AN EXAMINATION OF THE PERCEIVED NEED AND RECOMMENDED BODY OF KNOWLEDGE FOR ARCHITECTURAL INTERNSHIP PROGRAMS IN KUWAIT

A Dissertation

by

MOHAMMAD ABDULLAH

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2007

Major Subject: Architecture

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Approved by:

Chair of Committee,	Robert E. Johnson
Committee Members	Valerian Miranda
	Guillermo Vasquez De Velasco
	Atef Sharkawy
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ABSTRACT

An Examination of the Perceived Need and Recommended

Body of Knowledge for Architectural Internship Programs in Kuwait. **(**May 2007)

Mohammad Abdullah, B.S, University of Miami; M.S, Texas A&M University

Chair of Advisory Committee: Dr. Robert E. Johnson

This study stresses and reflects a professional concern for the state of architecture in Kuwait, with a specific emphasis on the development of competence of architectural students and recent graduates on professional knowledge areas/skills. Professional practice in Kuwait is perceived as a recent phenomenon that reflects the development of architecture and architects in the country. The apparent problem of the evolution of a professional base for the education and practice of architecture in Kuwait is the *lack of professional development systems*. Internship (being one professional development system) is not a requirement for graduation from the architectural program at Kuwait University or to practice architecture in Kuwait and to earn professional status. No formal internship model exists within the architectural field (education and practice) in Kuwait.

Therefore, this study assesses the importance (perceived value, perceived need, and recommended time period) of internship programs in Kuwait and proposes recommended knowledge areas/skills for this architectural internship experience, before and after graduation from college. For the purpose of this study, the internship experience during college is defined as *academic internship* and the internship experience after graduation as *practical training*. The knowledge areas/skills recommended in this study could act as a base of information for designing local curricular guidelines for the initiation of future internship programs in Kuwait as integral parts of a professional architectural practice model.

The study utilizes a descriptive survey design, which was quantitative in nature (utilizing a self-administered questionnaire) with an introduction of elements of qualitative research procedures (follow-up interviews) to support the objective data in a subjective manner. Based on the results of the study, four conclusions were drawn: (1) internship programs are perceived to be of value for students and recent graduates, (2) a perceived need exists for internship programs in Kuwait, (3) the recommended time period for an academic internship program ranges from 2-10 months and the recommended time period for a practical training program ranges from 1-2 years, and (4) agreement exists among the surveyed population on several knowledge areas/skills necessary for architectural internship programs in Kuwait.

DEDICATION

To my country, Kuwait,

my lovely supportive parents,

my beloved patient wife, Kholoud,

and my wonderful three children, Yousef, Ghalia and Hosain,

with love and appreciation.

ACKNOWLEDGMENTS

The author would like to express his sincere appreciation to all who have assisted him in completing this dissertation study. Special thanks are due to my doctoral committee members. First of all, thank you to my committee chair, Dr. Robert E. Johnson, for his guidance, encouragement, support, proofreading, and editing. I really value his effort in inspiring and motivating me through the long and difficult process of completing my doctorate. Thanks extend to my committee members, Dr. Valerian Miranda, Dr. Guillermo Vasquez De Velasco, and Dr. Atef Sharkawy for serving on my advisory committee; their advice and contributions were quite valuable in completing this dissertation study.

I would like to thank all seventy-eight architects who responded to the study's self-administered questionnaire and the four recent graduates, three small firm owners, and three large firm supervisors who agreed to participate in the in-depth follow-up interviews conducted to serve the purpose of this study.

Appreciation is given to my editor, Ruth Schemmer, for her proofreading and editorial assistance. I would like to extend my gratitude to my parents who always provided me with the spirit I needed, even if they were at a distance from me.

Finally, special recognition and appreciation has to be given to my wife for her love, support, patience, encouragement, and faith during my graduate school experience away from our home country. It is not within the limitation of words to express to her how much she has meant to this important accomplishment of my life.

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CHAPTER I

INTRODUCTION

Overview

This critical study stresses and reflects a professional concern for the state of architecture in Kuwait, with a specific emphasis on the development of professional knowledge, skills, and competence of architectural students and architects. The purpose of the study was to determine if the need for internship exists; if so, to propose recommended areas of knowledge for an architectural internship experience in Kuwait, before and after graduation from college. For the purpose of this study, we defined the internship experience during college as "**academic internship**" and the internship experience after graduation as "**practical training**."

To investigate this problem the researcher critically reviewed and compared the structure, contents, and administration processes of various architectural internship models around the world. This critical review and the outcomes of the field study served in proposing local guidelines of recommended areas of knowledge for the architectural internship experience in Kuwait. The aim of such initiatives is to develop a base of specialized professional bodies of knowledge that complements the education and practice of architecture in Kuwait.

This dissertation follows the style and the format of *Journal of Architectural Education.*

The long-term goal of this study is to improve the state of architecture as an educational endeavor and as a profession. The outcome of the study served the short-term goals of the study, to define the perceived need for internship, and proposes a base of information of local curricular guidelines for the initiation of future internship programs in Kuwait as integral parts of a professional architectural practice model.

Statement of the Problem

Prior to 2002, all Kuwaiti architects acquired their degrees from numerous countries—primarily from the United States, Great Britain, and Egypt. Domestic emergence of Kuwaiti architects began in 2002 with the first graduating class from the Department of Architecture at Kuwait University. This first academic architectural program in Kuwait was initiated within the College of Engineering and Petroleum in 1997 to cover both the art and science of architecture. It is not an engineering program; rather, it is envisaged to be the nucleus of a separate College of Architecture in the future. By the end of May 2006, the department had graduated its fifth class of students to practice architecture in both the private and public sectors. Given these facts, the landscape of the practice of architecture in Kuwait is expected to change dramatically. Professional practice of architecture in Kuwait is a recent phenomenon that is a reflection of the development of architecture and architects in the country.[1]

The apparent problem of the evolution of a professional base for the education and practice of architecture in Kuwait is the *lack of professional development systems*, which are widely recognized as integral parts of the training process for the development of competent architects. One of the first stages of this research was conducting a focus group session with representatives from the target population. The research problem was strongly emphasized by the focus group participants, as one of them noted: “the problem is the lack of a specific system that we follow for preparing architect starting from school years and even it is worse when they go into the field of practice; everything is random and depends on personal choices.” Another participant added, “We don’t have internship; this is our problem; internship is a very crucial stage where you are exposed to practical knowledge.”[2] Internship is not a requirement to graduate from the architectural program at Kuwait University or to practice architecture in Kuwait and earn professional status. There is no formal internship model within the architectural field (education and practice) in Kuwait.

Purpose and Objectives of the Study

Therefore, the purpose of this study was to determine if the need for internship exists; and if so, to propose recommended areas of knowledge for an architectural internship experience in Kuwait, before and after graduation from college.

To investigate this problem the researcher critically reviewed and compared the structure, contents, and administration processes of various architectural internship models around the world. This critical review and the outcomes of the field study served in proposing local guidelines of recommended areas of knowledge for the architectural internship experience in Kuwait. The aim of such initiatives is to develop a base of specialized professional bodies of knowledge that complements the education and practice of architecture in Kuwait.

The long-term goal of this study is to improve the state of architecture as an educational endeavor and as a profession. The outcomes of the study served the short-term goals—to define the perceived need for internship and propose a base of local curricular guidelines for the initiation of future internship programs in Kuwait as integral parts of a professional architectural practice model.

Significance and Benefits of the Study

This study evolved from the belief that there is a challenge for architects' practice because of the significant dynamic nature of architectural knowledge. In evaluating the significance of the study, even though similar field research might have been conducted in the United States and in countries around the world where an internship model exists, this research represents a new and beneficial contribution for the population of Kuwait in general and the architectural profession specifically. This situation is unique because the architectural profession in Kuwait, since its inception in the 1960's, has not previously been exposed to critical or evaluative studies that attempt to benchmark guidelines for any of its components.

Therefore, the outcomes of this study represented by the perceived need and the recommended areas of knowledge for architectural internship programs would greatly benefit people involved in the architectural field in Kuwait. If decision makers decide to implement such formal internship programs in the future, this study can act as the foundation for the initiation of such programs. Enforcing internship training programs in Kuwait would provide a setting for the acquisition of unique skills and the means to and a measure of specialized architectural knowledge. It would ensure a certain amount of guided practical experience before someone claims a professional title in architecture. People involved in the field of architecture in Kuwait must work diligently to identify and secure the rights and reputations of architectural graduates as well as to protect the public health, safety, and welfare by ensuring that all architects have undergone proper education and training on various technical and practice issues.

Research Questions and Hypotheses

The research addressed two primary **questions**:

Question 1: Are architectural internship programs important components in the preparation of architectural students and architects in Kuwait?

Question 2: Is there agreement about specific areas of knowledge necessary for architectural internship programs in Kuwait?

Within these two broad questions lie more specific questions:

- What is the perceived value of architectural internship (academic internship and practical training) programs?
- Is there a need for architectural internship (academic internship and practical training) programs in Kuwait?
- Should academic internship programs be required for architectural students in Kuwait as a condition of graduation?

- Should practical training programs after graduation be required in Kuwait as part of the training and professional development process of practicing architects?
- Is there agreement about an appropriate time period for an academic internship program?
- Is there agreement about an appropriate time period for a practical training program?
- What are the top areas of knowledge recommended by the study's population as curricular components of an academic internship program?
- What are the top areas of knowledge recommended by the study's population as curricular components of a practical training program?

These questions form specific statements for predicting the research outcomes and serve as the primary research **hypotheses**:

Hypothesis 1: Architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait.

Hypothesis 2: There is disagreement among the surveyed population on the areas of knowledge necessary for architectural internship programs in Kuwait.

Limitations of the Study

One limitation of this study was that it was conducted at a particular time and may not generalize to a different time period. Another limitation of this study was the limited size of the target population. There are approximately 60 graduates from the Department of Architecture at Kuwait University who have practiced architecture for 1-4 years. These young architects represented the core sub-population of the study. In addition, the research targeted other Kuwaiti architects who acquired their degrees abroad, as well as senior professionals in practice (mainly principals of architectural firms, architects with high-rank managerial positions, and supervisors of intern architects). Although the number of the last two groups is limited, their inclusion brought the overall population to about 100 subjects.

The bright side of this limitation was the excellent response rate from the population of interest. Due to administering the survey instruments by personal and second hand contact, the researcher obtained a 78 % response rate, which is considered an excellent return rate in survey research. The researcher also tried to overcome the size limitation by introducing qualitative components into the study—by conducting a focus group prior to developing the research instruments and by conducting several follow-up interviews with firms' principals, supervisors, and recent graduates in Kuwait. This helped to fill possible gaps from the limited quantitative data and increased the credibility of the outcomes.

An additional limitation was the lack of local resources and literature about the education and practice of architecture in Kuwait. This lack limits the reliability of the research argument, which was for the most part based upon several previous experiences within architectural education and practice worldwide and which emphasized literature published in the United States. The researcher expects that the outcomes of this study will initiate a base for future architectural studies, which can play an essential part in the future fabric of the architectural education and profession in Kuwait.

Assumptions of the Study

This study assumed that:

1. The population surveyed responded accurately and truthfully to all questions.
2. Respondents possessed opinions concerning the value of internship (academic internship and practical training) programs.
3. The results provide information that may be used by Kuwait University or any other academic institutions in the future to build a viable academic internship program.
4. The results provide information that may be used by any professional institution seeking to build a viable post-graduate practical training program in Kuwait.

The results of this study are not generalized to other situations. At the same time, the high response rate suggests a superior external validity for the population of interest.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

A Brief History and Background of Architecture in Kuwait[3]

Architecture before the Oil Wealth

The early inception of architecture in Kuwait first relied upon the basic traditional vernacular architecture of the 1940s—residents of Kuwait used simple local construction materials such as clay, sea rocks, limestone, and wood, to construct their homes. Kuwaiti architecture at that time was represented by the basic design of these small residential compounds, which shared the same conceptual design theme: "The Central Courtyard." The courtyard was the theme for laying out and organizing these small residential units, with a series of rooms built around this quad. The courtyard house was closed from the outside and open to the inside area. Most of these houses were built by local craftsmen.

Architecture after the Oil Wealth

The emergence of architecture as a profession in Kuwait coincided with the first urban plan of Kuwait City in the 1950s, which resulted from the discovery of oil in Kuwait, and the economic wealth associated with it. This first master plan was developed by the British firm Minoprio, Spencely, and Macfarlane.[4]

Architecture in Kuwait was influenced by rapid and drastic economic, social and cultural changes that took place in the Arabian Gulf region during the second half of the last century. Kuwait went through a rapid process of modernization and cultural change during that time. As thoroughly documented by Saba George Shiber, planning and construction of the modern city/state of Kuwait 50 years ago was a "dramatic urban revolution that swept over Kuwait as a hurricane, leaving one dizzied and dazzled in its wake. …Kuwait literally exploded from a small village to a fast-urbanizing regional metropolis in just over 12 years"[5]

The inception of an architectural profession in Kuwait after that time was characterized by the use of foreign consultants. The discovery of oil caused an instant growth of national income, which attracted global economic interests toward Kuwait. There were not many native architects or workers to handle the amount of design and construction work at that time. Therefore, numerous foreign architects and construction workers were recruited from different parts of the world. They were asked to design and construct all new buildings and projects needed in Kuwait.

The true foundation of a local architectural profession and local professionals originated with the emergence of a few Kuwaiti architects, educated mainly in Western European cultures and the United States. "The first Kuwaiti architect was "Hamid Shuaib," who graduated from Oxford University in 1958. The first architectural and engineering office, which was initiated by local Kuwaiti professionals, was the "Kuwait Engineer Office" in 1964. In 1985, the government of Kuwait passed a law prohibiting non-Kuwaitis from owning professional offices, and since then all of the firms are owned by local practitioners."[6]

In 1968, a second master plan was developed by another British firm (Colin Buchanan and Partners) [7] that stretched Kuwait City north and south along the Gulf shore. In 1976, another British planning firm (Shakland Cox) [8] proposed the establishment of two new cities in Kuwait. During the 1980s several major remarkable buildings designed by internationally recognized architects were constructed in Kuwait.[9]

Ibrahim argues that the new styles of architecture entered the Arabian Gulf region after the discovery of oil through two venues. The first venue was large size projects and development of monumental architectural plans that were designed and constructed by Western architects without any economic or technical limitations in designing these projects (banks, hotels, public buildings, service buildings, etc.). The second venue was domestic architecture built by architects in the form of private houses (modern villas). These villas were mostly designed and constructed by local or Arab architects who were influenced by economic, cultural and social requirements of the owner who usually imposed his views on the architect.[10] The social and cultural status of the owner was reflected in the design of his house. Most of these villas were built in the form of Mediterranean architecture found in Egypt, Syria and Lebanon. The Kuwaitis were inspired by the cultural development of these Arab Mediterranean countries, where they frequently spent summer vacations.

Adaptation of Modern Architectural Movements

The architectural profession in Kuwait progressed through many stages. The seventies and early eighties were considered periods of flourishing that were marked by a mixture of styles from all over the world.

Early Modernism and the International Style

Early Modernism and the International Style architecture (often associated with corporate architecture developed in the post-World War II era) influenced the design of most buildings constructed in Kuwait during that time. In the case of Kuwait, architects extensively used fair-face concrete, stone and marble cladding as the materials for this early corporate architecture period.[11]

Neo-Islamic

In the second half of the eighties, as Kuwait is an Arabic and Islamic country, its architecture went back to experience some experimental work in Neo-Islamic architecture. This movement was characterized by Islamic motifs and architectural elements used in a different context, and was a reaction to the architecture produced during the period of Islamic revivalism, which occurred at the end of the 19th century and the first half of the 20th century. This period was characterized by a return to traditional Islamic architectural patterns such as the use of ornamental elements.[12] In fact, unlike Modern and International Style architecture which tended to be straightforward and tectonic, this phase was characterized by ambiguity between what is functional and what is decorative.[13]

Late Modern and Post-Modern

There was then a transition period in the practice of architecture in Kuwait, represented by the aftermath of the Iraqi invasion of Kuwait on the August 2, 1990, and its liberation by an international coalition of forces. This dramatic experience had a remarkable impact on the Kuwaitis' security and sense of belonging.[14] Many buildings were damaged during the war by vandalism. The Kuwaitis became more appreciative of what they had and realized the value of the built environment in creating a national identity and sense of belonging.

During the years after the liberation of Kuwait from the Iraqi occupation in 1991, a number of large building commissions have been completed in an effort to rebuild the country and change the cityscape. Some of these large commissions were influenced by the growing trend in Western architecture towards the *Late-modern* and *Post-modern* movements. High-tech materials and modern, non-indigenous construction techniques were gradually replacing traditional building practices and materials, such as concrete and stone cladding, that have been used extensively in Islamic countries for millennia.[15] Although the Post-modernist elements went out of fashion in Europe after the 1980s to give way to new directions and concepts in architecture,[16] the influence of Post-modernism can still be seen in buildings that have been recently designed and constructed in Kuwait.

An Emerging Style: Al-Mutawa's Vision of Modern Traditional Architecture

"A country is recognized by its architects and its history is built into it,… [or] else the new would have nothing to do and nowhere to go".[17] At the same time that most buildings in Kuwait were influenced by the modernist aesthetics of international, non-indigenous architecture, there were a few attempts by local and foreign architects to recognize and acknowledge the heritage of traditional Kuwaiti architecture. Among those is Saleh Al-Mutawa, a Kuwaiti architect whose dream has been to revive the traditional architecture of Kuwait.[18] He has attempted to localize his architectural practice by reinterpreting certain local architectural elements in a contemporary language of three-dimensional forms.

For the majority of the 1990s, Al-Mutawa designed a large number of middle- to large-size apartment blocks around Kuwait, in addition to a high-rise office building. Three primary characteristics that distinguished this phase of his architectural practice are: 1) the extensive use of wooden elements, both old and new; 2) the incorporation of punctuated, fair-face concrete walls painted white with square patterns; and, 3) the utilization of traditional Kuwaiti elements used for the same function in new buildings.[19]

Al-Mutawa's recognition and acknowledgement of tradition took the form of reusing, or recreating, certain elements of architectural heritage in a contemporary design to convey a traditional image. His architecture reflects a local image of some sort, if we do not take it literally as a Kuwaiti image. It is an image that asserts its local Arab identity in the face of current worldwide trends toward sweeping globalization. Al-Mutawa's designs reflect a local, yet contemporary, image of Kuwaiti architecture.

Inception of Local Architectural Education

An important factor fostering a change in the status of architecture in Kuwait was the introduction of a local architectural education program in 1997. Prior to 2002, all Kuwaiti architects acquired their degrees from other countries—primarily the United States, Great Britain and Egypt. Domestic emergence of Kuwaiti architects began in 2002 with the first graduating class from the Department of Architecture at Kuwait University. This first academic architectural program in Kuwait was initiated within the College of Engineering and Petroleum to cover both the art and science of architecture. It is not an engineering program; rather, it is envisaged to be the nucleus of a separate College of Architecture in the future. By June 2006, the department had graduated five classes to practice architecture in both the private and public sectors. Given these facts, the landscape of the practice of architecture in Kuwait is expected to change dramatically. Professional practice of architecture in Kuwait is a recent phenomenon that is a reflection of the development of architecture and architects in the country.[20]

Summary about the Evolving Role of Kuwait's Architects and Architecture

The built environment found in Kuwait today is a product of the decisions made during its early stages of planning and construction. After briefly examining the history and background of architects and architecture in Kuwait, we move to summarize an argument that illustrates the evolving role of the architect and architecture in Kuwait.

The early inception of architecture in Kuwait was typified by the local construction of traditional houses. Vernacular architecture at that time had its special characters in Kuwait as well as in other parts of the Arabian Gulf. This style of architecture was influenced by the natural environment as well as economic, social and cultural factors. Kuwait, at that period of time, was mostly isolated from external influences until the discovery of oil during the 1940's. There were no formally trained Kuwaiti architects at that time and few foreign architects were employed by the government. Widespread building of traditional houses was carried out by local craftsmen.

The emergence of architecture as a profession in Kuwait coincided with the first urban plan of Kuwait City in the 1950s, as Kuwait experienced dramatic changes during the beginning of the second half of the 20th century. These changes occurred in the political, economic, and cultural arenas, and were especially evident in architecture. These changes were attributed to a number of factors, most significantly to the discovery of oil. Kuwaiti architecture at that time rapidly transformed to convert the country from fishing and trading vernacular settlement to a modern, planned metropolis. This transformation was the result of efforts made by Kuwaiti’s to utilize the oil wealth in improving their living conditions and joining the developed, modern world. The transformation was not imposed on them by outsiders as much as it was by selection and choice. The problem was not in choosing to modernize but in the rushing toward modernization without comprehending its drawbacks.

