pedagogies. On the practice side, the reasons behind the gap can be attributed to inadequate involvement by practitioners in local architectural education, little professional protection, and archaic laws discouraging faculty members from practice.

These studies have indicated that the gap between education and professional practice is negatively affecting the local economy and the overall objectives of national development especially when it comes to developing local expertise and in relying on Saudi organizations for local projects (Aljasser, 2002).

Research Problem

This research tries to determine the value of practical training in local Saudi architectural programs through a case study of the King Saud University (KSU) program. It tried to assess the skills and experiences gained by trainees and the process in which the program is being run. The research approached the issue from the perspective of the principle program stakeholders, namely; students,

educators and training organizations partners.

The research problem lies in documenting the current practical training program, comparing it to similar international programs, and in suggesting ways for improving the program to achieve its objectives

Research Questions

The study strives to answer the following questions:

- What is the current role of practical training in preparing new graduates for local practice? And, what are the actual skills and experiences gained by the trainees during this period?
- What are the objectives of the practical training period and how are these objectives and programs applied and administered in reality?
- Is the training period sufficient for the program objectives and activities?
- Does the current training program compliment the current academic program? How can the current program be more reactive to the changing academic and professional needs?
- What are some of the proven international training programs that can be applied to local experiences and which tools can improve local performance?

Research Objectives

The research aims to do the following:

- Document KSU practical architectural training program guidelines, standards, and the way it is being run and managed.
- Identify critical issues curtailing the achievement of the program objectives.
- Suggest tools and methods to improve and modify the program.

Research Parameters

Although there are differences in the five local Saudi architectural programs, they are similarities in terms of their objectives and curriculum, this research will only document and analyze the practical training program in the architecture and building sciences department at King Saud University, and therefore its findings can only be applied to the program.

Research Design

To achieve the research objectives, data will be

collected through four main sources:

- Data from previous research: especially ones that focused on local architectural training programs such as the research carried by Aljasser (2002), and Al-Marzoqi (1992).
- Data from students: including data collected through students' final practical training reports and a general questionnaire from the total population of students involved in the current program and in-depth interviews with selected trainees.
- Data from educators: in-depth interviews with concerned faculty members and the administrative team running the program, as well as data collected from internal administrative reports.
- Data collected from employers and organizations involved in students training mainly through in-depth interviews and employers' trainee evaluations.

After the data was collected, a database was established and the data was organized to be entered either quantitatively to facilitate systematic analysis or qualitatively to facilitate thematic analysis.

Data Analysis

Approximately two years were spent collecting the relevant data. The archival search provided important contextual and policy data which relates to comparisons with other practical training programs and administrative records. The main instrument of the research or the questionnaire covered the total population of students involved in the training program at KSU (147 trainees). Special care was given to the design and packaging of the questionnaire to make it appealing and personal. Participants were asked to take part in the survey voluntarily during the design studio time.

The questionnaire design took into account the three critical issues of rapport, conditioning and fatigue. Before the survey was applied, a pilot study was administered to 25 students and consequently several modifications were made, especially changes relating to the sequential ordering of questions, wording of questions and grouping of topics.

To gain a deeper understanding of the participants' assessment of the program, a sub sample of the survey participants selected by random sampling (27 trainees) agreed to participate in an in-depth interview. Interviews were also conducted with faculty members (11 faculty members), the program administrative team (three members), and training

organization officials (23 training organization officials). The interviews were unstructured, informal, and they covered a wide range of issues. The interview method for all four categories of participants was non-systematic, and it produced important supplementary and complementary data to the survey.

Following the completion of the survey, close-ended questions were coded into a standardized format and entered into a data file. Measures were evaluated using univariate analysis. Cross-tabulation was also used to determine the relevance of each measure. Data collected from open-ended questions were assigned mutually exclusive categories, and the in-depth interviews were categorized and redefined as individual themes preserving as much of the original detail as possible.

Research Results

Overall, the survey participants (7.4 out of 10) rated the KSU training program as positive. They indicated that they were somewhat satisfied with the overall program.