Due to the lack of trained Kuwaiti architects at that time, the inception of the architectural profession in Kuwait was characterized by the use of foreign consultants, primarily from England (Kuwait being an English colony at the time). These professionals came to Kuwait, initiating the first set of architectural and engineering offices. The presence of local architects and architecture in Kuwait began with the first formally educated Kuwaiti architect in 1958. It took another six years to initiate the first architectural firm managed by local architects, in 1964.

Even though the purpose behind introducing new cities and constructing remarkable buildings, designed by foreign architects in Kuwait by the 1980s, was to upgrade the standard of living of Kuwaiti citizens, the role of the local Kuwaiti architect was very limited due to his limited experience in studying, evaluating and managing large projects. Thus, international practice facilitated the dissemination of global trends into the urban environment in Kuwait.

After the discovery of oil, architects from neighboring countries were attracted to Kuwait along with construction workers and laborers. They brought with them their ideas, understanding and styles of architecture. Most of those architects were responsible for the design of modern houses (villas) in Kuwait. Unfortunately, most of these designs used strange shapes and forms, which from the researcher's point of view did not reflect the type of life that existed behind those buildings. They were just trying to impose over-creativity with the kind of open budget provided by rich Kuwaiti owners. Kuwaiti architects started to play a role within the design arena in this venue, sharing the work with the Arab architects in the design of the villas.

There were many attempts to modernize Kuwait by adopting international global architectural images in the design of medium and large-scale projects. The effect of international architectural styles has become more apparent after Kuwait was reopened, even more, to the West in the aftermath of the Gulf War in 1991. More buildings were commissioned to be designed by Western architectural firms mainly from the United States. The influx of foreign architects, especially from neighboring countries, practicing in Kuwait continues adding yet another dimension to the effect of globalization on Kuwaiti architecture. At the same time, attempts have evolved by local architects to reinvent traditional Arab forms. These architects are interested in reviving Kuwaiti traditional architecture.

These events produced two contrasting trends towards architecture in Kuwait; on one hand, there is a trend toward establishing a national identity in architecture, while on the other, there is a trend to build according to international styles found in other parts of the world. The outcome was a mix of contrasting styles that illustrated a clash of identities. The prominent, late Hamid Shuaib, the first Kuwaiti to practice architecture in Kuwait, reiterated the question posed in many conferences and seminars held in the Gulf area: ‘‘when will we, in Kuwait and other Gulf countries, have modern architecture suitable for our community, environment and heritage?’’[21] He criticized the fact that architecture in Kuwait and other Gulf countries was being produced by architects from different parts of the world.

It is a fact that Kuwait has experienced, is currently experiencing, and will experience the utilization of the expertise of foreign architects. The fact that most of the public buildings in Kuwait were designed by foreign architects and firms was a result of the absence of qualified local architects and firms that could handle projects of this size. With the emergence of Kuwaiti architects, educated mainly in Western cultures and the

United States, the establishment of the Department of Architecture at Kuwait University, and the graduation of five classes of students by 2006, the landscape of the practice of architecture in Kuwait is expected to change dramatically. Most young Kuwaiti architects are aware of the impact of the forces of globalization and localization on their architecture, but their responses vary from dramatic to minimal according to their personal understanding.

The current trend for architectural practice in Kuwait continues to utilize the expertise of foreign architects in most large governmental projects. The current practice in large governmental projects is to assign the project to international consultants with a minimal percentage share for local architects (10-30% of the work load).[22]

The Professional Organizations

The Kuwait Society of Engineers, founded in 1962, is considered the first and only official organization in Kuwait focusing on engineers and architects in particular—their problems, expectations and responsibilities. The main goal of the Kuwait Society of Engineers is to contribute to the industrial and architectural revolution of Kuwait, in cooperation with the associated parties. In 2004, the Society initiated the Kuwait League of Architects—a sub committee under its umbrella to take responsibility for all the architectural tasks within the society.

Since its creation, the Kuwait Society of Engineers has attempted to develop laws and regulations to govern the profession in Kuwait. As a result of these attempts, the first set of laws came into existence in 1972, which organized the rules and regulations governing the practice of architecture and engineering in Kuwait.[23] By law, all private architectural and engineering offices in Kuwait are required to provide both architectural services and in-house structural engineering services. The offices are classified by the Society in four categories, according to office size, staff size, number of projects per year, and the degree of importance of the projects they design and manage.

The Professional Architect Classification System

The regulation for the classification of architects was adopted by the Kuwait Society of Engineers in June 2002.[24] The standards for the professional architect were based on the "recommended guidelines for the International Union of Architects-UIA Accord: on recommended international standards of professionalism in architectural practice, policy on registration/licensing/certification of the practice of architecture."[25]

The regulation classifies architects as follows: [26]

1. Architect: a candidate holding a bachelor of architecture degree from a recognized university.
2. Professional architect**:** a candidate that passes the required examinations (Professional Architect Examination) and satisfies one of the following requirements:
    a) Four years of documented practical experience after graduation.
    b) A master's or doctoral degree in architecture followed by at least one year of documented professional experience.

3. Consultant architect**:** a candidate that passes an interview with a special committee and satisfies one of the following criteria:
    a) A professional architect with fifteen years of documented professional experience after graduation.
    b) A professional architect holding a master's degree in architecture and ten years of documented professional experience after the degree.
    c) A professional architect holding a doctorate degree in architecture and five years of documented professional experience after the degree.

This attempt to classify and regulate the practice of architecture in Kuwait is approximately parallel to the American model of architectural professional practice with a difference in the titles. The American model entitles an individual with a bachelor's degree in architecture as "intern" and an intern who satisfies the Intern Development Program (IDP) requirements and passes the Architect Registration Examination (ARE) as "registered or licensed architect." In Kuwait, a graduate from a 5-year architectural program is entitled to be called "architect" and an architect who acquires four years of documented practical experience after graduation and passes the Professional Architect Examination earns the title "professional architect." According to the new classification system in Kuwait, the first group (architects) are limited to working with secondary tasks as helpers, while only professional architects can design and sign drawings and major documents. The purpose behind this limitation is to encourage architects in Kuwait to register for and pass the Professional Architect Examination in order to be classified as professional architects with much more authority and work delegation. It is an attempt by the Kuwait Society of Engineers to regulate and elevate architectural practice in Kuwait.

The Professional Architect Examination

The establishment of the professional examination in the field of architecture in Kuwait was a major step towards evaluating the competency of architects practicing in the country. The Professional Architect Examination was initiated in 2002 and is similar in format and content to the Architect Registration Examination (ARE) offered by the National Council of Architectural Registration Boards (NCARB) in the USA.[27] In order to prepare candidates for this examination, the Kuwait Society of Engineers, in association with the Office of Consultations and Career Development of the College of Engineering and Petroleum at Kuwait University, offers a continuing education short course that introduces the candidate to the purpose and nature of the exam and covers important topics related to the situation of Kuwait.[28]

Internship Programs in Kuwait

Academic Internship

Even though academic internship is not compulsory in the only architectural educational program in Kuwait (The Department of Architecture at Kuwait University), the majority of the 4th and 5th years students seek this opportunity during the summer for a couple of months. The structure and content of this summer internship differ according to the interest of the student and the type of work performed in the chosen firm. Each student has a specific chart and forms to fill out during this training experience. There are weekly and monthly reports as well as a final presentation on all the tasks and work a student has accomplished during his/her training in the firm. This experience is offered only in the summer and is counted toward 3 credit hours of the architectural curriculum at the Department of Architecture at Kuwait University.

Post-Graduate Practical Training

There is no obligatory formal practical training program within the architectural profession in Kuwait. Practical training is not a requirement in order to officially practice architecture in Kuwait and earn professional status. It is assumed that four years of documented practical experience after graduation will be sufficient in order to take and pass the Professional Architect Examination and be classified as a professional architect.

In terms of post-graduate practical training, an optional program has been in existence since 2004, to train new graduates from both engineering and architecture. This program is organized and managed by the Kuwait Fund for Arab Economic Development (KFAED). The selection process is competitive and the program hosts about 2-3 architectural graduates from Kuwait University (representing 15-25 %) of the total graduating class each year; and a similar number of architectural graduates from abroad. Therefore, an average of 5 new architectural graduates joins this post-graduate training program each year. The following section will state information about KFAED and will go into the details of the objectives, design and structure of this optional practical training program.[29]

The Kuwait Fund for Arab Economic Development (KFAED) was established in December 1961 as the State of Kuwait's agency for the provision and administration of financial and technical assistance to the developing countries in their efforts towards economic development.

In 2002, KFAED as a developmental institution started to think of a new approach to support development in Kuwait through the financing of national programs with strategic significance. One leading program in this context aimed for the upgrading of national human resources in response to private sector needs. In 2004, KFAED initiated a practical training program designed to support the Kuwaiti private sector through implementation of a human resource development scheme. The fund started implementation of that program in engineering/architecture specializations, with plans to train about 30-40 recent Kuwaiti engineers/architects graduated each year.

The objective of this program is to assist these graduates in acquiring the skills and practical knowledge needed to enhance the prospects of their employment especially by the private sector. Another objective of the program is to create operational links between international and Kuwaiti companies, so as to assist in the technical and managerial development of the latter. KFAED relies on its strong established relationships with international companies in creating suitable partnerships between international companies and the Kuwaiti firms by utilizing this training program as a catalyst.

The design of the training program aims to reach a decent level of professionalism in a short time-period. The program's duration is 12 months and it calls for implementation in three phases, theoretical, training abroad, and local field training:

1. Theoretical phase: The duration of this phase is 3 months, and it encompasses an intensive program of classroom lectures and workshop activities, whereby trainees strengthen their technical, managerial, and financial knowledge and skills. This phase is divided into 13 weeks:

Week 1- Project management for non-managerial backgrounds

Week 2- Communication and presentation skills

Week 3- Self and time management

Week 4- Problem solving and decision making

Week 5- Value engineering

Week 6- Report writing (English / Arabic)

Week 7- Finance for non-financial backgrounds

Week 8- Feasibility study and business planning

Week 9- Negotiation skills

Week 10- Health, safety and environment in engineering projects

Week 11- Team work and team building

Week 12- Contracting and contract management

Week 13- Organizational structure and work ethics and behavior

2. Practical training abroad phase: The duration of this phase is 6 months, when trainees are assigned to international companies outside of Kuwait so as to familiarize

them with advanced practical methods and provide hands-on experience through specific assignments within these companies.

3. Local field training phase: The duration of this phase is 3 months, when the trainees are assigned to national companies to apply the skills, experience and knowledge acquired in the earlier two phases in specific responsibilities assigned to them within these companies.

KFAED bears, under contractual agreements with the trainees, the cost of the program, including the payment of monthly stipends and the defrayal of other ancillary expenses. Since the inception of this training program, 55 engineers and architects have graduated, as of summer 2006. Eighty percent of them were employed in the private sector satisfying a major objective of initiating that program.

The Role of the Architect and Architecture Worldwide

All previous information presented in this literature review chapter focuses on architecture and architects of the country where this study was conducted—Kuwait. We now move to a larger domain to review literature about architecture and architects worldwide. In order to create a compelling understanding and vision about the role of the architect and architecture in today's socio-cultural, economic global environment, it is helpful to understand the history of this role, the current context of this role, and the expected and/or desired future context for this role.

The Evolution of the Role of Architect and Architecture[30]

The regulated profession of architecture is relatively new, yet there have been architects for as long as societies have been built, with little distinction between designers and builders. Hundreds of years ago, before the Renaissance, the integrative knowledge required for the processes of both design and construction was typically embodied in the hand of one individual—"a master-builder." The master-builder used relatively few models and drawings, and relied heavily on direct verbal communication and on-site, full-scale layout. This direct process required the master builder to be continuously present on site and, typically, limited his practice to one major project at a time.

The master-builder's predominance gradually diminished during the Renaissance era. The early Renaissance birthed the concept that theory provided the essence of architecture, rather than practical technical knowledge or construction skills and experience. A major building client in that period would often employ and closely supervise a collaborative team for design and construction. By the late Renaissance, the technological development of drawings allowed an architect to describe a building design remotely. Architects were able to withdraw from day-to-day construction supervision and undertake multiple projects concurrently.

Four hundred years after the existence of the master-builder, the general contractor and professional engineer roles emerged. This occurred in England in the mid-19th century. The general contractor's relation to the architect was, in general, strictly financial. Drawings of the earlier period become contract documents. Design-bid-build general contracting dominated architecture in that industrial era.

In the early 20th century, new materials, methods, and manufacturing technology transformed architecture. As building design and construction increased in complexity, with multiple materials, products, and project participants to coordinate, design completion was often expected within a shorter time frame. The challenges of integrative project leadership became more demanding. The 20th century saw an increase in specialization with the emergence of various types of engineers and design consultants for interiors, lighting, acoustics, fire safety, code compliance, sustainability, etc. During the late 20th century, intermediary project and construction managers emerged, and many of them utilized information-age management techniques, often replacing the architect as the project leader.

During the approximate 5000-year evolution of architecture, the master-builder, who was the comprehensive generalist architect, transformed into a modern architect, who is one member of a team of specialists. At the same time, communications evolved from verbal exchanges to paper drawings to digital media.

The Conventional Role of the Architect within the Profession[31]

There is an important social context in which the design and production of architecture takes place. This context includes the profession, architecture firms, clients, and practitioners' shared ideas about how buildings ought to look and ought to function.

The conventional role of architects is defined in society and appears to be well understood. Architects are both technologists and artists whose design talents yield buildings with beauty, stability, utility, and, it is often hoped, cost-effectiveness. Architects' functional and legal responsibility is to prepare drawings and specifications accurately showing what to construct, to assist clients in obtaining project designs approved by all concerned parties, and to mediate and provide guidance during the construction of projects. The successful architect must have extensive technical and engineering knowledge, organizational and managerial ability, sociological and political sensitivity, legal awareness, selling and marketing skills, economic and accounting know-how, social and business connections, and some financial resources, not to mention design talent and a commitment to hard work.

During construction, the architect's role changes from design to design clarification and modification (known as change orders), coupled with periodic observation of the contractor's work. The architect continues to interact with the property owner, tenants, leasing agents, lenders, and inspectors having jurisdiction over the project.

The Role of the Architect within the Socio-Cultural-Economic Global Environment

From the evolution viewpoint, one can comprehend that the historical role of an architect essentially was not only that of an artist and engineer, but also an institution maker, which is not possible in the present time where the architect is a collaborator within a team of specialists. Currently, the master-builder scheme may be re-emerging within alternative project delivery systems in the form of a dynamically collaborative design-build team. The question is who is the dominant leader of this dynamic team—is it the architect, the contractor or someone else? Rapidly evolving technology is affecting architecture by driving increasing specialization and compressing time frames. These developments may require reevaluation of the role of the architect as a leader and/or design specialist.

In 2004, James Cramer presented 15 trends that are transforming design practices: 1) process innovation, 2) competitive productivity, 3) intelligent and integrated buildings, 4) globalization, 5) speed of market, 6) building information modeling, 7) shortage of talented workforce, 8) building lifecycle management solutions, 9) emphasis on creative and knowledge entrepreneurs as solution providers, 10) clients' strategic optimism, 11) humanized commercial and institutional environments, 12) green and sustainable design, 13) leadership in design and construction, 14) strategic positioning and modular processes, and finally, 15) the diminishing of distinctions between architects, engineers and contractors in the minds of the owners as well as the diminishing of design-bid-build delivery system.[32]

The trends in the 2004 list were monitored throughout architectural practice during that year. Cramer subsequently modified this list in 2005 according to the practice findings of 2004. Two trends of the 2004 list were dropped form the new 2005 list—shortage of talented workforce and emphasis on creative and knowledge entrepreneurs as solution providers. On the other hand, one trend was added to that 2005 list, which is the value of well-managed and flexible firms, such as the Beck group, in achieving top quality products.[33]

An earlier attempt to evaluate architectural practice trends was conducted in 1998 by the California Board of Architectural Examiners (CBAE). CBAE surveyed California licensed architects to develop an outline of the kind of change expected to occur in the architect's practice over the five years following that study (1998-2003).

The results of the study showed that almost three-quarters of the respondents expected an increase in design-build activity (72%) and the same proportion (72%) expected an increase in the effect of technology on practice. While a majority (65%) anticipated an increase in liability exposure and almost half (44%) expected national and international competition for local work to increase, over half (54%) saw an increase in opportunities for international work and nearly two-thirds (63%) expected an increase in partnering with other architects and professionals.[34]

All of the previous visions and examinations, some of which were based on empirical data, indicate a framework of common practice trends that are and will be prevalent in the practice of architecture for several years. By interpreting the outcome of the reviewed literature and by observing and researching related subjects, the researcher was able to reach a conclusion that this common framework could be represented by four major practice trends: 1) globalization, 2) computerization and new technology, 3) collaboration, and, 4) leadership. The current and future role of architects and the profession ought to adapt accordingly, given the dynamic characteristics of each trend within this framework.

Globalization and the Role of the Architect/Profession

The business environment for architects and architecture is changing worldwide, due to the driving force of globalization. The expertise of international consultants is being sought all over the world and they in turn seek work in other countries. Both developed and developing countries gain benefits from international cooperation. Developing countries benefit from the expertise of developed countries, while developed countries find work opportunities in developing countries.[35] This condition of physical and virtual movement has created increasing cultural contact and interaction, magnifying differences and commonalities between cultures and creating conditions of cultural fear.

Therefore, the role of architects must also adapt to the nature of global practice. Architects must be much more responsive to the cultures and environments in which they work. President and CEO of Leonard Parker Associates, Steve Huh, emphasized that "it is important to fully understand the culture of the country where you are working."[36] When asked how the design professions are different in Asia, Harold Adams, past chairman of RTKL U.S. architectural firm, replied—"the professionals are as different as each country, therefore it is not possible to provide one answer; in general some countries are very advanced, others are developing. The great differences between the culture and people of each country and how those differences influenced the way architects conduct business, negotiate, design, and so on. While it seems self-evident, and you try to prepare yourself for it, it's just something you don't understand until you get there and experience it firsthand."[37] RTKL's initial business strategy to secure work in China was to recruit a team of U.S. educated Chinese nationals. Adams commented about this group that "they understand the language, the culture and the technology of the United States and China. We couldn't do it any other way."[38]

On a related topic, Adams clarified that the issue of cultural sensitivity is part of their global strategy to reach international work either on American soil for clients from other countries or in chasing projects abroad of the United States. He asserted that "we always go through cultural sensitivity classes before we approach new international business trying to develop a background about the culture of each country." He added that "in our first exposure to an international Japanese client abroad of the United States, we had gone through cultural classes about Japan learning even the eating habits of the Japanese people." On American soil, Adams mentioned that cultural sensitivity issues and concerns of their international clients were incorporated by them into the designs of the French and Saudi Embassies in the 1980's.[39]

Computerization and New Technology and the Role of the Architect/Profession

Architecture is undergoing an exciting period of experimentation and implementation of bold alternatives in technology. The result of these can be seen in the managing of architectural practice. "Ahead, we see more technology changes in the next five years than in the past 95."[40]

As mentioned previously, the geographic markets of architectural practice have grown significantly in recent years. Advances in computer and information technology have decreased the necessity for close proximity between office and site; architectural firms work remotely all over the world.[41] Firms are growing from using technology as a computing tool to using it as the basic medium of business and design communication.

Building information modeling (BIM) is considered a new tool of change that might seize the speed of market in today's practice of architecture. Therefore, the architect's role is to manage and control the quality of information transmitting between departments and offices in a matter of seconds.

Strategic use of technology in organizing, structuring and sharing architectural design data with digital tools will be the most future-relevant theme in differentiating between architectural firms. With the pace of technological change and more and more tools available to the profession, architects ought to be smart enough to make the right decision about where to put resources for the best present and future return. The constant fear of being behind in this trend drives some firms to prematurely adopt unnecessary or marginally productive technology.[42]

Collaboration and the Role of the Architect/Profession

The role of the architect in the evolving world remains centered on architecture formed about an idea of use and place, but an architect must also extend his role into assembly, products, materials, and construction. While we cannot return to the idea of the master builder embodied in a single person, the architect can force the integration of several disciplines involved in the design and construction process.[43]

"The distinction between architects, engineers and contractors in the minds of the owner will diminish in the years ahead. Design-bid-build will also diminish, but will not die."[44] Architectural practice has built a paradigm characterized by the separation of disciplines and the sequential separation of design and construction activities. This paradigm of separation is incompatible with the current speed of the market, which forces new models of integrated collaboration in both design and construction to exist. Among those models are several alternative project delivery systems such as advanced design build, fast-track and bridging, as well as new design communication platforms such as building information modeling and other electronic database communication tools. Such integrated collaborative models bring together architects, engineers, contractors, and owners dedicated to continuous design improvement during design and construction. The speed of market is forcing the existence of new digital communication technology in the design and construction fields, which will contribute to the introduction of more sophisticated integrated collaborative processes and models in the near future.

All of these expected changes will force architects to develop new management and financial skills as well as design skills to maintain a place at the table. The role of an architect under these collaborative integrated models will not be marginalized to design only; rather it will be related to both the development of the project parameters (design) and the actual implementation of design ideas (construction).

Leadership and the Role of the Architect/Profession

Emerging technologies and collaborative teams promise to help architects work more productively—faster, better, more profitably.[45] This has put a tremendous premium on the architect's decision making and leadership skills. "Leadership in design and construction will become increasingly more competent, courageous, and visionary."[46]

Most professionals are optimistic that this is the time for architects to reclaim their leadership role and accept responsibility of being, as they used to be, the client's trusted advisor. It is a challenge that, if confronted, might result in a wonderful opportunity for the profession of architecture—architects can once again lead the project team. If this is the case, then James Cramer, editor of DesignIntelligence, believes that the collaborative business nature of the A/E/C industry is very complicated. It requires strong management skill in addition to the architect's aesthetics skills in order to organize the activities of a multitude of team members, each of whom has a special contribution to make.[47] Today's architect's leadership role ought to be strong enough to dictate how every individual can contribute to the group effort. Will we see more architects step up to take action in leadership in the near future?

This section about the role of the architect within the socio-cultural-economic global environment outlined many ways where the practice of architects and architecture is changing. According to the developed argument, we are immediately facing four major paradigm shifts that will change the role of architects within the profession.

First, the pursuit of global markets for architectural services is increasing. Many of the world's economies depend on one another for goods and services, and architectural firms are competing in the global market. This trend of globalization lays out an accompanying concern for cultural differences between the countries around the world. This cultural sensitivity concern must be confronted and dealt with if architects and firms want to go global.

Second, information will be readily accessible to all parties. Computerization and new technology will support this trend by providing the collaborative team with the means to produce intelligent models quickly and the ability to share information easily.

Third, a majority of projects will be team-based. The solitary designer of the past will be replaced by a collaborative team of many talented minds (and disciplines) working together to solve complex problems. New technologies and processes in design are changing not just what we do, but how we do it. Tomorrow's successful architects must be adept at collaborative design techniques and comfortable working at a fast speed. There will be new ways of working not only at the office, but on the construction site as well.

Fourth, the speed of the market will rapidly accelerate. Leadership and decision making will be key factors in this process. The architect must take a role and emerge as a leader of tomorrow's design world.

The Potential Impact of Architectural Practice Changes in the Future of Architectural Education and Internship Programs

On the threshold of the 21st century, countries face daunting challenges in this global environment that is dominated by computerization and new technology. The architectural profession is being globalized for the same reasons as other professions. Computers and technology permit easier access to colleagues across time and distance. The advances in technology for architects permit them to share information and drawings digitally. These accelerated changes in architectural practices should have significant implications for architectural education and professional training in internship programs in the future.

The implications of globalization and technology in architectural education are profound. Boyer and Mitgang, in the introduction to their review of architectural education and practice, note that the "combination of globalization and computerization has implications for architecture education that many schools are only beginning to confront."[48] However, these implications are clearly absent from the body of their report; they offer no recommendations or concrete examples of how these implications might be confronted.

To confront the globalization trend, architectural education should recognize its challenges and develop curricula that educate architects for global work. Paul Knox and Peter Taylor predicted in their paper, "Toward a Geography of the Globalization of Architecture Office Networks," that there will be plenty of scope within future architectural curricula to accommodate further knowledge of current business practices, including leadership and a deeper understanding of world geography, history, and culture. Universities may address these issues traditionally, via required courses on professional practice, as well as through elective courses and seminars.[49]

More opportunities for study abroad and student exchanges should be encouraged in order to mitigate the cultural barriers between future professionals. Knox and Taylor believe that improved English language skills are another subject that should be addressed in the near future. Globalization has made English the primary professional and commercial language with the expectation that professionals at a certain level should exhibit a decent degree of technical reading ability.[50] Even though educators think there is insufficient room in accredited architectural curricula to introduce this issue, advanced English language courses (depending on whether English is a student's first or second language) may need to be considered as an addition to future architectural curricula.

Just as architects and firms benefit from international strategic alliances in design and construction, so architectural schools are perceived to benefit from strategic alliances that may involve significant numbers of students and faculty in collaborative teaching and research environments.[51] The issue of distance education may occupy more room in this collaborative teaching and research environment. Universities can utilize the latest advancements in technology to offer sophisticated distance education programs.

An argument could be made that undergraduate education in general, and first professional degrees in particular, cannot really be expected to furnish the kind of requisite knowledge and experience for international practice. Moving a step further from academia, an answer for that argument can be made by noting that internship programs provide the appropriate settings for further professional training and development in international practice skills.[52]

As the profession of architecture becomes more globalized, so do the professionals, as many architects tend to spend a great deal of time traveling and working or even living full-time outside of their home borders. For this reason, the services offered by licensing and regulatory bodies, including internship programs, must follow their professionals.[53] Licensing and regulatory bodies that offer and manage internship programs should utilize the latest technology advancements in order to enable them to offer global access for their members living and/or working outside their local borders, in order to give them an opportunity to satisfy the requirements of internship programs, no matter their location on the globe.

All of the challenges and changes outlined in this section can be better met by the profession if the training grounds, both in school and within internship, realize that the kind of solely design-oriented education adopted by much of the traditional academy, does not serve the interests of the profession at large and does not prepare students to be successful in the workplace.

Building, renovating, or redefining a future architectural education or internship program will be a useless exercise if it does not have global capabilities. Strategic research with leading world-class universities, institutes, and external technology sources will only be possible with a supportive physical and information technology infrastructure. Team-oriented teaching, research and practice might become the norm in the scientific field asking for measures to facilitate interaction and communication for increased efficiency, productivity, and innovation in architectural teaching, research and practice.

Design studios, the core of architectural education, should be multidisciplinary, global, and flexible. The architecture education of the future can continue to evoke the artistic response, while considering the needs of the global nature of architectural practice. There should be technology-driven enhancements added to the structures of educational and internship programs, along with consideration for new materials-driven changes, green buildings areas, and integration within the community.

Overview of Architectural Education and Internship in the United States

In this section, a specific review of architectural education and internship systems within the United States is conducted for the purpose of clarifying all the details and requirements of those professional systems within the regulated architectural profession in the United States.

Architectural Education

In nearly all architecture schools in the United States, student life and work revolve around a studio class.[54] Other classes in the architecture curriculum are designed to support the concepts emphasized in studio. The course of study usually includes, but is not limited to, studio courses on design and aesthetic theory, architectural history and theory, as well as practical and technical courses on building economics, law and ethics, structures, building materials and technologies, energy conservation, solar design, acoustics, building mechanical systems, electrical systems, plumbing and construction.[55]

One particularly rigorous aspect of studio classes is the "critique" or "review." After spending sleepless nights preparing models and presentation drawings, students pin up their work on display for instructors (jury) to offer constructive criticism. Student work is often in the form of drawings and renderings, either through computer-aided design or drafting by hand. Students also build physical models and create presentation boards for drawings and graphics.

The workload in architecture classes is often many times greater than other university programs.[56] Because of this workload, students must be very dedicated, but a high level of understanding of the material often results.

Baccalaureate Education

There are two undergraduate academic degrees awarded within the U.S. architectural education system. The first degree is the first professional Bachelor of Architecture (B.Arch.), [57] which consists of a course of study that generally lasts five years, most often begun directly out of high school, with no prior post-secondary education. The B.Arch. is accredited by the National Architectural Accrediting Board (NAAB)—the sole agency authorized to accredit U.S. professional degree programs in architecture, as a professional degree, allowing the recipient to qualify for registration with the training and examination components being satisfied.

The second undergraduate degree is called the Bachelor of Science in Architectural Studies (B.S.Arch) or the Bachelor of Art in Architectural Studies (B.A.Arch) or the Bachelor of Environmental Design (B.E.D.).[58] Some universities offer these non-accredited, four-year pre-professional degrees. Therefore, students seeking architectural registration must enroll in a master's degree (M.Arch) program to be professionally licensed.

Graduate Education

A total of six graduate academic degrees are awarded within the U.S. architectural education system.

The first degree is the professional Master of Architecture (M.Arch.).[59] The M.Arch. degree is the title denoting a collection of three different levels of a master's degree in architecture. Many schools offer all three tracks and they range from 1 to 3.5 years, usually called M.Arch I, M.Arch II, and M.Arch III:

- M.Arch I is a professional degree for students who have earned degrees in either related disciplines or a degree other than the 5-year Bachelor of Architecture degree, such as a Bachelor of Arts or Bachelor of Science with an emphasis in architecture, which is typically not a 5-year degree.
- M.Arch II is a post-professional degree involving between one and two years (depending on which school) of intensive, focused work for students that already have a 5-year Bachelor of Architecture degree.
- M.Arch III is a professional Master's degree that takes 3.5 years to complete and it requires no previous education in architecture.

These degrees are accredited by NAAB as professional degrees, allowing the recipient to qualify for the Architect Registration Examination (ARE) after approximately three years of experience working in an architect's office (internship).

Graduate-level architecture programs consist of coursework in design, building science, structural engineering, architectural history, theory, professional practice, and elective courses. Some M.Arch programs allow students to specialize in a specific aspect of architecture, such as architectural technologies or digital media. A thesis or final project is usually required to graduate.

Recently, a number of schools have begun eliminating their B.Arch. programs, replacing them with five-year M.Arch programs. In almost every case, these programs are effectively the same as the five-year B.Arch. programs, but with the added benefit of a master's designation.

For those without any prior knowledge of the field, enrollment in a career change program is needed in order to supplement them with the general education acquired through professional education in architecture. It is an intensive program, typically comprising courses in design studio and visual communication, construction and structural systems, building science, static and strengths of materials, architectural history, and if needed, courses in other fields such as calculus, physics, and computers.[60]

The second graduate degree is the Master of Science in Architecture (M.S. Arch.).[61] M.S. Arch is non-professional degree (not accredited by the NAAB) at the master's level for those seeking advanced knowledge in preparation for careers in architectural research, university teaching, or specialized practice and consulting. This degree may also act as a steppingstone toward a Ph.D. in architecture.

Admission to M.S. Arch programs is offered to those students possessing professional degrees in architecture as well as those possessing degrees in related disciplines. It is an advanced, multidisciplinary thesis degree program designed to provide highly qualified students with a traditional academic foundation in theoretical concepts and research methods. In this program, students develop support courses and a thesis topic in a specific emphasis area.

The third and fourth graduate degrees are either the Doctor of Architecture (D.Arch.) or the professional Architectural Doctorate (Arch.D.).[62] The D.Arch is a post-professional doctoral degree in the field of Architecture. It can be completed after either a B.Arch. or M.Arch, but is not required for state licensure, since either the B.Arch. or M.Arch is required. Another case exists only at the University of Hawaii, which confers a first-professional (accredited) degree in architecture for people with no prior architectural professional degree. This degree is referred to as the architectural doctorate (Arch.D.).

A fifth graduate degree is the Doctor of Design, which is only offered by two universities within the United States—Harvard University and Washington State University.[63] This doctoral degree in professional design is designed for seasoned professionals who are looking to make original contributions to their fields, as well as traditional graduate students in the design disciplines who seek a doctoral degree.

The sixth and final academic graduate degree is the Doctor of Philosophy in Architecture (Ph.D. Arch.).[64] The Ph.D. program in architecture is a non-professional degree (not accredited by the NAAB) program of study and research leading to a doctoral dissertation representing the results of independent research and original investigation. The Ph.D. in architecture is appropriate for those seeking careers in research and teaching in architecture and its related areas or in roles in government or professional consultation, all of which require depth in specialization and experience in research. Although students typically have a background in architecture, other related backgrounds may also be appropriate.

Internship (Academic/Toward IDP Credits)

Undergraduate architectural students or students enrolled in M.Arch programs in the United States have the opportunity (option) to enroll in an internship. This experience can either count as academic credit (academic internship) or toward Intern Development Program (IDP) credits. The IDP is the National Council of Architectural Registration Boards' (NCARB's) official postgraduate training program in architecture. NCARB is the professional association of architectural registration boards of the various states in the United States. It helps formulate architectural qualifications, organizes architectural internship (IDP), administers the licensing examination (ARE), and maintains a register of certified architects.

If students choose to count this internship experience as part of the IDP credits, the time period should be at least ten months and not counted as academic credit.[65] In addition, NCARB specifies that no training units may be earned toward the IDP prior to satisfactory completion of:[66]

1. Three years in an NAAB accredited professional degree program or the third year of a four-year pre-professional degree program in architecture accepted for direct entry to an NAAB accredited professional degree program;

2. One year in an NAAB accredited Master of Architecture degree program for interns with undergraduate degrees in another discipline;

3. 96 semester credit hours as evaluated by Education Evaluation Services for Architects (EESA) in accordance with NCARB's Education Requirement, of which no more than 60 hours can be represented by general education courses.

Architectural Professional Practice

The education of an architect typically begins in a school of architecture but it does not end there. Training in architectural firms, continuing education, and professional practice further the architect's educational process.[67] In the field of architecture, the term "intern" is defined as an advanced student or unlicensed graduate, usually in a professional field, gaining practical experience under the direct supervision of a licensed architect.[68] In order to be licensed and acquire the title "architect" in the majority of the states within the United States, interns must participate in a postgraduate training program reflecting their commitment to acquire the comprehensive training essential for competent practice and for eligibility to take the Architect Registration Exam (ARE). This training program is called the Intern Development Program (IDP).[69]

A Brief History and Background of Architectural Internship [70]

Long before there were schools of architecture, there was mentoring. Under the tenets of this classical method of learning, professionals worked with apprentices and introduced them to architectural practice. Unfortunately, as professional demands grew, principal architects had less time for providing on-the-job training. Architects increasingly supported the creation of schools dedicated to the education and training of future architects. Eventually, schools of architecture grew in number and in size, filling the need for formal education. And, yet, fledgling architects were not ready to become licensed professionals, as they still needed to complete a practical training period. Once again, professional architects were asked to provide opportunities for graduates to acquire first-hand exposure to real-life complexities of practice and to learn how to apply the knowledge, skills, and abilities acquired in school. Architectural internship was then born.

Over the years, various attempts were made to structure internship. Registration boards usually determined its length and nature, typically requiring interns to log three years of practical training in the employ of architects before qualifying for examination and eventual registration. What constituted acceptable experience varied considerably among NCARB's member boards for many years.

The debate over what specifically constituted acceptable experience in an internship setting lasted for decades. In 1973, during a meeting of representatives from the four architectural collateral organizations—American Institute of Architects (AIA), the Association of Collegiate Schools of Architecture (ACSA), The National Architectural Accrediting Board (NAAB), and The National Council of Architectural Registration Boards (NCARB)—the group concluded that internship was unstructured, lacked definition, and had no clear path for its successful accomplishment. They acknowledged the profession's efforts to promote structured internship, most recently in the 1960s, when a "log book" concept for recording training experience was tried and failed.

Intern Architect[71]

The term "intern" refers to any individual in the process of satisfying a registration board's training requirements. This includes graduates from recognized architecture programs and architecture students who acquire acceptable training prior to graduation. “Intern architect” is a term often used to describe an individual who has successfully completed a professional degree in architecture, is in IDP training, and is studying for the professional certification exam (ARE). Most states prohibit the use of the word "architect" (or any derivation there of) from any person not licensed to practice architecture.

The Post-Graduate Internship: The Intern Development Program (IDP)

A Brief History[72]/*Background*[73] *of the IDP*

The story of IDP goes back to 1969 when an NCARB resolution established the title "Intern Architect" and began brainstorming about the development of an internship program. In 1972, research was conducted to develop a program for architectural internship and a national committee was established by the American Institute of Architects (AIA) and NCARB. The Intern Development Program (IDP) was then developed in the mid-1970s as a voluntary program to document a diversity of training experiences that preceded becoming a licensed architect. In 1976, the IDP was adopted by three states (Colorado, New Jersey, and Texas) as a pilot program. A year later, the IDP was initiated nationwide and by 1978, the State of Mississippi became the first state to require IDP completion for initial registration. NCARB and the AIA officially launched the IDP in 1979. In 1996, the IDP first became required for NCARB certification, and is currently required by 49 states for initial licensure.

The IDP is a national architectural training program in the United States administered by NCARB. NCARB is solely responsible for governing IDP through the establishment of the program's training criteria and a national system for monitoring interns' training progress. IDP's policies are established by its coordinating committee—a joint NCARB/AIA advisory committee. The Intern Development Program Coordinating Committee (IDPCC) advises NCARB and AIA on matters relating to improving the IDP. The IDPCC was formed to bring representatives of appropriate architectural stakeholder organizations together to discuss issues of mutual interest and concern regarding the IDP.

IDP is designed to provide structured training for interns to insure that they are exposed to most aspects of the architectural profession. A candidate works under the supervision of one or more architects as mentor(s) on a regular basis. Additionally the intern selects a sponsor, who is an architect who does not work for the firm where the intern is employed. Together the mentor and the sponsor work with the intern to make sure that the intern is actively working toward satisfying the requirements of the IDP program.

IDP Goals and Objectives[74]

For those graduates working toward an ultimate goal of licensure to practice architecture in the United States, the internship period is intended as a continuation of the process of architectural education, providing specialized training and knowledge about architectural practice that is not usually covered in the academic setting. The IDP is structured to better prepare interns for both the ARE and the wide range of career opportunities that lie beyond registration. The IDP was created to provide a coherent structure ensuring that graduates entering the profession today acquire the specific knowledge and skills necessary for the competent practice of architecture. IDP offers a set of resources that, when used in a systematic manner throughout the internship period, contributes to the development of skilled architects.

The IDP is an intern-driven program, meaning that success in the program relies heavily on individual initiative and persuasiveness with the employer, regarding the relevance of work-related assignments to NCARB's IDP criteria. Until late 2006, 49 states stipulated that only through IDP participation and documentation could interns comply with their required practical training standard. The profession now recognizes its responsibility for creating opportunities for exposure to the IDP’s areas of practice. Practitioners, having seen the program’s benefits, are eager to volunteer as supervisors and mentors to interns.

NCARB maintains the records of interns who participate in IDP. After an intern satisfies IDP requirements, the Council typically forwards a complete copy of the intern’s records to the registration board in the state where the intern will take the registration examination. This record of IDP activity confirms the intern’s compliance with the state’s practical training requirement.

IDP Structure[75]

The program is based on a units system, where the intern tracks experience in a variety of activities. While some state registration boards allow training options other than IDP for those pursuing licensure, most boards have adopted the IDP training standards as a requirement for licensure. The IDP training requirement establishes levels of training in four major areas of architectural practice: design and construction documents, construction administration, management, and professional/community service, which are then subdivided into 16 training areas. Interns must acquire 700 training units to satisfy the IDP training requirement. One training unit equals eight hours of acceptable activity in a given training area.

Through the IDP mentorship system, interns receive advice and guidance from practitioners. The IDP record-keeping system facilitates the documentation of internship activities, while the IDP supplementary education system provides a variety of learning resources designed to enrich training

IDP Duration

The current IDP is a “seat-time” based program with a typical minimum duration of three years, though most interns take more time to complete the required 700 training units, executed through sixteen different training areas, and to adequately document their experience.[76] According to the 2003 Internship & Career Survey, the average time it takes interns to complete the IDP training requirements is more than four years.[77]

Alternative Post-Graduate Internship: The Comprehensive Intern Development Program (CIDP) [78]

In an attempt to add qualitative (competency) measures to the IDP's quantitative (time) base, the California Architects Board (CAB) has adopted the Comprehensive Intern Development Program (CIDP) since January of 2005. CIDP is a specific *California requirement* that is designed to encourage better communication between the intern and supervisor and to enhance training effectiveness and accountability for both the intern and supervisor. CIDP requires an evidence verification of a supplemental documentation that an intern must complete while acquiring the necessary training units for NCARB's IDP. Interns seeking licensure in California must complete CIDP in addition to NCARB's IDP. CIDP requires interns to present training evidence in the form of work samples and written narratives to their supervising architects and mentors that shows their completion of the 16 core competencies currently employed by the IDP. Of the approximately 120 Skills and application activities contained in NCARB's IDP, 44 require CIDP evidence documentation.