There was no correlation found between overall satisfaction with training program and the trainees' personal characteristics or background. However, there was a strong correlation between the overall satisfaction and the type of organization trained in. Trainees who trained in pre-qualified private organizations were more satisfied with the experience and skills gained than ones who trained with public organizations and especially with municipalities.

The survey participants indicated that the most helpful part of the current practical training period, where most of the new skills were gained, were the activities relating to the design process and project technical drawing production, especially the development of design concept, development of preliminary design, and production and review of working drawings. The trainees either rated their participation negatively or did not participate in activities relating to fieldwork and construction sites management and work supervision as well as professional skills such as office management, client relations, and preparation of contract documents.

When trainees were asked to rank issues relating to their training experience, they ranked the relationships established with colleagues and employers as the most satisfying experience (8.2 out of 10). When asked about employment organization

training qualification, and the clarity of goals and requirements, their assessment was not decisive. They gave neutral rating to these issues. However, they were very decisive in their answers when asked about their assessment of the program management. They gave this issue a clear negative rating and ranked as the least pleasing issue in their training experience list (3.8 out of 10).

Open-ended questions results

Participants' assessments of the training program in open-ended questions can be divided into three main categories, namely, training program advantages, its shortcomings and survey participants recommendations for improvement.

Training program advantages

Trainees mentioned that the program allowed them to gain the following skills:

- The flexibility to select the training organization.
- Gain insight on ways of building and maintaining professional relationships and familiarity with potential employers.
- Gain new professional and site experience.
- Familiarity with organization rules and procedures.
- Familiarity with construction process, tools, methods and management.
- Application of theoretical knowledge to real time field situations, especially in the preparation of the following activities: concept development, design development, project management; and the preparation of working drawings, project specifications, and bill of quantities.
- Gaining exposure to sub-fields and carrier options and specifying professional objectives.

Training program shortcomings

Trainees mentioned the following program shortcomings:

- The training program objectives and requirements are not clear and unachievable within the set time frame.
- The summer season is not the best season for training (major training organization figures are unavailable and students are not used to working during summer).
- Training organizations are not qualified to train.
- Trainees' technical language skills especially in English are not up to standards.
- The program coordinators do not have an

orientation program for trainees and training organizations.

- The program management does not have any incentives to follow up on trainees and develop the program.
- The training organization does not take the program seriously (trainees attendance is not followed, and trainees are not given serious professional work).
- The training program is not given any credit or grade. Hence, students and coordinating staff are not rewarded for a work well done.

Trainees' recommendations for program improvements

Trainees mentioned the following suggestions for improving the program:

- Increase training period.
- Clarify the program objectives and requirements.
- Introduce the program to students and training organizations through an orientation program.
- Assign the program credit hours and a grade.
- Help students select organizations with positive training records.
- Reward the program management team for maintaining, assessing and improving the program.

Of course, these advantages, disadvantages and recommendations only represent the perspective of the trainees. The in-depth interviews as well as other sources of data were used to verify these views and test for any discrepancy between the trainees, training organization officials, training coordinators and faculty members.

Qualitative Analysis Findings

Following the preliminary quantitative analysis of the archival and survey data, a qualitative analysis was conducted. Data from survey open-ended questions and responses from in-depth interviews were categorized, redefined, summarized and presented in thematic format as follows:

The current state of local architectural schools practical training programs

The survey results indicate that the majority of trainees rated the clearness of program objective unfavorably (4.5 out of 10). They mentioned that the program objectives were unclear. They indicated that the practical training program did not achieve its

main objective of preparing trainees for professional practice. Trainees stated that the least of the program objectives to be achieved were those relating to documenting and recording experiences through report writing, and those relating to applying theoretical knowledge to actual field situations. The survey results also indicated that training administrative coordinators assessed the training program as more effective than trainees and employers. As to the type of training organization, survey participants clearly indicated that public organizations, especially local municipalities, were the least to achieve the training program objectives. When it comes to the program administration, the survey data shows weakness in the qualification of training organizations, follow up, and evaluation procedures, as well as in the guidelines and scheduling of program pre-specified skills and activities.