The intern compiles the required CIDP evidence as he or she acquires training in the specified IDP skills and application activities. It is not intended that an intern devote any additional effort to developing work sample evidence for CIDP; it is anticipated that the evidence will usually result directly from the intern's day-to-day work acquiring the training experience. Though interns work to complete CIDP and NCARB's IDP simultaneously, the methods of documentation for CIDP and NCARB's IDP differ—the information must be separately recorded and tracked by the intern. Interns in California should independently satisfy CIDP (evidence-supported) requirements and NCARB's IDP (training unit-based). CIDP evidence verification is maintained by CAB while the IDP training unit verification is maintained by NCARB.

The Architect Registration Examination (ARE) [79]

The Architect Registration Examination (ARE) is the professional licensure examination for architects in the United States. The ARE is the only examination prepared and maintained by the National Council of Architectural Registration Boards **(**NCARB) and has been adopted for use by all 55 U.S. member boards. Eligibility to take the exam is governed by the prospective architect's state.

The ARE assesses candidates' knowledge, skills, and ability to provide the various services required in the practice of architecture. The examination consists of a series of nine tests in two formats: multiple-choice and graphic. The six multiple-choice tests are: Pre-Design, General Structures, Lateral Forces, Mechanical & Electrical Systems, Building Design/ Materials & Methods, and Construction Documents & Services. The three graphic sections are: Site Planning, Building Planning, and Building Technology.

Prior to the widespread availability of computers, the exam was offered annually, over a single week. Today, the exam is computer based, with candidates being able to set their own study and examination schedule. After the intern passes the examination and becomes registered in a state, NCARB records substantiate the individual's qualifications for certification. A "rolling-clock" policy was adopted on January 1, 2006 with the provision that candidates must pass all divisions of the ARE exam within a period of five years. However, participants will not have to retake any divisions passed prior to January 1, 2006.

Most states still require completion of NCARB's IDP before young professionals can start taking the ARE. If licensure requires three equal phases—education, experience, and examination—why integrate education and practice, but not practice and the exam? [80]

Late in 2005, the AIA National Board voted in support of a policy statement advocating that state licensing boards offer the ARE concurrent with the IDP. Even though NCARB has resisted this change claiming that this move would jeopardize the "health, safety, and welfare of the public," currently, seven states--Arizona, California, Florida, Kentucky, Texas, Vermont, and Wisconsin—empower interns to sit for the ARE, and those seven happen to be home to over 30 percent of the country's architects."[81]

Overview of Medical Education and Internship in the United States

Now we examine the education and internship systems in medicine, a profession that is practice-oriented, similar to architecture. Medicine and architecture have similarities and differences in their educational and general licensing procedures but both professions are ultimately concerned about the health, safety, and welfare of the public. They reinforce that through their licensing procedures and professional registration, which includes an internship component. This review of medical education and internship systems would enable us to create a base of comparison between internship systems (target research topic) within those two practice based professions in the United States as a professional example.

Medical Education

Medical education in the United States includes activities involved in the education and training of medical doctors, from entry-level education through continuing education of qualified specialists. It is an education related to the practice of medicine, either the initial training to become a doctor or specialization training thereafter. The four components of a standard medical education are 1) *baccalaureate* preparation in an undergraduate college; 2) medical studies leading to the medical degree from an accredited *medical school*; 3) the period of *graduate medical education* when a physician completes a residency and, possibly, a fellowship in medical specialty at an accredited graduate training program; 4) and *continuing medical education*, which keeps physicians' practice current throughout their entire professional career.[82]

Baccalaureate Education

Baccalaureate education sometimes is referred to as "premedical" education. Most commonly, this degree is in one of the biological sciences, but not always; in 2005, nearly 40% of medical school matriculants had received bachelor's degrees in fields other than biology or specialized health sciences, such as social sciences and humanities.[83] Admission into medical school typically requires either three years of undergraduate study or a four-year bachelor's degree from an accredited college or university, depending on the medical institution.[84]

Medical School (Entry-Level Undergraduate Education) [85]

In the United States a medical school is an institution with the purpose of educating doctors in the fields of conventional medicine or osteopathic medicine. Once admitted to medical school, it takes four years to complete this entry-level medical education program and graduate as a Doctor of Medicine (M.D.), or Doctor of Osteopathic Medicine (D.O.). Both allopathic (M.D.) and osteopathic physicians (D.O.) have equal rights and nearly an equal scope of practice in the United States. Traditionally the course of study is divided between *preclinical* and *clinical* studies:

a. The *preclinical* study: generally comprises the first two years and consists of classroom and laboratory instruction in core subjects and basic sciences such as anatomy and cell biology, biochemistry, physiology, genetics, pharmacology, histology, embryology, microbiology, pathology, pathophysiology, and neurosciences.[86] These core science courses are often supplemented by instruction in humanities and medical ethics, biostatistics, epidemiology, and medical sociology.[87]

Once students successfully complete preclinical training, they generally take Step 1 of the medical licensing boards, the United States Medical Licensing Examination (USMLE) or the Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA).

b. The *clinical* component: usually occupies the final two years of medical school and takes place almost exclusively on the wards of a teaching hospital or, occasionally, with community-based physicians as a *clerkship* experience.[88] Generally, initial training is taken at the medical school. Students observe and take part in the care of patients under the supervision of resident and attending physicians.[89] Rotations are required in internal medicine, surgery, pediatrics, family medicine, obstetrics/gynecology, neurology, and psychiatry. Beyond these, a variable number of specialty electives are required.

During the fourth year, most medical students take Step 2 of the medical licensing boards (USMLE or COMLEX). Upon completion of medical school, the student gains the title of doctor and the degree of M.D. or D.O., but cannot practice independently until completing at least an internship and Step 3 of the USMLE or COMLEX.

Graduate Medical Education and Internship

Graduate medical education (GME) is the next phase of formal medical education. It begins at graduation from medical school and ends after the educational requirements for one of the medical specialty certifying boards have been completed.[90] During the first part of this century, graduates of medical schools commonly spent one year of free-standing internship in a hospital to gain practical experience.[91] Today, this year is no longer called **internship;** rather, it is part of the three-to-seven years of postgraduate training, which is called **residency**.[92]

Internship

A brief history/background of medical internship. In the past, internship was the focal point of the transition from medical student to physician. From its origins in hospital apprenticeships, this experience of professionalization and initiation into direct patient responsibility has followed an inconsistent path. Modern U.S. internships began in the late 19th century, and the evolution of many of their characteristics has been determined more by socioeconomic-political issues than by consideration of educational objectives.[93] By the 1920s, the internship had become an accepted part of preparation for general practice, but specialty training was still largely unregulated and disparate.[94]

The medical profession has a long history of supporting internships. Interns assist, learn from, and work with, more experienced doctors.[95] The traditional medical internship occurs beyond the undergraduate education. During the last year of medical school, students apply for postgraduate residencies in their chosen field of specialization. These vary in competitiveness depending upon the desirability of the specialty, prestige of the program, and the number of applicants relative to the number of available positions.[96]

Historically, post-graduate medical education began with a free-standing, one-year internship. Completion of this year continues to be the minimum training requirement for obtaining a general license to practice medicine in most states.[97] However, because of the gradual lengthening of post-graduate medical education, and the decline of its use as the terminal stage in training, most new physicians complete the internship requirement as their first year of residency. Since the internship has been mostly subsumed into residency, it is now uncommon for a physician to take a year of internship before entering a residency, and the first year of residency training is now considered equivalent to an internship for most legal purposes.[98]

Of all the stages of medical training, the first year of residency is perhaps the most stressful period in medical training due to factors such as long hours, challenging patients, sleep deprivation, and limited time for personal pursuits.[99] More than medical school, more than the later years of residency, the first postgraduate year is experienced as a trial by fire.[100] To be successful, interns must learn to balance such diverse demands as the responsibility for patient care, economic hardship, on-call schedules, patient death, the need for constant learning, the task of teaching, and the requirements of attending physicians and senior residents, along with the necessities of family and personal life.[101]

Notwithstanding the trend toward internships integrated into categorical residencies, the one-year prelim internship or the traditional rotating internship (sometimes called a transitional year) continues to exist. Some use it to re-apply to programs into which they were not accepted, while others use it as a year to decide upon a specialty.

Medical intern. In the context of medical education in the United States, “intern” is a historical term for a physician in training who has completed medical school, passed Step 2 of the USMLE or COMLEX-USA, and is undergoing his first year of post-graduate training (PGY1).[102] The Accreditation Council for Graduate Medical Education (ACGME), who is responsible for the accreditation of post medical training programs within the United States, no longer uses the term intern to define first year post-graduate trainees; they are called first year residents.[103] A first year resident (also called PGY1-post graduate year1) in a specialty residency is sometimes also referred to as a *specialty track intern*. For example, a first year resident in surgery can be referred to as a surgical intern.[104]

Internship duration. A medical internship lasts one year and usually begins in July.[105] While not generally advertised; many programs have or can make positions available at other times.[106]

Internship types. [107] There are two kinds of medical internships outside the context of a categorical residency. The medical profession uses different terms to refer to this practical field-based experience. The terms include the less dominant prelim internships and the more common transitional (traditional rotating) internships.

1. Prelim internships: These internships are done in either internal medicine or surgery. Interns spend twelve months focusing on either medicine or surgery.

2. Transitional internships:[108] These internships offer a well-balanced schedule of a one-year training experience that rotates the medical practitioners through major clinical disciplines and specialties, including emergency medicine, family medicine, internal medicine, obstetrics/gynecology, pediatrics, and general surgery. They are designed to facilitate the choice of and preparation for a specialty.

Residency

In North America, residency is a period of postgraduate medical training during which a physician gets specialized clinical training that leads to eligibility for board certification in a primary care or referral specialty.[109] It is filled by a resident physician who has received a medical degree (M.D. or D.O.) and is comprised almost entirely of the care of hospitalized or clinic patients, mostly with direct supervision by more senior physicians. A residency may follow the internship year or include the internship year as the first year of residency.[110]

Whereas medical school gives doctors a broad range of medical knowledge, basic clinical skills, and limited experience practicing medicine, medical residency gives in-depth training within a specific branch of medicine, such as anesthesiology, dermatology, emergency medicine, family medicine, internal medicine, neurology, neurosurgery, nuclear medicine, obstetrics and gynecology, ophthalmology, orthopedics, otolaryngology, pathology, pediatric medicine, physical medicine and rehabilitation, plastic surgery, preventive medicine, psychiatry, radiology, general surgery and urology.[111]

Each of the specialties in medicine has established its own curriculum, which defines the length and content of residency training necessary to practice in that specialty. Programs range from three years after medical school for internal medicine to five years for surgery to six or seven for neurosurgery.[112]

Fellowship

Some highly specialized fields require formal training beyond residency. Examples of these include cardiology, endocrinology, and oncology after internal medicine; cardiothoracic surgery, pediatric surgery, and surgical oncology after general surgery; reproductive endocrinology/infertility, maternal-fetal medicine, and gynecologic oncology after obstetrics/gynecology, plastic surgery, and urology.[113] There are many others for each field of study. The training programs for these fields are known as fellowships and their participants are fellows to denote that they have already completed a residency and are eligible or certified by The American Board of Medical Specialties (ABMS) in their basic specialty.[114] Fellowships usually range in length from two to three years and often contain a research component.[115]

A Comparative View of Architectural and Medical Internship in the United States

Architecture and medicine clearly fall within the definition of professions. Architecture is a practice-oriented profession much like medicine. Both professions are directly concerned with the "health, safety, and welfare of the public" and try to reinforce that through licensing procedures and professional registration. Although medicine and architecture have separate and distinct practice jurisdictions, there is remarkable similarity in their general licensing procedures from training to admission. The professions share elements of education, internship, testing, and issuance of the credentials required to legally practice the profession.[116] Internship, which is the target of the current research study, is an important component in a full cycle of the professional education and practice models for both professions—architecture and medicine.

The facts, presented by this study, about the U.S. medical and architectural internship models are utilized by the author in order to compare and contrast between the two professional models. The aim of this comparative review is to form a base of information about both models in order to reach a conclusion about their resemblances and differences. The results from reviewing both architectural and medical internship models in the United States indicate that:

- In architecture, the *academic internship* opportunity is unstructured, and requires only a final report as proof of participation. Alternatively, this experience can be structured if it is counted toward the IDP program and follows the rules and regulations of the National Council of Architectural Registration Boards (NCARB)'s official postgraduate training program in architecture. Similar practical training experience (*clerkship*) in medical school is somewhat structured and only counts toward academic credit. In this experience, students observe and take part in the care of patients under the supervision of resident and attending physicians. Rotations are required in internal medicine, surgery, pediatrics, family medicine, obstetrics/gynecology, neurology, and psychiatry. Beyond these, a variable number of specialty electives are required
- There is a great deal of agreement to adopt the *IDP* as a unified architectural *postgraduate training program* in most of the states within the United States. This is not the case in medicine since two kinds of postgraduate internships (Specialty *Prelim* and *Transitional*) still exist.
- The IDP time in architecture is not strictly controlled; the program has anticipated but not defined duration of completion. It takes three to seven years in some cases, with four being the average, in order to satisfy the program requirements. In medicine, the first year of residency (Prelim or Transitional internship year) ends at a specific date and the second year of residency commences thereafter.

- In architecture, the IDP is structured to a decent degree into several competencies and training areas. The program is based on a units system, where the intern tracks experience in a variety of activities. There is a great deal of similarity in medicine, whereas the transitional internship is structured into a balance of major clinical disciplines and specialties and has effective curriculum that includes both planned educational experiences and a clinical component. On the other hand, the prelim medical internship is a special program which varies in structure from institute to institute, and is directed towards medical graduates who want to pursue a specialty in medicine or surgery.
- Both internship experiences take place in a professional setting, either in an architectural office or in a teaching or community based hospital.
- In architecture, internship has more presence within the practice after acquiring an undergraduate or graduate, NAAB accredited degree; but in some cases the IDP's credit earning process can commence during the time in an architectural school. In medicine, internship is considered part of the graduate medical education (GME) and starts directly after graduating from a medical school. The traditional medical postgraduate internship (Prelim, Transitional) as represented by the first year of residency, can only start beyond the undergraduate education.

Comparison of Architectural Internship Models Worldwide

Academic internship/practical training is a directed activity in the practice of architecture during architectural education and/or following receipt of a professional degree but prior to registration/licensing/certification.[117] The purpose behind this activity is to complement academic preparation in order to protect the public; applicants for registration/licensing/certification must integrate their formal education through practical training.[118] In this section, the architectural internship model is reviewed for 8 countries located in 4 regions around the world—Australia, Europe, North America, and Asia/Middle East. Architectural *academic internship* (during school) and *practical training* (post-school) models are reviewed in terms of their compulsory/discretionary requirements, structure, recording, and duration (see Table 1 for comparison of the architectural internship models).

1. Australia

Academic Internship

The Royal Australian Institute of Architects (RAIA) recommends and supports concurrent architectural practice experience during undergraduate experience but cannot require mandatory practical experience as part of its education policy.[119] Therefore, in all Australian architectural schools, the curricula include no compulsory academic internship. However, practical experience is recommended practice during the program and many students try to obtain work in offices and government institutions. If they do so, then a maximum of one year of this experience can be counted toward the mandatory two years of post-school practical training.[120]

Table 1. Comparison of Various Architectural Internship Models Worldwide

	Academic Internship (during Architectural School)				Practical Training (Post Architectural School)			
Region/Country	**Compulsory** [1]	**Structured** [2]	**Recorded** [3]	**Specific Duration** [4]	**Compulsory** [5]	**Structured** [6]	**Recorded** [7]	**Specific Duration** [8]
<u>A. Australia</u>								
1. Australia	No	No	No	No (Maximum 1 year can be counted toward the mandatory 2 years of post-school practical training)	Yes	Yes	Yes	2 years of experience (at least one year in Australia, seven competencies)
<u>B. Europe:</u>								
2. Germany	Yes	No	No	Yes (4+2=6 months minimum)	Yes	No	No	2 years of experience
3. United Kingdom	Yes	No	Yes	Yes (I year)	Yes	No	Yes	1 year of experience
<u>C. North America:</u>								
4. Canada	No	No	No	No (Maximum 1 year can be counted toward IAP)	Yes (IAP)	Yes	Yes	3 years (5600 hours)
5. United States	No	No	No	No (Minimum 10 months of training to be counted toward IDP)	Yes (IDP)	Yes	Yes	3 years (700 units)
<u>D. Asia/Middle East</u>								
6. China	No	No	No	No (Minimum 10 months of training to be counted toward the ADPT)	Yes (ADPT)	Yes	Yes	3 years (700 units)
***7. Malaysia**	No	No	No	No (Minimum 6 months)	Yes	No	Yes	2 years of experience (at least one year in Malaysia)
8. Singapore	Yes	No	No	Yes (10 months)	Yes	No	No	2 years of experience (at least one year in Singapore)
Kuwait	No	No	No	Yes (1 summer=2 months)	No	No	No	4 years of documented experience

Practical Training

Candidates for registration require a minimum aggregate of two years of recognized practical training experience. Eighteen months of this training period must be under the supervision of a registered architect, and one year must have been undertaken in Australia after attaining the academic qualification. This experience must be recorded in the Architects Accreditation Council of Australia (AACA) Log Book and verified by the architect supervisor**.** The required period may be the summation of several periods in different offices; however periods less than the full-time equivalent of eight weeks continuous duration in an architect's office or less than the full time equivalent of four weeks continuous duration in a technical capacity on building or allied work is not credited.[121]

Practical training must include work undertaken at varying levels in seven mandatory competencies in the practice of architecture, which have been drawn from the National Competency Standards in Architecture (NCSA). The Prescribed Competencies against which the experience is to be documented are as follows: [122]

1. Prepare architectural drawings with regard to the location, extent of building elements, components, finishes, fittings and systems.
2. Coordinate the documentation of the project.
3. Establish site conditions, site related requirements and limitations and existing facilities.
4. Assess applicable codes, regulations and legislation
5. Prepare preliminary project evaluations, programs and feasibility studies.

6. Establish and coordinate specialist consultants, contractors and suppliers.
7. Administer the project contract.

2. Germany

Academic Internship

In most universities, architectural students have to pass a preliminary examination (Vordiplom). Registration for this examination has to be preceded by a four-month internship and successful completion of all courses scheduled for the time until the examination takes place. Furthermore, after successful completion of the Vordiplom examination, a further internship in an office of at least two months is required.[123]

Practical Training

Relevant practical experience is required. If the architect wants to be registered with the appropriate chamber of architecture in Germany, then he/she must provide proof of two years experience as an architect in addition to passing the final examination. Only after two years apprenticeship, with a presentation to the Federal Chamber of Architects (Architektenkamme*)* are they entitled "architect" and admitted to practice.[124]

3. United Kingdom[125]

In the United Kingdom, education and training is continuous through a single professional learning model. Architectural students join a five-year degree program, in a course that is recognized by the Royal Institute of British Architects (RIBA) and the Architects Registration Board (ARB). This is usually divided into two parts: A three year degree, known as RIBA Part 1 followed by a further two years of advanced undergraduate study, known as RIBA Part 2. A minimum of two years professional practical experience in an architects' office or equivalent is required. One year of academic internship is usually taken after part 1 (stage 1 professional experience), and the other practical training year after part 2 (stage 2 professional experience).

There is no centralized list held by the RIBA of firms for training; but the RIBA Directory of Practices provides candidates with names and addresses plus a short description of the kind of work they do, in order to decide the type of firm one desires. Both stages of the professional experience must be recorded in the RIBA's Professional Experience and Development Record (PEDR).

4. Canada

Academic Internship

Architectural students have the opportunity (option) to enroll in an academic internship. This experience can either count as academic credits that show on their transcript or as part of the post-graduate Internship in Architecture Program (IAP). Students may choose any combination of work terms. The Canadian Architectural

Registration Boards (CARB) recognizes this experience by allowing a maximum of one year to be counted against the three-year internship (IAP) requirement for registration.[126]

Practical Training[127]

Interns are required to complete the Internship in Architecture Program (IAP). This program is offered through the associations of architects in each Canadian province. Interns are required to work with a mentor (a licensed architect) who will guide their work over a period of time, according to the rules of the IAP. Usually, interns complete the program in about three years.

A minimum of 5600 hours of varied experience in specified areas of architectural practice is required. Experience may be gained in two components: mandatory and discretionary. The entire experience requirement may be satisfied within the mandatory component, or by a minimum 3720 hours mandatory experience and up to 1880 hours discretionary experience. The required cumulative total of 5600 hours and experience must be documented in the Canadian Experience Record Book (CERB) and evaluated by the provincial association at the end of each 900-1000 hours of experience.

Experience in categories A, B and C is required; optional in category D; and can be gained in category E.

Category A: Design and Construction Documents - total of 2800 hours required

Category B: Construction Administration - total of 560 hours required

Category C: Management - total of 280 hours required

Category D: Related Activities - total of 80 hours permitted

Category E: Discretionary - total of 1880 hours permitted.

5. United States

Academic Internship

Architectural students in the United States have the opportunity (option) to enroll in an academic internship. This experience can either count as academic credits or as Intern Development Program (IDP) credits. If students choose to count it as part of the post-graduate IDP credits, the training period should be at least 10 months and should not count as academic credit. Also, as previously mentioned, NCARB's rules regarding this issue must be satisfied.[128]

Practical Training[129]

For those graduates working toward an ultimate goal of licensure to practice architecture, this practical training period is intended as a continuation of the process of architectural education, providing specialized training and knowledge about architectural practice that is not usually covered in the academic setting. Each U.S. state registration board establishes the details of its own training requirement; for those states and provinces requiring an NAAB accredited degree, three years of training in addition to the degree are the norm.

In the United States, the Intern Development Program (IDP) was created to provide a coherent structure ensuring that graduates entering the profession today can acquire the specific knowledge and skills necessary for the competent practice of architecture.

While some state registration boards allow training options other than IDP for those pursuing licensure, most boards have adopted the IDP training standards as a requirement for licensure. The IDP training requirement establishes levels of training in four major categories of architectural practice: design and construction documents, construction administration, management, and professional/community service. Interns must acquire 700 training units to satisfy the IDP training requirement. One training unit equals eight hours of acceptable activity in a given training area.

Through the IDP mentorship system, interns receive advice and guidance from practitioners. The IDP record-keeping system facilitates the documentation of internship activities, while the IDP supplementary education system provides a variety of learning resources designed to enrich training. Details of each category follow:

Category A. Design & Construction Documents: total of 350 units required. This total includes 275 minimum units required, plus 75 additional training units that must be earned in any of the training areas 1-10:

1. Programming = 10 units
2. Site and Environmental Analysis = 10 units
3. Schematic Design = 15 units
4. Engineering Systems Coordination = 15 units
5. Building Cost Analysis = 10 units
6. Code Research = 15 units
7. Design Development = 40 units
8. Construction Documents = 135 units

9. Specifications & Materials Research = 15 units
10. Document Checking & Coordination = 10 units

Category B. Construction Contract Administration: total of 70 units required. This total includes 30 minimum training units required, plus 40 additional training units that must be earned in any of the training areas 11-13:

11. Bidding & Contract Negotiation = 10 units
12. Construction Phase—Office = 10 units
13. Construction Phase—Observation = 10 units

Category C. Management: total of 35 units required:

14. Project Management = 15 units
15. Office Management = 10 units

Elective Units in This Category = 10 units

Category D. Related Activities: total of 10 units required:

16. Professional and Community Service = 10 units
17. Other Related Activities = 0 units

The required minimum in Categories A, B, C, and D totals 465 training units. The additional 235 training units may be acquired in any of the listed categories.

6. China

The National Administration Board of Architectural Registration (NABAR) in China reached a cooperation agreement (mutual recognition agreement) with its US counterpart—the National Council of Architectural Registration Boards (NCARB) in

June 1993, which endorsed the mutual recognition of architects between the U.S. and the People's Republic of China and regulated the practice of architecture between the two countries. Since that time NCARB has served as a professional resource to NABAR for developing the professional base for regulating architectural practice in China. [130] Therefore, the internship model adopted in China is similar to the one practiced in the United States.

Academic Internship

Architectural students in China have the opportunity (option) to enroll in an academic internship with the possibility of counting a minimum of ten months of this experience toward the post-graduate Architectural Design Practice Training (ADPT) program recognized by NABAR. Students may choose any combination of work terms.[131]

Practical training

A Class 1 architect must complete three years of training in an architectural institute or firm prior to sitting for the licensing exam. It is called "Architectural Design Practice Training (ADPT)." This program is patterned after the U.S.'s IDP.[132] It concludes after three years or 700 training units (1 training unit = 8 hours of effective work).

7. Malaysia

Academic Internship

Architectural students are encouraged to seek internship opportunities but not mandatory required to do so. A minimum of 6 months is recommended for an academic internship experience.[133]

Practical Training

For the purpose of sitting for the professional architectural examination, architectural graduates must have 2 years working experience which shall commence from the date of registration with the Board of Architects (Lembaga Akitek Malaysia). Out of the 2 years working experience, one year must be obtained in Malaysia in an Architect's practice which is registered with LAM. Graduates should start logging working experience in the PAM (Pertubuhan Akitek Malaysia) logbook.[134]

8. Singapore

Academic Internship

A Bachelor of Architecture degree is typically a six year course at a university. It is a four year B.Arch., followed by 10 months of approved internship, then a 1 year M.Arch.[135]

Practical Training

Upon completion of a university degree, it is necessary to gain at least two years practical experience in an architect's firm (depending on the category chosen) under the direction and supervision of a registered architect before a person can apply for registration as an architect.

There are three categories of professional registration: 1) Category One - graduates with two years of practical experience consisting of at least 12 consecutive months in Singapore and who have passed such professional practice examination as may be prescribed or approved by the board. 2) Category Two - those with five years practical experience of which two are in Singapore. 3) Category Three - those with 10 years practical experience.[136]

Comparative Review

The aim of this comparative review is to form a base of information about several existing academic internship and practical training models worldwide, in order to propose local guidelines of recommended practices for the future of architectural academic internship and practical training programs in Kuwait. Eight questions were raised by this comparative analysis:

1. Is academic internship during architectural school compulsory?
2. Is academic internship during architectural school structured into certain units and/or competencies?
3. Is it required to record the academic internship during architectural school in a systematic manner?
4. Is there a specific duration for satisfying the academic internship requirements during architectural school?

5. Is post-graduate practical training enforced as a component of the professional practice model?
6. Is post-graduate practical training structured into certain units and/or competencies?
7. Is it required to record the post-graduate practical training in a systematic manner?
8. Is there a specific duration for satisfying the post-graduate practical training requirements?

The comparison of these different professional development practices of academic internship and practical training models clustered the examined models in these countries (except Malaysia) into two groups. **Group 1** represents the *American internship model* and the countries that try to adopt this model. **Group 2** represents the *European internship model* and the followers of that model. Malaysia has combined the two models and uses the American model for its academic internship and the European model for the post-graduate practical training experience.

Group 1: The United States, Canada, Australia, and China fall into this group. The *American internship model* does not require an academic internship experience during the students' attendance at an architectural school but recommends seeking such an opportunity. If students decide to take advantage of this opportunity, then they may count the internship credits as academic credits that show on their transcripts or as part of the structured post-graduate practical training program. Specific rules and durations have to be satisfied in order to consider the academic internship experience as post-graduate practical training credits. According to this model, the academic internship is unstructured, and only requires a final report as proof of participation. The post-graduate practical training, on the other hand, is compulsory, structured to certain units and competencies, recorded in log books, and has an anticipated duration of completion.

Group 2: Germany and the United Kingdom are used in this comparative analysis to represent the *European internship model*. The internship model in Singapore is related to the European model with its resemblance to the English continuous system of professional learning.

The European internship model is characterized by mandatory unstructured academic internship during architectural school with specific duration. Only the English system requires a systematic recording for any performed activities during that time. According to this model, post-graduate practical training is compulsory but not structured to certain units or competencies. Training is defined by specific durations and only the English system requires a systematic recording for any performed experience during that time.

The Case of Kuwait

It is the purpose of this study to compile recommendations for the architectural internship experience in Kuwait. Architectural education in Kuwait was established in 1997 following the standards of education in the United States. Administrators of the architectural program at Kuwait University consulted several institutions regarding the academic and administrative structure of the program including the National Architectural Accrediting Board (NAAB), Texas A&M University, and Massachusetts

Institute of Technology. The composition of the architectural curriculum at Kuwait University's program complies with NAAB curricular requirements.

The establishment of a professional examination in the field of architecture (the Professional Architect Examination) in 2002, was a major step toward evaluating the competency of architects practicing in Kuwait. This exam is similar in format and content to the Architect Registration Examination (ARE) offered by the National Council of Architectural Registration Boards (NCARB) in the U.S.[137]
Confirming that both the structure of architectural education and professional examination in Kuwait were adapted from the American model, we can predict that the direction of the modification or creation of any architectural internship experience in Kuwait might follow the American internship model (Group 1).

Research Gap and Argument

While there is ample published research and writing on architectural education and practice, *there is comparatively little focused specifically on the midway crucial time between school and practice—internship*.[138] In an attempt to investigate related issues to this crucial link between the education and practice of architecture, this research proposes recommended initiatives for the internship experience during college (academic internship) and after college (practical training) in an attempt to bridge the gap between education and practice of architecture in Kuwait. These recommendations would act as a reliable source for the development of future internship programs as active components of the architectural education and practice in Kuwait, because it is based upon observational scientific facts from people directly involved in the field of architecture in Kuwait. The rationale of the study was based on four arguments conveyed from reviewing past literature and studies of architectural education and practice:

1. Architecture as a Dynamic Changing Field

The architecture of a specific culture is a reflection of its beliefs, customs and attitudes toward life. As the culture of society changes, new demands and changes must be satisfied by its architecture. Architecture is a dynamic and innovative profession that evolves with the demands and developments of society.[139] The word “architect’’ is not potent by accident; its power comes from the nature of discovering architecture, which continues throughout all architects’ careers.[140] Therefore, the need for qualified architects calls for the establishment of grounded academic internship and practical training programs embracing both continuity and change in order to support the education of architectural students and architects and prepare them to meet the dynamic nature of architecture, and the changing needs of society. The architectural profession, and hence its education and training, must continue to change.[141]

2. Criticism of University Education

In the late nineteenth century, architecture was brought into the university setting to accomplish several goals: "upgrade the social rank and intellectual eminence of architects" and to "democratize access to the profession.”[142] Architectural education in its present state has drawn a wide range of criticism. Practitioners attack it for not training students in such a way that they are immediately useful in the workplace.[143] It is most unlikely that the unending complaints by practitioners really have much to do with the level of skills of graduates.[144] As Collins has discussed at length, there is a great deal of empirical evidence that academic schooling does not significantly enhance the practical effectiveness of future practitioners.[145] It is a fact confirmed for architecture, most practical skills are learned on the job.[146]

3. *The Value of Continuous Professional Knowledge*

For all professions and for architecture in particular, experts argue that schools are the beginning of an educational process, not the end.[147] The essence and justification of all professions is the development, sharing and passing on of certain kinds of high-level, critical knowledge for the collective good. Architectural knowledge, like all other kinds of professional knowledge, is largely derived from action and experience. Architectural knowledge is distinguished by relating to design and to user requirements. Such knowledge belongs to practice and cannot be substituted by the different kinds of knowledge which belong to the universities.[148] In their survey of architectural schools' alumni, Boyer and Mitgang found that the majority of architects agreed that "certain kinds of technical and practical knowledge are best learned in the workplace itself, under the guidance of experienced professionals."[149]

4. The Value of Internship

Although its form may be a source of disagreement, the necessity of an architectural internship as a setting for the acquisition of unique skills is relatively uncontroversial.[150] Internship, before and after graduation, are essential midway spaces linking architectural students and intern architects to the real world of practice.[151] Architecture is not unique in its internship requirement; engineering, medicine, and education all require similar periods of practical experience.[152] What these occupations have in common is that they are all "professions." Wilensky offers the classic sociological definition of a profession: "Any occupation wishing to exercise professional authority must find a technical basis for it, assert an exclusive jurisdiction, link both skill and jurisdiction to standards of training and convince the public that its services are uniquely trustworthy."[153]

Central to a "profession" is its claim to a body of specialized technical knowledge.[154] Sociologist Eliot Freidson also defines a profession as a means of specialized formal knowledge, which brings professional authority.[155] Judith Blau, author of *Architects and Firms*, believes that professionals gain power and prestige by the expert knowledge and skills that they acquire in their training.[156] Beth Quinn takes a similar stand by noting that "architectural knowledge is specialized, not commonly available, and requires extensive formal training and experience."[157]

Francis Duffy perceives a profession from another angle, in the abstract, sociological sense, as an institution designed to regulate standards of competence in the more complex and challenging fields of human endeavour while simultaneously protecting the public from abuse by laying down standards of conduct for its members.[158] In that sense, architectural internship serves as means of credentialing, ensuring a certain amount of guided practical experience before someone may claim the title “architect.” Thus, internship is both a means to and a measure of specialized architectural knowledge.[159]

Garry Stevens combines different viewpoints about internship to summarize its advantages as a means of professional reproduction in threefold. First, it allows fine control of the supply of new practitioners. Second, practitioners define what is to be learned and have a better appreciation of the market's need for particular skills. Third, the full weight of an individual's social capital is best exploited by apprenticeship.[160]

CHAPTER III

THEORETICAL BASE

Theories of professional knowledge were utilized to construct the theoretical foundation of the research instruments. Central to this theoretical base is the acknowledgement that a wealth of knowledge creation takes place outside the academic setting and this knowledge is the basis for permission to practice and for decisions that are made with respect to the unique needs of clients.[161] “It is argued that professional knowledge should be interpreted with the broadest possible meaning, and the context in which knowledge is acquired should be viewed as a significant factor. Because of the value which practitioners place upon the importance of their practical experience, the advantages of reflecting on and learning from existing experience are contrasted with the acquisition of knowledge. Therefore, this investigation into the development of architects' professional knowledge and skills was related to two primary theories of the development of professional bodies of knowledge and skills: 1) the lifelong learning model and 2) the skill acquisition model.

Lifelong Learning Model

Lifelong learning engages active and critical interest in contemporary professional issues. The model for lifelong learning depicts the principles of competency-based education. The idea behind lifelong learning is that the individual constantly strengthens and develops his/her skills, and that we have a society that supports the desire, ability and will to continue to learn.[162] Professional growth and mastery of knowledge, according to this model, begin with 1) the *novice* who cannot perform but whom, with education and experience, achieves competence as 2) an *entry-level practitioner,* and then moves on to being 3) *competent*, with sufficient knowledge to decide upon a plan or perspective. The practitioner continues the lifelong learning process that allows him/her to master the discipline, to become 4) *proficient*, and then to become 5) an *expert*.[163]

The professional development in lifelong learning is circular in its nature. All that you learn is subject to new knowledge, new life experiences, new social imperatives and new political agendas.[164] Lifelong learning is a process that requires change and the taking of responsibility by schools, professions, and not least by individuals. We live in a reality where the needs for constant skills enhancement are becoming more important. Within one's professional life, by far the largest part of learning takes place during the daily execution of one's tasks at work. This happens somewhat unstructured and unconsciously for both the individual and the company. A prerequisite for achieving effective lifelong learning is to combine informal learning with formal learning, and to find systems and methods where informal knowledge is given a recognized value. Internship as a developed program for further education and training at the workplace is not only a prerequisite for maintained competitiveness, it is also behind the creation of increased security amongst the employees, and the company becoming more attractive in the competition for manpower.[165]

Skill Acquisition Model

According to this model, professional development evolves through many stages, each with a corresponding orientation. In a related model, Dreyfus and Dreyfus propose that practitioners learn in the context of practice and develop their skills according to a progression from 1) *novice* to 2) *advanced beginner*, to 3) *competent*, to 4) *proficient*, and finally to 5) *expert*.[166]

"In the Dreyfus model of skill acquisition, the emphasis is on learning from experience, utilizing increasing perception and intuitive recognition of systems within practical situations, rather than action based on rote learning. As practitioners progress through the stages of skill acquisition, there is a decrease in rule-guided behavior in lieu of more holistic knowing how."[167]

This research utilizes the Dreyfus model in an attempt to describe and interpret knowledge and skill acquisition during internship programs within architectural education and practice. If one takes a closer look at internship, one finds that this kind of training contains important insights for learning and for testing what the intern has learned. The intern becomes an expert by imitating the master, and gradually learns how to accomplish the whole task.

Association of the Measurable Observations to Theoretical Models

The five levels of professional growth and mastery of knowledge presented in the *lifelong learning model* and the *skill acquisition model* were correlated to the five-item scale's competency levels (Exposure, Understanding, Competent, Application, and

Mastery) utilized in Parts 2 and 3 of the study's primary research instrument (self-administered questionnaire), in order to inform upon the measurable observations. An attempt was made to relate the theory and observation of the acquisition of professional knowledge and skills during the internship experience. Association of the test scores to theoretical models better served the internal construct validity of the research.

CHAPTER IV

RESEARCH METHODOLOGY

Design Strategy

The research reviewed previously conducted studies and research in architectural education and practice with a specific emphasis on the development of professional knowledge and skills of students and architects as well as studies that examined internship programs.

The study utilized a descriptive survey design to obtain knowledge from people involved in the field of architecture in Kuwait. The research design was quantitative in nature with an introduction of elements of qualitative research procedures represented by a pre-focus group and several follow up interviews in order to support the objective data in a subjective manner. Therefore, it was a combined research design consistent with the Creswell and Groat dominant-less dominant design model: "In this design the researcher presents the study within a single, dominant paradigm (quantitative) with small components of the overall study drawn from the alternative paradigm (qualitative)."[168]

This mixed-methodology design represents the most complete level of integration among two or more research methodologies in the study of the same phenomenon.[169] Increasingly, researchers in many fields, including architecture, are advocating more integrative approaches to research whereby multiple methods from diverse traditions are incorporated in one study.[170] Because each method of conducting research brings with it particular strengths and weaknesses,[171] many researchers believe that combining methods provides appropriate checks against the weak points in each, while simultaneously enabling the benefits to complement each other.[172]

Instruments Development

To draft and develop the research instruments for this study, the researcher tracked similar studies that utilized questionnaire/interview instruments to review the issue of internship and the bodies of professional knowledge. This literature review acted as the primary source for drafting the first set of questions used in this study. To ensure that the formulation of the research instruments specifically addressed the needs of the architectural field in Kuwait, the study utilized a variety of practice analysis methodologies to develop grounded research instruments. These methodologies included a focus group study, visits to Kuwait's architectural firms and public agencies, and pre-testing of the self-administered questionnaire.

Focus Group

Focus groups generate qualitative data that provide insights into the attitudes, perceptions, and opinions of participants solicited through the open-ended question and-answer protocol.[173] The outline of the focus group for this study (see Appendix-A for the outline draft) was reviewed by the Institutional Review Board at Texas A&M University and approved as exemption from full review on the basis of survey or interview procedure. The purpose of that roundtable discussion was to obtain input from representatives of the research target population about the major issues and questions that should be addressed in the research. It helped the researcher to discover the vocabulary and thinking patterns of the target group before the development of the survey instrument. It also alerted him to issues that might otherwise have been missed. The outcome of this focus group established insights that helped the researcher formulate the research instruments.

The researcher conducted this focus group on January 3, 2006 in the Department of Architecture at Kuwait University, in Kuwait. The participants' selection was based upon the interest and motivation of participants to contribute to the proposed research. Participants were identified and recruited through phone conversations or by direct contact by the principal investigator. The total number of subjects selected to participate in this focus group was based on advice from a professor of a survey methods course at Texas A&M University. Twelve subjects representing the entire subgroups of the study's population participated in this focus group.

The focus group's discussion lasted approximately 2 hours and was audiotaped, transcribed, and then analyzed using conventional content analysis to come up with the main findings (themes) of this focus group. Four central themes emerged from the data gathered from this focus group: (1) the regulation of the architectural profession in Kuwait; (2) the performance of recent architectural graduates; (3) the sufficiency of the Kuwaiti architectural education program as a preparation for professional practice; and finally (4) the importance of internship and practical training programs as an integral part of the experience of architectural students and young architects.

The content analysis subcategorized each of these four primary themes into a set of sub-themes. Table 26 in Appendix-B shows this categorization of major themes/sub-themes and presents some participants' quotes related to each theme/sub-theme.

Visits to Architectural Firms and Major Public Agencies

The researcher visited major private architectural firms of varying sizes and specialties and major governmental institutions and ministries in Kuwait, which have a direct involvement with the profession of architecture such as: the Public Authority for Housing Care, Kuwait Municipality, and the Ministry of Public Work. The purpose of those visits was to interact with professionals and learn about new, unique, and/or emerging trends in the practice of architecture in Kuwait and examine how these settings would supplement the development and implementation of future internship programs of architecture in the country.