The role of practical training in preparing students for professional practice

Survey participants especially training partners (employers) mentioned that the KSU architectural program does not prepare students well for practice, especially in the areas of marketing, office management and site works. Furthermore, the majority of faculty members and practitioners gave a much higher value to the role of practical training in the preparation of young architects than the value given to this role by students. When interviewed, both faculty members and practitioners mentioned serious concerns regarding the program placement procedures, length of training period, the lack of follow up and supervision by program coordinators, and the unclear guidelines and documentation procedures (logbook or report requirements).

The missing site skills

Practitioners recommended developing the practical training program in a way that stresses the learning or exposure to specific skills in a detailed pre-scheduled program. They wanted to measure the success of the program and of trainees through the degree of learning or exposure to these skills.

Trainees reported only minimal exposure to site skills such as: the ability to read and understand project documents and specifications, their ability to review jobs completely and assess them by comparing them to original documents, and to direct project contractors by written reports on problems

and shortcomings. On the other hand, trainees reported that they were not exposed to other site skills required by international professional organizations dealing with project management such as preparing financial statements, managing contract issues, reviewing project materials and components, sampling and testing materials, reviewing test results and acting on them. Although trainees need considerable time to gain familiarity and efficiency with these activities, practitioners consider them critical for the preparation of the local architect, even if he/she chooses career options that are preformed far from the construction site (Scarpa, 1999).

The role of part-time professional faculty members

Survey participants revealed that one of the important factors affecting students preparedness for practice was the amount of contact spent with professional practitioners while at school. Their argument is supported by an unpublished report (prepared recently by the author and others) that documented the statistics of well-known western architectural programs. These statistics show a significant percentage of part-time professional practitioners among their staff ranging from 20-60% of the total faculty members. Current faculty members at KSU architecture program are qualified academicians and researchers, but most do not have the practical experience needed to teach in a professional program that relies on teaching students the needs and secrets of the craft for the local market. The current program only allows for a small percentage of staff with professional background. The importance of the right mix between permanent academic faculty members, part-time professional instructors, and visiting practitioners (who can raise important practical issues and help students gain applied knowledge) is critical to the success of professional degrees such as architecture. However, these part-time professionals should not be expected to perform these essential tasks without a clear strategy and good management that involve defining clear mission and objectives, the right placement, monitoring and supervision, and ongoing teaching skills assessment and improvements through continuous education (Al-Dakheel and Albuttihi, 2002; Roberts, 1990).

With the knowledge gained from visiting guest speakers, and part-time practicing instructors, as well as as programmed field trips to construction sites,

students can mesh well with potential work experiences and have more confidence to deal with potential employers' practices and procedures.

Obstacles hindering recent graduates' entry into the private sector

Argument presented by practitioners who participated in this study support earlier findings by the 2001 Alnamee study. They gave three main reasons for KSU architectural program graduates delayed entry into the workforce. First, local employers blame local programs for not providing students with enough practical skills that translate into costly retraining after their employment. Second, the gap in pay scale between local and expatriate architects is widening and further complicated by an ongoing reduction in professional services fees. Third, some employers still hold the perception of graduates who lack discipline and the ability to follow instructions or orders from others.

Insufficient training period

Survey participants were almost unanimous in their assessment of the current program duration. Most of the participants (8.2 out of 10) agreed that the objectives and scheduled skills could not be achieved within the current time frame. To remedy the problem, some advocate longer university programs with longer practical training. Others shift the training responsibility to the profession and professional organizations (Al-Marzoqi, 1999). Faculty members suggested several alternatives to deal with this issue such as the mentored cooperative option, or the teaching office option, as follows:

The co-operative option

International accreditation boards define cooperative education programs as the ones with at least 12 months of continuous supervised work experience (with alternating periods of work and school), evaluation of work experience by formal faculty, and no reduction in minimum course requirements (Bringham, 1993).

The cooperative experience allows the students the chance to define their goals and career interests, and it gives employers a chance to assess the student's qualifications and fit within the organization. The long 12-month continuous placement allows trainees the chance to be treated as normal employees and to gain in-depth knowledge of the way the business is run.

The literature indicates that cooperative programs should be based on educational objectives and that the principle stakeholders are students, employers and coordinators. The educational value of the program and its success is measured by the skills the students gain, the level of mentoring and follows-up procedures, and the type of training environment (Fisher, 1994).