Development of the Research Instruments

The development of the research instruments was based on information from sources such as the literature review of similar studies and feedback from the intense focus group discussion.

The Primary Research Instrument (Self-Administered Questionnaire)

This survey instrument was divided into five sections: (1) internship importance; (2) academic internship areas of knowledge; (3) practical training areas of knowledge; (4) professional information; and (5) demographic background (see Appendix-C for the research questionnaire). The preparation and distribution of this questionnaire to the surveyed population was intended to accomplish two central goals:

1. Identify the importance (perceived value and need) of architectural internship programs in the preparation of architectural students and architects in Kuwait.
2. Define recommended areas of knowledge for architectural internship programs in Kuwait.

The Secondary Research Instrument (Follow-Up Interview)

Preparing and conducting follow-up interviews compiled subjective information from representatives of the surveyed population, in order to support the quantitative data compiled from the self-administered questionnaire in a subjective manner. Another major goal of conducting these interviews was to compile information about some of the confounding variables that cannot be examined by the questionnaire such as the commitment of students, architects, and firms/organizations to participate and invest in systematic formal academic internship and practical training programs (see Appendix-D for the research interview protocol).

Pre-testing the Self-Administered Questionnaire

To ensure that the format of the survey questionnaire was clear and comprehensive, a pilot test of the survey instrument was conducted with eight representatives of the target population (see Appendix-E for the pilot survey cover letter). The instrument was then modified according to the participants' feedback, and the researcher produced a final draft of the self-administered questionnaire.

Research Target Population

The theoretical population of this study was architects in Kuwait. The main portion of the target population were local graduates of the Department of Architecture at Kuwait University. They numbered approximately 60 graduates who have been in practice for 1-4 years. There were also Kuwaiti architects with degrees from abroad of Kuwait as well as senior architects holding managerial positions at architectural firms and public agencies. Although the number of the abroad graduates and senior architects is limited, their inclusion brought the overall population to 100 subjects. Due to the limited number of architects in Kuwait, the accessible population for this study was the same as the theoretical population. As a result of the accessible population being relatively small and narrowly defined, it was not necessary to select a sample from this accessible population.[174] The response rate of the quantitative component of the study was quite encouraging, with a 78% return rate. The data analysis classified the population of the study into three subgroups according to their number of years in practice that satisfies the professional classification system of architects in Kuwait. Up to three years of experience is categorized as recent graduate (architect); four-to-fourteen years of experience as a practitioner (professional architect); and more than fifteen years of experience as a senior practitioner (consultant architect).

Administration Procedure and Data Collection

Extensive data collection was conducted during a twelve-week site visit to Kuwait in summer 2006. The study started by administering the self-administered questionnaire. The researcher had access to lists that included the names and phone numbers of local graduates and senior practitioners and sought to identify the contact information for the abroad graduates. Personal delivery and collection of questionnaires were utilized in order to ensure a high response rate. The high response rate of the questionnaire (78 %) reduced the sampling and coverage error for this study.

The follow-up interviews were conducted with ten representatives from the research population. The researcher's familiarity with the target population enabled him to be selective in identifying potential interviewees. The conducted interviews included four intern architects who previously participated in an academic internship program during college and in the KFAED post-graduate training program. The interviews also targeted three principals of small-size architectural firms who personally supervise the work and training of interns. Finally, the researcher interviewed three supervisors of large firms who are responsible of supervising and coordinating the work of trainees (architectural students or recent graduates) in their firms.

Data Management and Analyses

Self-Administered Questionnaire (Quantitative)

After all of the questionnaires were received, the researcher utilized SPSS statistical software to transform the data into an electronic form. Descriptive statistics, test statistics and further exploratory data analyses summarized the data from the survey questionnaire. Univariate analysis on the distribution of cases on only one variable at a time was first conducted. The findings were reported by individually listing each variable under study. Univariate analysis served the purpose of describing the survey population. The data were first analyzed utilizing frequency percentages and summary averages including modes and means. Each variable of interest was included separately in this study. Twelve (12) sub-hypotheses were tested from Part 1 and one hundred-ten (110) null hypotheses from Parts 2 and 3 (55 null hypotheses in each part) of the study's questionnaire instrument, with the goal of reaching conclusions about the research's two main hypotheses. All hypothesis testing was conducted with an alpha level of .05.

Hypothesis 1: Architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait.

Part 1 of the questionnaire compiled data about the first main research hypothesis, which addressed twelve (12) sub-hypotheses that fall under three categories: (a) internship value (questions 1-5); (b) internship needs (questions 6-10); and, (c) internship time period (questions 9a and 10a).

In questions 1-8, respondents were presented with statements in the questionnaire instrument and asked to indicate the degree to which they “strongly disagree”, “disagree”, are “neutral”, “agree” or “strongly agree’ with each statement. Identical response categories were used for all participant groups, in order to measure the given variables in a uniform manner. The five response categories were given the score of: 1= strongly disagree, 2= disagree, 3= neutral, 4= agree and 5= strongly agree. The Likert method was used for an item analysis resulting in the selection of the best items.

Questions 1-5 defined the value of internship and it was hypothesized here that there are no significant differences among the responses of subpopulations related to the value of internship in the training of architectural students and architects. All sub-hypotheses under this subcategory were tested for significance using the Mann-Whitney nonparametric test because of the abnormality of collected data.

Questions 6-10 defined the need of internship in Kuwait and it was hypothesized here that there are no significant differences among the responses of subpopulations related to the need of initiating internship programs as part of the training process for architectural students and architects in Kuwait. These sub-hypotheses were also tested for significance using Mann-Whitney (abnormal data).

Questions 9a and 10a identified the recommended time period of internship programs, before and after graduation from architectural school. These two questions were analyzed by utilizing frequency percentages for each response in order to provide the percentages of occurrence reported by all subpopulations of this study. Inferences about the population proportions were statistically tested for significance between recent graduates and practitioners using the nonparametric Chi-square analysis test.

Hypothesis 2: There is disagreement among the surveyed population on the areas of knowledge necessary for architectural internship programs in Kuwait.

Parts 2 and 3 of the questionnaire compiled data about the second main research hypothesis, which addressed two specific questions about each knowledge area proposed in the study: (1) what is the perceived level of competence in a knowledge area at the completion of an *academic internship* program? And (2) what is the perceived level of competence in a knowledge area at the completion of a *practical training* program?

Six response categories for the level of competence in each knowledge area were assigned and given the score of: 0= unnecessary, 1= exposure, 2= understanding, 3= competent, 4= application and 5= mastery. An overall mean (*M*) was developed (see Appendix-F) for the competence level (command of knowledge) of each knowledge area to trigger its relative importance to include in an internship program (academic internship and practical training). A knowledge area/skill was classified as very important if the mean score was 4.00 and above. Scores between 3.00 and 3.99 were considered important inclusions. Scores between 2.00 and 2.99 were moderately important. Scores between 1.00 and 1.99 were of less importance and sores below 1.00 were considered of no importance to include in an internship program.

This relative importance categorization of the areas of knowledge included within the study facilitated responses to two other related research questions: (1) what are the top areas of knowledge recommended by the study's population to be considered as curricular components of an academic internship program? And (2) what are the top areas of knowledge recommended by the study's population to be considered as curricular components of a practical training program?

One hundred-ten (110) null hypotheses were tested for significance from Parts 2 and 3 of the survey questionnaire instrument (55 for each part) using the Mann-Whitney nonparametric test, due to the abnormality of the collected data. The resulting significance value (p_{value}) for each knowledge area was utilized to test for agreement between two subpopulations of the study (recent graduates, n=47, and practitioners, n=28) on the perceived level of competence for each knowledge area/skill. This study first intended to compile statistical data from three classifications of architects in Kuwait (recent graduates, practitioners, and senior practitioners), but unfortunately the collected data showed a lack of statistical power to include the third group (senior practitioners) in the statistical analysis, due to the limited number of responses to the self-administered questionnaire (n=3).

With the presence of those three subpopulations, it was first hypothesized that there would be no significant differences between the responses of recent graduates and practitioners related to the knowledge areas/skills needed for internship programs, but there would be a difference between the perceptions of those two groups and the perceptions of senior practitioners about the desirable knowledge areas/skills. The author was unable to test this sub-hypothesis because of the elimination of the third group (senior practitioners) from any statistical inferences. Therefore, the analysis of responses for the three questionnaires received from senior practitioners was only utilized in a descriptive manner.

Spreadsheet comparative analysis was also utilized as a supporting tool to make inferences about the degree of agreement between recent graduates and practitioners on the command of knowledge of a knowledge area/skill by the completion of an internship program. The spreadsheet frequency table presented in Appendix-G includes the percentage of responses for the two subpopulations (recent graduates and practitioners) regarding their perceived (expected) level of competence for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program.

Part 4 of the questionnaire retrieved professional information about the respondents while part 5 constituted their demographic background. This information helped the researcher in defining the subgroups of our population and in classifying the responses for the data analyses. Two 5-point Likert scales and other measurement scales were utilized on these two parts of the questionnaire. Most of the questions in these two sections addressed several attribute independent variables whereas the dependent variable is the outcome or criterion variable. These variables represented most of the study's mediator variables that may intervene to alter the relationship between the primary independent and dependent variables of the study (see Appendix-H for a framework of the research variables).

Follow-Up Interview (Qualitative)

The subjective part of the study was compiled from the follow-up interviews with 10 representatives from the target population. This part of the study investigated several perceptions and opinions regarding academic internship and practical training programs. The interviews were recorded, transcribed, and coded through conventional content analysis in order to make sense of the qualitative data and create objective conclusions. A detailed content analysis of the data collected from these interviews was utilized to validate and critique the analyzed objective data from the questionnaire instrument. Codes were established for their relevance to the interactions between participants, the conditions under which they occurred, the strategies used by the participants, and the consequences of the interactions.[175]

Communicating the Results

The final step of the data analysis was to communicate the results of the data analyses from the self-administered questionnaires and the follow-up interviews in order to synthesize the outcomes of the research and draw up the initial sub-conclusions that form the primary findings of the study. The researcher utilized inductive analysis of the qualitative data in order to reach conclusions that verify or falsify propositions of the quantitative data.[176]

Human Subject Review Process and Informed Consent

In accordance with federal and Texas A&M University rules, the research design proposed in this research characterizes it as human subject research.[177] Approval from the review board was obtained prior to administering the research instruments. This research was considered for exemption of full review on the basis of survey/interview procedure.[178]

The Office for Human Research Protection (OHRP) at Texas A&M University states that: “informed consent is one of the primary requirements underpinning research with human subjects; it reflects the basic principle of respect for persons.”[179] The researcher defined the protocol for the research design, prepared the informed consent, and acquired approval from the IRB before approaching any potential research subjects.

CHAPTER V

RESULTS AND FINDINGS

Introduction

In this chapter, an analysis of the data is presented and the findings are reported. The main purpose of the study was to determine if the need for internship exists in Kuwait; and if so, to establish a base of information of local curricular guidelines for the initiation of future internship programs in Kuwait as integral parts of a professional architectural practice model.

This chapter presents the results of the statistical analysis of the quantitative data retrieved from the self-administered questionnaire instrument. It also includes a section of qualitative observations made from analyzing ten (10) follow-up interviews, conducted to retrieve opinions and perceptions from key participants about issues related to the topic of internship. Responses to the interview questions were grouped into categories based on the themes and sub-themes that emerged from the data analysis.

Quantitative Data Analysis and Hypotheses Testing

Parametric assumptions were bypassed because of the abnormal nature of the quantitative data collected from the self-administered questionnaire instrument. Descriptive statistics and non-parametric tests were utilized to analyze the answers to the questionnaires and reach a decision regarding the research's two main hypotheses. All hypothesis testing was conducted with an alpha level of .05.

The theoretical population of this study was architects in Kuwait. The self-administered questionnaire was delivered to the entire accessible population (N=100). There were seventy eight (n=78) returned questionnaires, reflecting a high response rate of 78%. For the purpose of testing the research hypotheses, the researcher classified the research population into three subpopulations according to the range of their field experience. There were 47 recent graduates (60.2%) with 0-3 years in practice, 28 practitioners (35.9%) with 4-14 years in practice, and only 3 senior practitioners (3.9%) with 15 years or more in practice. The researcher adopted this classification scheme that mirrors the professional classification system of architects in Kuwait, but with different usage of terminology for each title. The selected terminology only serves the purpose of this research noting that the official classification system of architects in Kuwait classifies an architectural graduate with 0-3 years in practice as an "architect," a practitioner with 4-14 years of practice as a "professional architect," and one with more than 15 years of practice as "consultant architect."

Later in the data analysis stage, a decision was made, after some statistical consultancy, to drop the third subpopulation (senior practitioners) from statistical inferences and test the research hypotheses between only two subpopulations—recent graduates (n=47) and practitioners (n=28). This decision was justified, based on the limited number of senior practitioners (3) who responded to the research questionnaire, a number which lacks enough statistical power to draw valid conclusions about this group of pioneer architects in Kuwait.

Demographic Background and Professional Information

The study's subpopulation classification was retrieved from analyzing question 3 in *Part 5* (demographic background) of the self-administered questionnaire. The analysis of this demographic component of the questionnaire presented a balance of respondents' gender. There were a total of 41 male (52.6%) and 37 female (47.4%). The research included 67 local (Kuwaiti) architects (85.9%) and 11 foreign architects (14.1%). Among the entire population, there were 46 graduates (59%) from the local architectural program at Kuwait University and 32 graduates (41%) from architectural programs abroad.

Questions 7 and 8 in *Part 4* of the questionnaire (professional information) classified the employment and the position of the survey respondents. Four respondents (5.2%) run their sole practice, 26 (33.3%) work in private firms, 43 (55.1%) held governmental jobs in the public sector, and 5 (6.4%) others were distributed between four architects working in academia and one in real estate. The majority of architects considered themselves as either entry-level architects (48.7%) or middle-level architects/managers (35.9%). The data also included 7 high-ranking architects/managers/supervisors (9%) and 4 principals/partners of architectural firms (5.1%). Table 2 summarizes most of the demographic and professional information about the self-administered questionnaire respondents.

Table 2. Demographic and Professional Information about the Research Respondents

Variable	Frequency	Percent
1. Range of Years in Practice		
Recent graduates (0-3)	47	60.2%
Practitioners (4-14)	28	35.9%
Senior practitioners (15 and more)	3	3.9%
2. Gender		
Male	41	52.6%
Female	37	47.4%
3. Nationality		
Kuwaiti	67	85.9%
Non-Kuwaiti	11	14.1%
4. Architectural Education		
The Department of Architecture at Kuwait University	46	59%
Abroad architectural program	32	41%
5. Current Employment		
Sole Practice	4	5.2%
Private Firm*	26	33.3%
Government work	43	55.1%
Other (4 Academic, 1 Real Estate)	5	6.4%
* Number of employees in a Private Firm Small firm (1-25) = 5 Medium Firm (26-50) = 2 Large Firm (51-250) = 13 Giant Firm (250-1000+) = 6		
6. Current Position		
Entry level architect	38	48.7%
Middle-level architect/manager	28	35.9%
High-rank architect/manager/supervisor	7	9%
Principal/partner of firm	4	5.1%
Other	1	1.3%
Total	78	100%

The architectural education background variable presented in Table 2 (item 4) was utilized as a differentiating variable in analyzing most questions on *Part 4* of the self-administered questionnaire (professional information). Question 1 in this part measured the degree of satisfaction with one’s previously attended school in preparation for the realities of architectural practice (see Table 3). Twenty-nine out of 46 local graduates (63%) were on the satisfaction side (satisfied, very satisfied, and extremely satisfied) whereas 17 of them (37% were either not very satisfied or not at all satisfied with the education they acquired from the Department of Architecture at Kuwait University. When we compared those results to architects who acquired their degrees from abroad programs, we found out that a higher majority of them—28 out of the 32 (87.5%) were satisfied, very satisfied, or extremely satisfied with their architectural education while only 4 of those abroad graduates (12.5%) were not very satisfied with their education acquired abroad.

Table 3. Satisfaction with Previous Education (by Architectural School)

		Architectural school				Total	
		The Department of Architecture at Kuwait University		Abroad architectural program			
1. Overall, how satisfied are you with your school education in preparing you for the realities of architectural practice?		Frequency	Percent	Frequency	Percent	Frequency	Percent
	Not at all satisfied	1	2.2%	0	0%	1	1.3%
	Not very satisfied	16	34.8%	4	12.5%	20	25.6%
	Satisfied	21	45.6%	11	34.4%	32	41%
	Very satisfied	6	13%	15	46.9%	21	26.9%
	Extremely satisfied	2	4.4%	2	6.2%	4	5.2%
Total		46	100%	32	100%	78	100%

Table 4 shows that most of those abroad graduates (62.5%) graduated from U.S. educational programs, while the rest (31.2%) completed programs within the region in countries such as Bahrain, Egypt, India, Lebanon, and Saudi Arabia. There were two abroad graduates who did not state the name of their universities in the questionnaire.

Table 4. Architectural Schools of Abroad Graduates

Country/University	Frequency	Percent
Bahrain :		
Bahrain University	2	6.3%
Egypt:		
Cairo University	1	3%
India:		
JNT University of India	2	6.3%
Lebanon:		
Lebanese University	2	6.3%
Saudi Arabia:		
King Faisal University	3	9.3%
United States:		
Catholic University of America	1	
Kent State University	1	
Oklahoma State University	1	
Rhode Island School of Design	1	
Roger Williams University	2	
The Pennsylvania State University	1	
Tulane University	1	
University of Colorado	1	
University of Houston	1	
University of Louisiana at Lafayette	2	
University of Miami	5	
Virginia Tech	1	
Washington State University	2	
➢ United States Total	20	62.5%
Missing	2	6.3%
Overall Total	32	100%

When we analyzed the responses for Question 2 in Part 4 of the questionnaire, we found that 31 local graduates (67.4%) had previously participated in an academic internship program in a professional office setting during their attendance at the Department of Architecture at Kuwait University while 16 abroad graduates, exactly half of those included in this survey, took advantage of an internship opportunity during their college years (see Table 5).

Table 5. Participation in a Previous Academic Internship Program (by Architectural School)

		Architectural school				Total	
		The Department of Architecture at Kuwait University		Abroad architectural program			
2. Did you participate in an academic internship program in a professional office setting during your study in architectural school?		Frequency	Percent	Frequency	Percent	Frequency	Percent
	No	15	32.6%	16	50%	31	39.7%
	Yes	31	67.4%	16	50%	47	60.3%
Total		46	100%	32	100%	78	100%

Eighteen of the 31 local graduates with a previous academic internship experience (58.1%) were either satisfied, very satisfied or extremely satisfied with their internship; whereas 13 of them (41.9%) were either not at all satisfied or not very satisfied with this experience. When we compared those results to architects who acquired their degrees from abroad programs, we found out that 11 of 16 former participants in an academic internship experience (68.7%) were positive (satisfied, very satisfied or extremely satisfied) about that experience while 5 of those abroad graduates (31.3%) were negative (not very satisfied) with their past academic internship experience during college (see Table 6).

Question 3 in this part of the self-administered questionnaire aimed at measuring the role of architectural schools in promoting the career of architecture. Graduates from both Kuwait University’s program and abroad programs were eager to start their architectural career after they completed their academic studies. This is reflected from the data analysis for the responses of this question, whereby 38 local graduates (82.6%) were eager (likely, more likely, and very likely) to pursue an architectural career and an even larger dominant percentage of abroad graduates (96.9%) indicated a similar positive attitude about their future career in the field of architecture (see Table 7). The analysis suggests that architectural schools, local and abroad, were successful in promoting the career of architecture to their students.

Table 6. Satisfaction with Previous Academic Internship Experience (by Architectural School)

		Architectural school				Total	
		The Department of Architecture at Kuwait University		Abroad architectural program			
		Frequency	Percent	Frequency	Percent	Frequency	Percent
2a. If yes, how satisfied were you with you previous academic internship experience?	Not at all satisfied	5	16.1%	0	0%	5	10.6%
	Not very satisfied	8	25.8%	5	31.3%	13	27.7%
	Satisfied	9	29%	2	12.5%	11	23.4%
	Very satisfied	7	22.6%	7	43.7%	14	29.8%
	Extremely satisfied	2	6.5%	2	12.5%	4	8.5%
Total		31	100%	16	100%	47	100%

Table 7. The Role of Schools in Promoting the Architectural Career

		Architectural school				Total	
		The Department of Architecture at Kuwait University		Abroad architectural program			
		Frequency	Percent	Frequency	Percent	Frequency	Percent
3. Overall, did the experience of attending architecture school makes it less likely or more likely, that you would pursue a career in architecture?	Not at all Likely	2	4.4%	0	0%	2	2.6%
	Less likely	6	13%	1	3.1%	7	9%
	Likely	13	28.3%	8	25%	21	26.9%
	More Likely	18	39.1%	15	46.9%	33	42.3%
	Very likely	7	15.2%	8	25%	15	19.2%
Total		46	100%	32	100%	78	100%

Questions 4 and 5 in Part 4 of the self-administered questionnaire aimed at measuring the respondents' passion for the field of architecture, according to the place where they spent their school years. Twenty five local graduates (54.3%) refused to re-attend the architectural program at Kuwait University if they were given the chance to go back to that educational experience. The other 21 local graduates (45.7%) were willing to do it over in the same program. On the other hand, the picture of the abroad graduates was more unbalanced: 26 of them (81.2%) were willing to re-attend the same school from which they graduated, while only 6 (18.8%) would refuse to re-attend the school from which they earned their degrees (see Table 8).