The goals of the practical training period cannot be achieved during the current two-month duration. Some survey participants, especially faculty members, have argued that both the current two-month option and the formal cooperative 12-month option are not acceptable. They have suggested that a six-month training period is ideal since it strikes a balance between the benefits of the cooperative program and being away from school for too long period of time and the economic benefits of completing the professional program in a reasonable amount of time.

Employers or partners in the cooperative program team should be considered co-educators and they should be rewarded through some form of recognition or involvement in the academic program. Their involvement should not be exclusive for training purposes, but it should extend to the programs curriculum development, recruitment and research.

The advantages of cooperative mentored programs

Some survey participants (3.1 out of 5) stress the importance of training organizations and the amount of work they invest in structuring such programs. Currently, there are many good examples of local organizations that take students practical training seriously. One of these organizations that have a long history of social and cultural investment in the country and its citizens is ARAMCO, the only local oil company. It has a good record of developing local expertise through specific standardized training and continuing education programs that it partners with all its suppliers and subcontractors. The company's methods are a good example to follow.

The company established training and placement programs to domesticate local expertise in many fields including the architecture and building sciences fields. The programs combine formal education with one-to-one relationship between the trainee and the field specialist. It also monitors each trainee's program through a board of specialists and managers to make sure that the candidates training is focused on

a specific future need. Each trainee along with a mentor prepares an individual development plan that includes milestones such as fieldwork, educational programs, training program assignment, and special problem solving situations. Trainees are encouraged to enrol in professional development courses and to join professional societies. A training board usually reviews each candidate's progress through monthly reports.

Mentoring is the most important aspect of the program. The candidate is matched with a mentor who is a specialist in the field to provide one-to-one coaching. A mentor not only shares experiences, expertise and wisdom, but he/she is also a coach, a confident, a sounding board, and a counsellor ready to discuss personal issues. He/she serves as a teacher, sponsor, guide, model and counsellor who facilitate his/her protégé's aspirations. To deal with obstacles, the mentor provides a safe haven in a casual environment where a trainee feels free to ask questions, and make mistakes without feeling judged; an environment where a trainee feels free to explore issues and reflect on experiences in full honesty (Bong, 2003).

The mentor is rewarded by loyalty and effort from the trainee, and by organizational credit from the company. The trainee's performance reflects the mentor's contribution to the program. Without honesty and commitment, mentoring cannot take place. Mentoring is most effective when there is enough mutual respect and communication to permit sharing and honesty and mutual commitment. Thus, defining, addressing and matching mentor to trainee is a critical factor for the program success.

The role of the mentor changes over time. As the trainee progresses, the mentor changes from trainer to advisor. He allows the trainee to grow and to take more responsibility and to become more independent until he becomes self-sufficient. When the trainee reaches this stage, he usually asks for confirmation and not for advice and that is usually the ideal time for the program to allow for a relationship to split between the mentor and the trainee. Students from the KSU architectural program can benefit from such a model. The program can encourage and support other local organizations to develop similar mentoring programs to reach the goals outlined above.

The in-house training center (the teaching office model)

Internship programs prepare young professionals best for only a few aspects of the profession, while

serious omissions in the practice experience are evident. Firms usually delegate the most time-consuming aspects of project work to interns, "a ready and cheap source of manpower". Without a balance of practice-related tasks undertaken in a sequential and planned term, interns may have little opportunity to perfect their skills in some critical areas of the profession, thus prolonging the apprenticeship process needlessly (Beach, 2002; Crosbie, 1995). Some KSU faculty members advocate an in-house training center and cite as a similar example the existing medical training model where the KSU medical school carries its own in-house training in 'the university medical center'. They support the establishment of a collective architectural firm practicing within the KSU architectural school that allows for faculty members to practice and for students to train. In such a center, students' practical training is a continuous process. It is not limited by time and location constraints. Students can study and train concurrently, and they can apply academic knowledge directly to practical situations. Several international programs have a history of experiences with such an approach. They have set clear guidelines and time schedules that link practical skills to the academic program and the students' level of expertise. One such innovative program is the one set up by faculty members of the University of Cincinnati namely, Apostolides and Looye. Their model, as in other models, is built on a true partnership between schools and the industry. It starts with a year of academic basics, and then the student is required to enroll in a cooperative training program for a period of four to eight quarters during his/her enrollment in the program. Hence, students spend more than a third of their time in training activities. The first two quarters of cooperative training have specific objectives and requirements that collaborate with the students' level in the academic program, and they concentrate on the basics of professional training and the development of basic design and drawing skills. The next four cooperative training quarters concentrate on concept development, presentation drawings, working drawings, project specifications, and construction management. In the last two quarters, the student is treated as an architect under training and he/she is exposed to all the activities mentioned before in addition to other site and contractual activities. The student's performance and evaluation is mainly done through group discussions and reviews of a logbook and reports (Apostolides and Looye, 1998).

Improving the practice setting in Saudi Arabia

Some survey participants from the industry demanded graduates who are ready to assume immediate job responsibilities. They argued that expatriates are unfair competitors to Saudi architects not because they perform better than new Saudi architects do, but rather because they accept lower wages and require less on-job training.

In order to improve practice in general, the survey participants agreed that there is a real need to organize the architectural practice in Saudi Arabia. Recent statistics are alarming; they indicate that only one out of six people working in local private architectural firms are Saudis and only one in 12 are graduates of Saudi architectural schools (Alnamee, 2001).

The imbalance in the pay scale between Saudi architects and expatriate architects, and the markets' undervaluation of professional architectural services supported by the authorities' reluctance to regulate the industry has discouraged trainees and Saudi graduates from entering the consultation end of the profession and increased their interest in the public sector. Even trainees and graduates, who join private firms, do so mainly because of the lack of jobs in the public sector, and they jump ship as soon as a public opportunity arrives.

Recent national development plans focus on domesticating expertise in many fields including the design and building industry. To reach such goals, several measures should take place. These measures include the establishment of an independent body that protects the profession, organizes practice, localizes professional expertise, and reviews and assesses local architectural programs. This professional organization should set clear and precise licensing criteria, and it should be solely responsible for the licensing of individual architects and consultants in the country. It can bridge the education-practice gap. Regulating practice, licensing standards and enforcing continuing professional education can make real changes in how the profession is practiced and can benefit society as a whole through a better building industry (Aljasser, 2003).

Like all other work environments, local architectural practices have their own sub-cultural internal code. This unofficial code sets and organizes the hierarchy of relationships between colleagues within the organization and guides their conduct. When developing curriculum, the faculty of the KSU architecture program, for the most part, ignore

practice as a cultural setting and create a real gap between the graduates and the market in which they will serve. The KSU program should prepare students by informing them about organizational sub-cultural setting and the best approaches to deal with it.

The value of professional ethics

Some employers who participated in the study alluded to some of the obstacles hindering KSU trainees and new Saudi architects' entry into the profession. Six out of 10 mentioned a social factor that plays a part in the exclusion problem. They complain that some KSU trainees do not follow the chain of command and are reluctant about taking orders from expatriate superiors. Furthermore, they complain that some trainees are less disciplined, non-conforming and unpunctual.

Five out of 10 practitioners also mentioned that instilling valid work ethics and professional values are critical to developing local expertise and beneficial to national development, but no one claims responsibility for instilling these values into new architects. Is it the responsibility of the general education, architectural programs, professional societies, or work organizations?

Survey participants argued that it is the responsibility of all the stakeholders. They mentioned that general education should instill general work ethics. Architectural programs should teach professional values and stress their application during the training program. Work organizations should adopt mentoring programs that apply these values in their organizations with trainees and recent graduates.

Conclusions

Some academicians and intellectuals are convinced that universities are not in the business of vocational training, but rather should strive to produce new knowledge. They argue that if architecture is considered a purely practical profession, then it is not necessary for students to spend five years in a full-time higher education institution, when most of the skills can be gained from direct office and site training. On the other hand, some professionals and government officials argue that the current local architectural education programs stress academic achievements and research, and do not allow professional practical preparations sufficient time.