Table 8. Possibility of Re-attending the Same School (by Architectural School)

		Architectural school				Total	
		The Department of Architecture at Kuwait University		Abroad architectural program			
		Frequency	Percent	Frequency	Percent	Frequency	Percent
4. If you had to do it over, how likely is it that you would still attend the architectural school you *graduated from*?	Not at all Likely	10	21.7%	0	0%	10	12.8%
	Less likely	15	32.6%	6	18.8%	21	26.9%
	Likely	10	21.7%	5	15.6%	15	19.2%
	More Likely	9	19.6%	9	28.1%	18	23.1%
	Very likely	2	4.4%	12	37.5%	14	18%
Total		46	100%	32	100%	78	100%

The data analysis moved one step further to measure the population’s passion for the architectural field in general and found out that the majority of them care about this field. This was apparent from the high percentage of local graduates (91.4%) and abroad graduates (96.9%) who were willing (likely, more likely, and very likely) to re-attend any architectural school, other than the one they have graduated from, if they were given the chance to do so (see Table 9).

Table 9. Possibility of Re-attending Any Other School (by Architectural School)

		Architectural school				Total	
		The Department of Architecture at Kuwait University		Abroad architectural program			
5. If you had to do it over, how likely is it that you would attend *any* school of architecture?		Frequency	Percent	Frequency	Percent	Frequency	Percent
	Not at all Likely	2	4.3%	1	3.1%	3	3.9%
	Less likely	2	4.3%	0	0%	2	2.6%
	Likely	9	19.6%	8	25%	17	21.8%
	More Likely	9	19.6%	11	34.4%	20	25.6%
	Very likely	24	52.2%	12	37.5%	36	46.1%
Total		46	100%	32	100%	78	100%

The analysis of the previous two questions presented an obvious percentage difference in the responses of local graduates, between the choice of re-attending another school of architecture and re-attending Kuwait University's program (91.4-45.7 = *45.7%*). On the other hand, the analysis of the abroad graduates' responses showed a lower difference of (96.9-81.2 = *15.7%*). This proposition implied that the entire population is passionate about the field of architecture but with local graduates showing less appreciation for their architectural education at Kuwait University. Some deficiencies of the local architectural program at Kuwait University will be declared later in the qualitative observations section from the analysis of interviews with former students of the program.

Question 6 in Part 4 of the questionnaire asked about the commitment of architects in Kuwait toward completing the Professional Architect Examination. It was clear from analyzing the responses of this question that fewer architects (28 out of 78), representing 35.90% of the surveyed population, have already completed this exam, accordingly distributed among fewer Kuwaiti (34.3%) compared to foreign (45.4%) architects (see Table 10).

Table 10. Completion of the Professional Architect Examination (by Nationality)

		Nationality				Total	
		Kuwaiti		Other			
6. Have you taken the Professional Architect Examination?		Frequency	Percent	Frequency	Percent	Frequency	Percent
	No	44	65.7%	6	54.6%	50	64.1%
	Yes	23	34.3%	5	45.4%	28	35.9%
Total		67	100%	11	100%	78	100%

When we related the outcome from this question to the respondents' current employment, we found that architects who have completed this exam are: all four sole practitioners (100%), 10 of the 26 (38.5%) architects who work in the private sector, 13 of 43 (30.2%) architects in governmental related jobs, and only 1 out of the 5 (20%) other architects working in the academic and real estate fields (see Table 11).

Table 11. Completion of the Professional Architect Examination (by Nationality and Current Employment)

Current employment			Nationality				Total	
			Kuwaiti		Other			
			Frequency	Percent	Frequency	Percent	Frequency	Percent
Sole practice	Completion of the Professional Architect Examination	Yes	3	100%	1	100%	4	100%
	Total		3	100%	1	100%	4	100%
Private firm	Completion of the Professional Architect Examination	No	12	60%	4	66.7%	16	61.5%
		Yes	8	40%	2	33.3%	10	38.5%
	Total		20	100%	6	100%	26	100%
Government work	Completion of the Professional Architect Examination	No	29	72.5%	1	33.3%	30	69.8%
		Yes	11	27.5%	2	66.7%	13	30.2%
	Total		40	100%	3	100%	43	100%
Other	Completion of the Professional Architect Examination	No	3	75%	1	100%	4	80%
		Yes	1	25%	0	0%	1	20%
	Total		4	100%	1	100%	5	100%
Total			67	100%	11	100%	78	100%

Among the 50 respondents who have not yet taken the Professional Architect Examination, the majority (70.00%) intended (likely, more likely, very likely) to take the exam in the future. This positive intention was evenly represented among the Kuwaiti architects (70.5%) and foreign architects (66.7%) who responded to the study's self-administered questionnaire (see Table 12).

Table 12. Possibility of Taking the Professional Architect Examination in the Future (by Nationality)

		Nationality				Total	
		Kuwaiti		Other			
6a. If no, how likely is it that you will take the Professional Architect Examination and be classified as "Professional Architect?"		Frequency	Percent	Frequency	Percent	Frequency	Percent
	Not at all Likely	4	9.1%	0	0%	4	8%
	Less likely	9	20.4%	2	33.3%	11	22%
	Likely	10	22.7%	1	16.7%	11	22%
	More Likely	13	29.6%	1	16.7%	14	28%
	Very likely	8	18.2%	2	33.3%	10	20%
Total		44	100%	6	100.0%	50	100%

The Importance of Internship Programs

The aim of *Part 1* of the study's self-administered questionnaire (the importance of internship programs) was to determine the value, need, and recommended time period for internship programs in Kuwait, before and after graduation from college. The data compiled from this part of the questionnaire was of an abnormal nature. Therefore, nonparametric tests (Mann-Whitney and Chi-square) were utilized in this section to analyze twelve sub-hypotheses that combined to form a decision about the study's first main hypothesis, "architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait." This hypothesis was tested for significance between two subgroups of the population—recent graduates and practitioners.

In order to reach a decision regarding this hypothesis, twelve sub-hypotheses that fall under three categories in Part 1 of the questionnaire were statistically tested for significance: (a) internship value (sub-hypotheses 1-5); (b) internship needs (sub-hypotheses 6-10); and, (c) internship time period (sub-hypotheses 11 and 12).

The data compiled from the responses of the three senior practitioners who participated in this quantitative part of the study was reported in a descriptive manner in order to clarify their perspectives about the importance of internship programs.

Internship Value

Table 13 presents the composite results for sub-hypotheses 1-5, corresponding to the internship value statements. The Mann-Whitney test was used to analyze these five sub-hypotheses (abnormal data). The table includes the mean (*M*), standard deviation (*SD*), and the sample sizes (*N*) for the responses for two categories of the respondents (recent graduates and practitioners), and the overall statistics in these categories for those two groups within this study. The internship value is indicated by the assessment of the mean that ranged from 1= strongly disagree with the internship value statement to 5= strongly agree with that statement.

The letters H1 and the number of the statement (1-5) in this section identify internship value statements. The results for each sub-hypothesis are as follows:

Sub-hypothesis 1 (H1-1): There are no significant differences between the responses of recent graduates and practitioners related to the value of establishing internship programs in Kuwait. This sub-hypothesis was retained (p_{value} =0.43>0.05). Both groups tended to agree that the establishment of internship programs would complement architectural education in Kuwait. An examination of the mean also shows that recent graduates and practitioners agreed (overall *M*=4.35) upon the establishment of internship programs as a complement component to architectural education in Kuwait. In addition, one of the three participating senior practitioners agreed with this value while two strongly agreed.

Table 13. Internship Perceived Value

Hypotheses (internship value) **1=Strongly Disagree** **2=Disagree** **3=Neutral** **4=Agree** **5=Strongly Agree**	Recent Graduates	Practitioners	Totals	P_{value} Significance
H1-1: In general, the establishment of internship programs would complement the architectural education in Kuwait				0.43
Mean *SD* *N*	4.40 0.83 47	4.25 0.89 28	4.35 0.85 75	N.S
H1-2: The majority of technical and practical knowledge are best learned in the workplace itself, under the guidance of experienced professionals				0.29
Mean *SD* *N*	4.32 0.84 47	4.14 0.89 28	4.25 0.86 75	N.S
H1-3: Academic internship programs during college years are the most essential links connecting education to the world of practice				0.10
Mean *SD* *N*	4.13 0.90 47	3.82 0.91 28	4.01 0.91 75	N.S
H1-4: Practical training programs after graduation ensure a certain amount of guided practical experience on various technical and practice issues for all architects				0.43
Mean *SD* *N*	4.26 0.79 47	4.11 0.88 28	4.20 0.82 75	N.S
H1-5: Overall, internship programs play an important role in developing the professional abilities of architectural students and architects				0.20
Mean *SD* *N*	4.45 0.72 47	4.18 0.94 28	4.35 0.81 75	N.S

Significance level = 0.05

Sub-hypothesis 2 (H1-2): There are no significant differences between the responses of recent graduates and practitioners related to the belief that the majority of technical and practical knowledge is best learned in the workplace itself, under the guidance of experienced professionals. This sub-hypothesis was retained ($p_{value} = 0.29 > 0.05$). Both groups tended to agree with this standpoint. The overall *M* of 4.25 suggests that recent graduates and practitioners agreed upon the value of the workplace as the best ground for acquiring technical and practical knowledge. In addition, one of the three senior practitioners was neutral and two agreed with this belief.

Sub-hypothesis 3 (H1-3): There are no significant differences between the responses of recent graduates and practitioners related to the value of academic internship programs in linking architectural education to the world of practice. This sub-hypothesis was retained ($p_{value} = 0.10 > 0.05$). The responses of the two groups supported the belief that academic internship programs are the most essential links connecting education to practice (overall *M* of 4.01). Two senior practitioners agreed while one strongly agreed with this belief.

Sub-hypothesis 4 (H1-4): There are no significant differences between the responses of recent graduates and practitioners related to the value of post-graduate practical training programs to ensure a certain amount of guided practical experience on various technical and practice issues for all architects. This sub-hypothesis was retained ($p_{value} = 0.43 > 0.05$). Both groups tended to agree (overall *M* of 4.20) that formal practical training ensures some guided practical experience on various technical and practice issues for participating intern architects. Two senior practitioners agreed and one strongly agreed with the value of a structured post-graduate training program.

The value of internship wraps up with **sub-hypothesis 5 (H1-5)**: There are no significant differences between the responses of recent graduates and practitioners related to the role of internship programs in developing the professional abilities of architectural students and architects. This sub-hypothesis was also retained ($p_{value} = 0.20 > 0.05$). Recent graduates and practitioners tended to agree (overall *M* of 4.35) that internship programs play an important role in developing the professional abilities of architectural students and architects. Two senior practitioners agreed while one strongly agreed with the positive role of internship programs.

Failing to reject any of these five sub-hypotheses (H1-1 to H1-5) related to the value of internship programs compelled us to retain the combined hypothesis about the *internship value*: there are no significant differences between the responses of recent graduates and practitioners related to the *value* of internship programs in the training of architectural students and architects. In addition, the three senior practitioners who responded the study's self-administered questionnaire mostly agreed and strongly agreed with all five internship value statements presented in this part of the questionnaire.

Internship Need

Table 14 presents the composite results for sub-hypotheses 6-10, corresponding to the need for internship programs in Kuwait. The Mann-Whitney test was also used to analyze the five sub-hypotheses (abnormal data). The need for internship is indicated by the overall mean value (M) for each statement that could range from 1= strongly disagree to 5= strongly agree in questions 6-8 and ranged from 1= no to 2= yes in questions (statements) 9 and 10.

The letters H1 and the number of the statement (6-10) in this section identify internship need statements. The results for sub-hypotheses 6-10 are as follows:

Sub-hypothesis 6 (H1-6): There are no significant differences between the responses of recent graduates and practitioners related to the need for internship programs in order to accommodate the changing realities of architectural knowledge. This sub-hypothesis was retained ($p_{value} = 0.50 > 0.05$).

Both groups tended to agree that internship programs should be considered in Kuwait in order to respond to those changing realities of architectural practice. An examination of the overall mean also showed that they agreed (*M*=4.24) on this consideration of internship training programs. Two of the three senior practitioners agreed with this consideration while one strongly agreed.

Sub-hypothesis 7 (H1-7): There are no significant differences between the responses of recent graduates and practitioners related to the inclusion of internship programs in the training of architectural students and architects in Kuwait. This sub-hypothesis was retained ($p_{value} = 0.49 > 0.05$).

The responses of the two groups supported the viewpoint that internship programs should be part of the training and professional development process of students and architects in Kuwait (overall *M* of 4.29). Also, one senior practitioner supported (agreed with) and two strongly supported (strongly agreed with) this proposition.

Table 14. Internship Need

Hypotheses (internship value) **H1-6 to H1-8:** **1=Strongly Disagree** **2=Disagree** **3=Neutral** **4=Agree** **5=Strongly Agree**	Recent Graduates	Practitioners	Totals	P_{value} / Significance
H1-6: Internship programs should be considered in Kuwait in order to respond to the changing realities of architectural practice *Mean*	4.32	4.11	4.24	0.50
SD	0.75	1.03	0.87	N.S
N	47	28	75	
H1-7: Internship programs should be part of the training and professional development process for students and architects in Kuwait *Mean*	4.34	4.21	4.29	0.49
SD	0.73	0.79	0.75	N.S
N	47	28	75	
H1-8: Formal structured practical training programs after graduation should be developed in Kuwait to enrich the knowledge of fresh graduates from architectural schools. *Mean*	4.21	4.43	4.29	0.25
SD	0.83	0.74	0.80	N.S
N	47	28	75	
H1-9: Do you think that architectural students should be required to have some academic internship experience as a condition of graduation? **1= No 2=Yes** *Mean*	1.85	1.75	1.81	0.28
SD	0.36	0.44	0.39	N.S
N	47	28	75	
H1-10: Do you think that practical training experience after graduation should be required to take place in the practice of architecture in Kuwait? **1= No 2=Yes** *Mean*	1.74	1.93	1.81	0.051
SD	0.44	0.26	0.39	N.S
N	47	28	75	

Significance level = 0.05

Sub-hypothesis 8 (H1-8): There are no significant differences between the responses of recent graduates and practitioners related to the need for developing formal structured practical training programs for recent architectural graduates. This sub-hypothesis was retained (p_{value} =0.25>0.05). Both groups tended to agree that such post-graduate practical training programs should be developed in Kuwait to enrich the knowledge of recent graduates from architectural schools.

An examination of the overall mean (*M*=4.29) also supported the need for developing such formal structural practical training programs. In addition, the three senior practitioners distributed between two who agreed, and one who strongly agreed, with the need to develop such programs.

Sub-hypothesis 9 (H1-9): There are no significant differences between the responses of recent graduates and practitioners related to requiring Kuwait University's students to complete an architectural academic internship program before they graduate from the program. This sub-hypothesis was retained (p_{value} =0.28>0.05). Both groups tended to agree that such an academic internship experience should be required in the architectural program at Kuwait University.

An examination of the overall mean showed that most of recent graduates and practitioners agreed (*M*=1.81) on requiring some academic internship experience as a condition of graduation. A frequency analysis generated for this question also supported this agreement by showing that 64 of the total 78 respondents (82.1%), including senior practitioners, agreed upon requiring an academic internship experience before graduation from college. This represents 61 out of 75 (81.3%) combined recent graduates and practitioners plus the three senior practitioners who responded to the study's questionnaire.

Sub-hypothesis 10 (H1-10): There are no significant differences between the responses of recent graduates and practitioners related to obligating all recent graduates to join a structured architectural practical training program. This sub-hypothesis was barely retained (p_{value} =0.051>0.05). Both groups tended to agree that such a post-graduate practical training experience should be required to take place in the field of architecture in Kuwait.

An examination of their overall mean supported this standpoint whereas most of the two groups agreed (*M*=1.81) upon the inclusion of such a program within the professional architectural practice system in Kuwait. Also all senior practitioners (3) supported this inclusion. A generated frequency percentage showed that exactly 64 out of the 78 respondents (82.1%) agreed with this required inclusion. This represents 61 out of 75 (81.3%) combined recent graduates and practitioners plus the three senior practitioners.

None of the sub-hypotheses (H1-6 to H1-10) were rejected. Failing to reject these five sub-hypotheses suggests that there is a need for the initiation of internship programs within the architectural education and practice fields in Kuwait. The meaning behind retaining those five sub-hypotheses combined to prove another hypothesis related to the need for internship programs in Kuwait: there are no significant differences between the responses of recent graduates and practitioners related to the *need* for the initiation of internship programs as part of the training process for architectural students and architects in Kuwait. This need was fully backed by all three participating senior practitioners and dominantly supported by the majority of the respondents (a total of 82.1% for both academic internship and practical training programs).

Internship Time Period

Table 15 presents the results for sub-hypotheses 11-12, corresponding to Questions 9a and 10a of the self-administered questionnaire, which aimed to compile recommendations for appropriate time periods for academic internship and practical training programs in Kuwait. Inferences about the subpopulation (recent graduates and practitioners) proportions were statistically tested for significance using the nonparametric Chi-square test. Frequency percentages for each response were also generated in order to provide a view of the percentages of occurrence reported by all three subpopulations of this study.

The recommended time period for an academic internship program (Question 9a) was triggered by the overall mean value (*M*) of the assigned nominal values: 1= one summer, 2= one semester, 3= one school year, to 4= any other recommended time period. For the practical training programs (Question 10a), the open measurement scale for the recommended number of months/years of training was regenerated in the form of several nominal levels: 1= three months, 2= four months, 3= six months, 4= one year, 5= 2 years, 6= 3 years, and 7= 5 years of training. The purpose behind this regeneration of responses into categories was to simplify the analysis of responses for this question, taking into consideration that these categories include all the possible responses from all three subpopulations.

Table 15. Internship Time Period

Hypotheses (internship time period)		Recent Graduates	Practitioners	Totals	P_{value} / Significance
H1-11: The length of an internship program during college should be					0.26
1=One Summer (2 months)	*Mean*	2.08	1.86	2.00	
2=One Semester (4 months)	*SD*	0.89	0.65	0.82	
3=One School Year (10 months)	*N*	40	21	61	N.S
4=Other					
H1-12: The length of a practical training program during early years of practice should be					0.48
1=3 months 2=4 months	*Mean*	4.31	4.50	4.39	
3=6 months 4=1 year	*SD*	0.76	1.07	0.90	
5=2 years 6=3 years	*N*	35	26	61	N.S
7=5 years					

Significance level = 0.05

The letters H1 and the number of the statement (11-12) in this section identify the recommended internship time period statements. The result for **sub-hypothesis 11 (H1-11)**: There are no significant differences between the responses of recent graduates and practitioners related to the length of time recommended for an academic internship program. This sub-hypothesis was retained (χ^2 =3.988, df =3, p_{value} =0.26) and we can say that it is possible there is no relationship between the outcomes and the two subpopulations.

We recall from analyzing the responses to question 9 that 61 combined recent graduates and practitioners (81.3%) agreed with requiring an academic internship experience before graduating from the architectural program at Kuwait University. Among those 61 supporters, 27 (44.3%) agreed that the length of an internship should be one semester (4 months). A one summer (2 months) term was recommended by 18 respondents (29.5%). Fourteen respondents (23%) preferred a whole school year (10 months). The rest (2) selected the other category with one recommending 3 months and another recommending several short internship programs according to the interest of the student.

This scheme indicates that there were no significant differences between the responses of both subpopulations (recent graduates and practitioners). Most of them (96.8%) calling for an obligatory academic internship program agreed that this experience should be at least 2 months to 10 months in length, with a 4 months preference.

An examination of the overall mean (*M*=2.00) shows that most of recent graduates and practitioners recommended one semester-four months as an appropriate length for the academic internship experience in Kuwait. Two of the three senior practitioners also recommended the one semester (four months) time period while one believed that it should extend to about 6 months.