This paper does not advocate the abandonment of a strong liberal education or sound research for new knowledge through higher education, but rather achieving a changing balance that corresponds to the goals of each stage of national development and the needs of local practice. This balance is achieved through several changes including a review of the current practical training systems efficiency in order to utilize the resources for more socio-cultural and academic justifiable ends; and to make interval evaluations of the market and national development plans needs and incorporate them into an ever evolving curriculum. Such a curriculum should provide some aspects of vocational training while still offering a constant dose of liberal arts that allows for social, critical, creative and enlightened development.

The rapid changes accompanying the globalization phenomenon have made it essential for institutions of higher learning to improve the quality of their programs and the performance of their graduates to compete in a borderless world with minimal protections or regulations. To reach the level of global competition, the KSU architectural programs have to go through a rigorous evaluation and development process founded on sound theoretical base. The program should adopt the standards of global architectural education and professional licensing procedures while corresponding to local development plans needs and aiming to preserve local culture and identity.

The programs development should include practical training which is a partnership between institutions of higher learning, professional organizations and training organizations, in which every partner has a major and important part to contribute. Without the realization of the importance of their role and the complete participation of all partners involved, the results will not be sufficient and the gap will widen.

Practical training helps in the establishment of the student's character and self-confidence. It shows them tools for working within groups, ways of collecting relevant data, balancing issues, making decisions and creating strategies. Increasing the training period duration usually increases the trainee's chances of getting employment in the same training organization especially if the trainee is talented, and has professional skills and leadership abilities. Hence, the most critical steps in developing practical training programs are imbedded in their planning and continuous assessment.

This study has shown that stakeholders in the current KSU architectural practical training program are somewhat satisfied with the overall program. Participants were satisfied with the programs flexibility, the skills gained in some activities, and the relationships established within training organizations. On the other hand, participants were dissatisfied with several aspects of the program. They complained of the programs' lack of clear objectives, guidelines, placement and scheduling criteria, and follow up and management procedures.

Data analysis indicated that trainee's who trained in pre-qualified private organizations were more satisfied than ones who trained with public organizations especially municipalities.

To remedy the current program shortcomings, faculty members and practitioners who participated in the survey suggested the adoption of one of two models, namely a mentored cooperative program or an in-house teaching office. Participants stated that in order for these models to succeed, they needed clear measurable goals and guidelines in a structured well-managed format. In addition, participants pointed out that these models have to link practical skills to the academic program, to instil professional values, and inform trainees of organizational subculture.

Training coordinators need to develop an evolving evaluation mechanism that qualify, filter and reward serious training organization. They should direct the program to give trainees exposure to sub-fields and career options and allow them familiarity with organization rules and procedures.

Efficiently designed cooperative programs or in-house teaching office with clear measurable objectives, placement and management procedures, and sufficient time frame that relay on serious training organizations with mentoring programs can be effective tools for improving the current state of practical training.

Recommendations

Recommendations can be divided into several categories, as follows:

Recommendations relating to the improvement of the overall program:

- Program mission and objectives should be worded in a way that is measurable and achievable as follows:
 - Prepare local expertise that can achieve national development objectives and meet local market demands.

- To apply theoretical knowledge to practical problems and situations.
- To understand and be able to assess project documents, and contractual and ethical aspects of the practice.
- To discover the different sub-specialities in the field, and to be able to match these specialities with personal interests and talents.
- To be able to choose and be chosen by organizations which are compatible with the trainee's skills and interests.

Other recommendations relating to the overall program include:

- Increase training period duration to match training objectives and to be sufficient for training activities.
- Create six-month well structured and managed cooperative programs with mentoring components or an in-house teaching office and pre-test their effectiveness on a small group of trainees.
- Teach professional values and stress their application during the training program.
- Remove obstacles and encourage faculty members' involvement in local practice, and recognize and reward their professional accomplishments.
- Schedule numerous field trip visits by students to work environments, both in construction sites and office settings, during each phase of the academic program.

Recommendations relating to the improvement of the current program structure:

- Stress the program requirements in technical language, marketing, management and site skills.
- Define training skills and schedule them in a specific detailed way, based on the UIA official activities list, and create a proactive program that responds to the needs and changes in the local work environments and that corresponds with the stage of national development.
- Mandate the keeping of training logbook where all activities and new learned skills are documented.
- Assign a grade and credit hours to the program.
- Introduce the program to students, faculty and training organizations through an orientation campaign that reveal the important role of training in qualifying competent graduates with abilities to develop the profession and domesticate expertise.

Recommendations relating to the improvement of the current program relationship with professional practice:

- Develop a program that responds to local culture while learning from the experience of other developed and developing nations, especially from professional organizations such as NAAB, RIBA and UIA.
- Prepare students by informing them about practice cultural setting in their curriculum.
- Increase the involvement of part-time professional practitioners and visiting practitioners in the academic program.
- Involve serious training partners in the building industry in the planning, assessment and development of the academic and training programs.

Recommendations relating to the improvement of the current program management:

- Create a placement and follow-up center to insure proper placement, to check on trainee's progress, and to supervise and monitor training.
- Retrain and pre-qualify program coordinators and staff.
- Establish clear guidelines for qualifying training organizations and start a list of training partners according to their qualifications and their training record with an incentive and reward system.
- Through the collaboration of practitioners, intellectuals, students and faculty members, establish an in-house training center that serves in bringing together the needs and aspirations of the industry and the nation's development plans with the realities of the KSU architectural academic program. The center can narrow the gap between education and practice through many activities including the evaluation and development of curriculum and in providing an evolving mechanism that concentrates on the development of students' practical skills.
- Reward training program participants as well as management team for maintaining, assessing and improving it through initiating alternative funding methods to reward program management team, outstanding trainees and training partners.

Acknowledgements. This research could not have been done without the valuable support of the research center at the College of Architecture and Planning at King Saud University. Many thanks also

goes to all those who took the time and effort to participate in the survey.

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دور التدريب المهني في التعليم المعماري: حالة دراسية بكلية العمارة والتخطيط بجامعة الملك سعود

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(قدم للنشر في ١٢/٤/١٤٢٦هـ؛ وقبل للنشر في ٥/٢٤/١٤٢٧هـ)

ملخص البحث. الملاحظ أن الفجوة بين مخرجات التعليم المعماري وبين احتياجات سوق العمل ومتطلبات التنمية في المملكة العربية السعودية تزداد عمقاً وذلك لعدة أسباب أحدها تجاهل برامج العمارة في المملكة للدور المهم الذي يلعبه التدريب المهني في الخطط الدراسية ولتأهيل الطلاب للانضمام لسوق العمل بشكل مباشر. ومع التقييم والتطوير التي حظيت به معظم هذه البرامج في الفترة الأخيرة إلا أن التدريب المهني لم يُعطى حقه من الدراسة والتطوير.

تتفق برامج التعليم المعماري المحلية على أهداف عامة للتدريب المهني تشمل إعطاء الطالب الفرصة للاطلاع على طبيعة العمل المهني، وتطبيق المعلومات النظرية في واقع عملي، والتعرف على المجالات المهنية المختلفة حيث يختار الطالب المجال المناسب لقدراته ومواهبه وفي نفس الوقت تتعرف الجهات المهنية على نوعية الطلاب وإمكانياتهم.

وتتفق معظم الدراسات السابقة التي قيمت برامج العمارة المحلية على أن التدريب المهني الحالي لا يحقق الأهداف الأساسية للتعليم المعماري، ولا يتواءم مع متطلبات سوق العمل وخطط التنمية. وضحت الدراسات السابقة ثلاثة أسباب رئيسية خلف القصور في أداء برامج التدريب المهني المحلية هي: الوقت المخصص للتدريب غير كافٍ، وأهداف ومتطلبات التدريب غير واضحة، ووسائل الإشراف والمتابعة غير مجدية.

يناقش هذا البحث الخلفية التاريخية لبرامج التدريب المهني في برامج التعليم المعماري المحلية ويقارنها بالبرامج والمتطلبات العالمية. ويرصد ويقيم أهداف ومتطلبات التدريب المهني في كلية العمارة والتخطيط بجامعة الملك سعود كحالة دراسية من وجهة نظر الأطراف المعنية وهم الطلاب، وأعضاء هيئة التدريس، وجهات التدريب. ومن ثم تقدم الدراسة بعض التوصيات لتطوير البرنامج الحالي.