The result for **sub-hypothesis 12 (H1-12)**: There are no significant differences between the responses of recent graduates and practitioners related to the length of time recommended for a practical training program during early years of architectural practice. This sub-hypothesis was retained (χ^2 =5.524, df =6, p_{value} =0.48) and we can say that it is possible that there is no relationship between the outcomes and these two subpopulations.

Of the 61 recent graduates and practitioners who agreed upon the necessity of the inclusion of a post-graduate practical training program within the professional architectural practice system in Kuwait, 28 (45.9%) agreed that the length of this training program should be one year and 25 (41%) recommended a two-year training program. The remaining eight respondents (13.1%) distributed between one recommending 3 months, one with 4 months, three with 6 months, two preferring 3 years, and one recommending a length of 5 years. This indicated that there were no significant differences between the responses of both subpopulations. The majority of recent graduates and practitioners (86.9%) calling for the inclusion of an obligatory practical training program for recent architectural graduates in Kuwait agreed that the length of this post-graduate training program should range between 1 and 2 years.

An examination of the overall mean (*M*=4.39) shows that most of recent graduates and practitioners recommended a time period from 1-2 years of training. All three senior practitioners, on the other hand, recommended two years as an appropriate time period for completing the post-graduate training experience.

Decision for Hypothesis One (H1)

The research question that guided Part 1 of the study's self-administered questionnaire on the importance of internship programs was: are architectural internship programs important components in the preparation of architectural students and architects in Kuwait? Within this broad question lay several specific questions: what is the perceived value of architectural internship (academic internship and practical training) programs? Is there a need for architectural internship (academic internship and practical training) programs in Kuwait? Should academic internship programs be required for architectural students in Kuwait as a condition of graduation? Should post-graduate practical training programs be required in Kuwait as part of the training and professional development process for practicing architects? Is there an agreement about an appropriate time period for an academic internship program? And is there an agreement about an appropriate time period for a practical training program?

This section covered the data analysis associated with testing 12 sub-hypotheses in the first part of the study's questionnaire instrument. Twelve statements about internship value, need, and recommended time period using hypotheses 1-12, gave participants the opportunity to respond with their perceptions about the importance of internship programs (academic internship and practical training) in training architectural students and architects in Kuwait. Failing to reject any of those twelve sub-hypotheses led the researcher to *retain the first main research hypothesis* of this study:

Hypothesis 1 (H1) - Architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait.

Internship Programs Body of Knowledge

The second part (academic internship areas of knowledge) and third part (practical training areas of knowledge) of the research questionnaire instrument contained knowledge areas organized into seven (7) main domains:

1. Pre –Design
2. Design
3. Construction Documentation and Administration (Office / Field)
4. Practice (Office) Management
5. Project and Construction Management
6. Related Activities and Fields
7. General knowledge/Skills

Each of the seven domains consisted of several knowledge areas/skills with a rating scale that indicates the level of competence (command of knowledge) for each knowledge area/skill by the completion of an academic internship program during college (Part 2) and by the completion of an architectural practical training program after graduation during the early years of practice (Part 3).

Two similar questions were raised in these two parts: 1) At what level of competence should each knowledge area/skill be acquired by the completion of an academic internship (Part 2)? And 2) at what level of competence should this knowledge area/skill be acquired at the completion of a practical training program (Part 3)? The results compiled from analyzing these two questions point to an answer for the main research question that guided this section on the internship program's body of knowledge. That question was: is there an agreement about specific areas of knowledge necessary for architectural internship programs in Kuwait? The analysis also enabled inferences about the top knowledge areas/skills recommended by the study's population to be considered as curricular components of an academic internship program and the top knowledge areas/skills recommended by the study's population to be considered as curricular components of a practical training program.

The same scale was utilized on each question in Parts 2 and 3 of the self-administered questionnaire instrument, intended to measure the level of competence (command of knowledge) on each knowledge area/skill at two different points of internship time (academic internship during college and practical training after graduation). This scale was represented by:

0. Unnecessary — not required at all.
1. Exposure — sufficiently aware of the knowledge to be able to look it up.
2. Understanding — able to discuss the concepts involved.
3. Competent — having sufficient knowledge to decide upon a plan or perspective.
4. Application — able to use the knowledge to solve common problems.
5. Mastery — able to apply the knowledge to new problems, to integrate information and to create and evaluate solutions.

The seven main bodies of knowledge domains with their related knowledge areas/skills were repeated in Parts 2 and 3 of the questionnaire instrument. Within those two domains, one-hundred and ten (110) null hypotheses (55 per part) were statistically tested for significance between two subpopulations of the study (recent graduates and practitioners) using the Mann-Whitney nonparametric test because of the abnormal nature of the collected data. The statistics and significance testing tables for these null hypotheses corresponding to each part are found in Appendix-I. These tables include the means, standard deviations, sample sizes of those two subpopulations of the study, and the overall means and standard deviations for those combined two subpopulations. The tables also include the significance value (ρ_{value}) for the responses of those two subpopulations (recent graduates and practitioners) of this study.

Composite frequency distribution table of responses by percent for the level of competence for each internship knowledge area/skill was generated to make inferences about the degree of agreement on the command of knowledge of a knowledge area/skill by the completion of an internship program. The spreadsheet frequency table presented in Appendix-G includes the percentage of responses for the two subpopulations (recent graduates and practitioners) regarding their perceived (expected) level of competence for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program.

The relative importance of inclusion of a knowledge area/skill in an internship program was determined by the overall mean value for the entire population (47 recent graduates, 28 practitioners, and 3 senior practitioners) presented in Appendix-F. Scores between 4.00 and 5.00 were considered as very important. Scores between 3.00 and 3.99 were important. Scores between 2.00 and 2.99 were moderately important. Scores between 1.00 and 1.99 were of less importance and scores below 1.00 were considered of no importance at all to include in an internship program curriculum.

The letters H2, the number of the main category and the knowledge area/skill, and the knowledge area/skill name in this section identify internship body of knowledge hypotheses.

I. Pre –Design

The first domain of pre-design included two knowledge areas/skills (programming and site/environmental analysis) and tested 4 null hypotheses about the perceived level of competence for each knowledge area/skill by the completion of an academic internship program first and then by the completion of a practical training program. The results for these 4 null hypotheses (null hypotheses 13-16) are as follows:

Null hypothesis 13 (H2- I1)/Programming: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in programming knowledge by the completion of an *academic internship* program.

There was sufficient statistical evidence to **reject** null hypothesis 13 ($p_{value} = 0.03 < 0.05$). This indicated that the two subpopulations were different in their means regarding the perceived level of competence in programming knowledge by the completion of an academic internship program. An independent-samples T-test was utilized to locate the means difference. Recent graduates and practitioners were different in means between (0.083, 1.396) with 95% probability, regarding perceived command of knowledge about programming by the completion of an academic internship program (see Appendix-I/Table 27 for details).

Examining the responses of those two subpopulations of the study showed that a decent percentage (29.79%) of recent graduates believed that the command of programming knowledge should be to an application level. Twenty-five percent of the surveyed practitioners had a different perspective and believed that the command of programming knowledge should be at an exposure level. This odd frequency distribution of responses confirmed the results from statistically testing the means difference among the two subpopulations.

Examining the subpopulations' means showed that recent graduates perceived programming as an important inclusion (*M*=3.49) while practitioners perceived it as a moderately important inclusion (*M*=2.75) within an academic internship program structure (refer to the means in Appendix-I/Table 27).

Null hypothesis 14 (H2- I1)/Programming: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in programming knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.98>0.05, see this value in Appendix-I for this null hypothesis and all the following retained null hypotheses). Both groups tended to agree that the acquisition of programming knowledge should advance to a mastery level (36%: see Appendix-G for this knowledge area/skill and all the following knowledge areas/skills in retained null hypotheses) at this practical stage. An examination of the mean (overall *M*=3.50: see Appendix-F for this knowledge area/skill and all the remaining knowledge areas/skills) for the entire population revealed that programming is an important knowledge area to include in a practical training program.

Null hypothesis 15 (H2- I2)/Site and environmental analysis: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in site and environmental analysis knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.38>0.05). Both groups tended to agree that knowledge about site and environmental analysis should be acquired to the level of competent (22.67%) or application (24%). An examination of the mean (overall *M*=3.14) also showed that it is perceived as an important knowledge area to include in an academic internship program

Null hypothesis 16 (H2- I2)/Site and environmental analysis: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in site and environmental analysis knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.63>0.05). Both groups tended to agree that site and environmental analysis knowledge should be acquired at an advance level of mastery (33.33%). An examination of the mean (overall *M*=3.45) showed that site and environmental analysis is perceived as an important knowledge area of inclusion in a practical training program.

II. Design

The second domain of design included seven (7) knowledge areas/skills—schematic design, design development, analysis and selection of building materials and systems, cost analysis, architectural construction documents, specifications and building code requirements and constraints, and building systems integration. Fourteen (14) null hypotheses were statistically tested for significance in this domain regarding the perceived level of competence for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program. The results for these 14 null hypotheses (null hypotheses 17-30) are as follows:

Null hypothesis 17 (H2- II1)/Schematic design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in schematic design skills by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.81 > 0.05$). Both groups tended to agree that students should master (34.67%) schematic design skills by the completion of an academic internship program. An examination of the mean (overall M=3.63) showed that information about schematic design is considered as an important inclusion within an academic internship program.

Null hypothesis 18 (H2- II1)/Schematic design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in schematic design skills by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} = 0.06 > 0.05$). Both groups still tended to agree that schematic design skills should be acquired to the level of mastery (34.67%). An examination of the mean (overall M=3.63) also showed that schematic design is perceived as an important component in the structure of a practical training program.

Null hypothesis 19 (H2- II2)/Design development: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in design development skills by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.84 > 0.05$). Both groups tended to agree that the acquisition of design development skills during this time should be at a mastery level (34.67%). An examination of the mean (overall

M=3.77) showed that respondents perceived the area of design development as an important inclusion within an academic internship program.

Null hypothesis 20 (H2- II2)/Design development: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in design development skills by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.54>0.05). Both groups tended to agree that design development skills should also be acquired to the level of mastery (41.33%). An examination of the mean (overall *M*=3.85) showed that it is important to include information about design development in a practical training program curriculum.

Null hypothesis 21 (H2- II3)/Analysis and selection of building materials and systems: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in the analysis and selection of building materials and systems by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.39>0.05). Both groups tended to agree that related knowledge about this field should be acquired to the level of competent (29.33%). The examination of the mean (overall *M*=3.41) showed that respondents perceived this area as an important inclusion within an academic internship program curriculum.

Null hypothesis 22 (H2- II3)/Analysis and selection of building materials and systems: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in the analysis and selection of building materials and systems by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.87>0.05). Both groups tended to agree that inputs in this field should advance to be acquired at an application (36%) to a mastery level (38.67%). An examination of the mean (overall *M*=3.97) showed that this area of knowledge is perceived as an important, and even close to being a very important, component in a practical training program curriculum.

Null hypothesis 23 (H2- II4)/Cost analysis: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in cost analysis knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.86>0.05). There was an agreement between both groups that students should learn about cost analysis at a level that ranges from exposure to competent (21.33%). An examination of the mean (overall *M*=2.64) showed that cost analysis is perceived as a moderately important field of training in an academic internship program.

Null hypothesis 24 (H2- II4)/Cost analysis: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in cost analysis knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.39>0.05). Both groups tended to agree that the acquisition of cost analysis techniques should advance to a mastery level (32%) when completing this post-graduate training program. An examination of the mean (overall *M*=3.62) clarified the populations' perception that it is important to include the cost analysis field within a practical training program.

Null hypothesis 25 (H2- II5)/Architectural construction documents: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about architectural construction documents by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.74 > 0.05$). Both groups tended to agree that related knowledge about this field should be acquired to a competent level (29.33%). The mean value (overall *M*=2.77) supported this by ranking architectural construction documents as a moderately important inclusion within an academic internship program.

Null hypothesis 26 (H2- II5)/Architectural Construction Documents: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about architectural construction documents by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} = 0.91 > 0.05$). Both groups tended to agree that knowledge about architectural construction documents should be acquired at an application level (36%). An examination of the mean (overall *M*=3.55) showed that it is important to include information about architectural construction documents in a practical training program.

Null hypothesis 27 (H2- II6)/Specifications and building code requirements and constraints: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in dealing with specifications and building code requirements and constraints by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.53 > 0.05$).

Both groups tended to agree that related knowledge about this field should be acquired to an understanding level (26.67%). An examination of the mean (overall *M*=2.79) showed that this area of knowledge is perceived as moderately important within an academic internship program curriculum.

Null hypothesis 28 (H2- II6)/Specifications and building code requirements and constraints: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in dealing with specifications and building code requirements and constraints by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} = 0.94 > 0.05$). Both groups tended to agree that the acquisition of knowledge about this field should advance to an application (33.33%) or a mastery level (32%) when completing the post-graduate program. An examination of the mean (overall *M*=3.65) showed that it is important to include this knowledge area in a practical training program curriculum.

Null hypothesis 29 (H2- II7)/Building systems integration: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about building systems integration by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.66 > 0.05$). Both groups tended to agree that the acquisition of related knowledge about building systems integration should range from an understanding (29.33%) to an application level (25.33%). The mean value (overall *M*=3.10) showed that knowledge about building systems integration is valued as an important inclusion within an academic internship program.

Null hypothesis 30 (H2- II7)/Building systems integration: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about building systems integration by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.26>0.05). Both groups tended to agree that knowledge about building systems integration should advance to a mastery level (40%). An examination of the mean (overall *M*=3.92) showed that it is important to include information about building systems integration in a practical training program.

III. Construction Documentation and Administration (Office / Field)

This third main domain included four (4) knowledge areas/skills, three of which are related to office tasks and one related to field work. The three office tasks are facilitating project communication, maintaining project documents and records, and preparing change orders. The field work is observing construction for conformity with drawings and specification. A total of eight (8) null hypotheses were statistically tested for significance in this domain regarding the perceived level of competence for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program. The results for those 8 null hypotheses (null hypotheses 31-38) are as follows:

Null hypothesis 31 (H2- IIIa1)/Facilitating project communication: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in facilitating project communication knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.88>0.05). Both groups tended to agree that related knowledge about this field should be acquired to an understanding (28%) or competent level (28%). An examination of the mean (overall *M*=2.62) showed that knowledge about facilitating project communication is perceived as moderately important for inclusion in an academic internship program curriculum.

Null hypothesis 32 (H2- IIIa1)/Facilitating project communication: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in facilitating project communication knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.60>0.05). Both groups tended to agree that the acquisition of knowledge about this field should be at a competent (32%) to an application level (29.33%) when completing this post-graduate program. An examination of the mean (overall *M*=3.24) showed that it is important to include knowledge about facilitating project communication in a practical training program curriculum.

Null hypothesis 33 (H2- IIIa2)/Maintaining project documents and records: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in maintaining project documents and records knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.91>0.05). There was an agreement among both groups that the acquisition of related knowledge about maintaining project documents and records should range from an understanding (24%) to a competent level (25.33%). The mean value (overall *M*=2.40) showed that related information about this task is considered as a moderately important inclusion in the training during an academic internship program.

Null hypothesis 34 (H2- IIIa2)/Maintaining project documents and records: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in maintaining project documents and records knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.46>0.05). Both groups tended to agree that knowledge about maintaining project documents and records should be acquired at a competent level (34.67%). An examination of the mean (overall *M*=3.15) showed that it is important to include information about this task in a practical training program.

Null hypothesis 35 (H2- IIIa3)/Preparing change orders: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding preparing change orders by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.55>0.05). Both groups tended to agree that related knowledge about change orders should be acquired at an understanding level (28%). An examination of the mean (overall *M*=2.06) showed that information dealing with change orders is perceived as moderately important for inclusion in an academic internship program curriculum.

Null hypothesis 36 (H2- IIIa3)/Preparing change orders: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding preparing change orders by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.31>0.05). Both groups tended to agree that the acquisition of knowledge about change orders should be at a competent level (28%) when completing this program. An examination of the mean (overall *M*=3.18) showed that it is important to include knowledge about preparing variety of change orders within the training of a practical training program.

Null hypothesis 37 (H2- IIIb)/Observing construction for conformity with drawings and specifications: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in observing construction for conformity with drawings and specifications by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.43>0.05). Both groups tended to agree that related knowledge about this skill should be acquired to a competent level (34.67%). The mean value (overall *M*=2.86) showed that related information about this skill is perceived as a moderately important inclusion within the training in an academic internship program curriculum.

Null hypothesis 38 (H2- IIIb)/Observing construction for conformity with drawings and specifications: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in observing construction for conformity with drawings and specifications by the completion of a *practical training* program.

There was sufficient statistical evidence to **reject** null hypothesis 38 (p_{value} =0.046<0.05). This indicated that the two subpopulations were different in their means regarding the perceived level of competence in knowledge about observing construction for conformity with drawings and specifications by the completion of a practical training program. An independent-samples T-test was utilized to locate the means difference. Recent graduates and practitioners were different in means between (0.017, 1.025) with 95% probability, regarding perceived command of knowledge about observing construction for conformity with drawings and specifications by the completion of a practical training program (see Appendix-I/Table 29 for details).

Examining the responses of those two subpopulations of the study showed that 36.17% of recent graduates believed that the command of knowledge about observing construction for conformity with drawings and specifications should be acquired to an application level while 38.30% of them believed it should be at a mastery level. The surveyed practitioners distributed evenly between 25% who believed that knowledge about observing construction for conformity with drawings and specifications should be acquired to an understanding level, 25% at a competent level, 25% at an application level and another 25% believed that it should be acquired to a mastery level. This long stretch of frequency distribution for practitioners responses compared to the application-to-mastery perception of recent graduates confirmed the results from statistically testing the means difference among those two subpopulations.

Examining the subpopulations' means showed that recent graduates perceived observing construction for conformity with drawings and specifications as a very important inclusion (M=4.02) while practitioners perceived it as an important inclusion (M=3.50) within a practical training program (refer to means in Appendix-I/Table 29).

IV. Practice (Office) Management

The fourth domain of practice (office) management included nine (9) knowledge areas/skills—bidding and contract negotiation, strategic planning, legal contracts and practice issues, financial management, accounting, marketing, client relations, risk management, and information management. Eighteen (18) null hypotheses were statistically tested for significance in this domain regarding the perceived level of competence for each knowledge area by the completion of an academic internship program and by the completion of a practical training program. The results for these 18 null hypotheses (null hypotheses 39-56) are as follows:

Null hypothesis 39 (H2- IV1)/Bidding and contract negotiation: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding bidding and contract negotiation by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.22 > 0.05$). Both groups tended to agree that students should be able to understand (29.33%) knowledge related to bidding and contract negotiation when completing their internship. An examination of the mean (overall M=2.13) showed that information about bidding and contract negotiation is perceived as a moderately important inclusion in an academic internship program curriculum.

Null hypothesis 40 (H2- IV1)/Bidding and contract negotiation: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding bidding and contract negotiation by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.36>0.05). Both groups tended to agree that the acquisition of bidding and contract negotiation knowledge should be at an application level (28%). An examination of the mean (overall *M*=3.27) showed that it is important to include materials about bidding and contract negotiation within a practical training program.

Null hypothesis 41 (H2- IV2)/Strategic planning: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in strategic planning knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.08 >0.05). Both groups tended to agree that the command of strategic planning knowledge should range from exposure (22.67%) to competent (25.33%) level at that stage. Inferences from the mean value (overall *M*=2.26) suggested that related information about strategic planning is considered as moderately important for an academic internship program.

Null hypothesis 42 (H2- IV2)/Strategic planning: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in strategic planning knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.16>0.05). Both groups tended to agree that the command of strategic planning knowledge should advance to a mastery level (28%) at that stage of professional training. An examination of the mean (overall *M*=3.46) showed that strategic planning is perceived as an important inclusion in a practical training program.

Null hypothesis 43 (H2- IV3)/Legal contracts and practice issues: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding legal contracts and practice issues by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.83>0.05). Both groups tended to agree that architectural students should be able to understand (32%) knowledge related to legal contracts and practice issues by the time they complete their internship. An examination of the mean (overall *M*=2.01) showed that information about legal contracts and practice issues is perceived to be moderately important and even in close proximity of being less importance to include in an academic internship program curriculum.

Null hypothesis 44 (H2- IV3)/Legal contracts and practice issues: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in legal contracts and practice issues knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.95>0.05). Both groups tended to agree that the command of knowledge about legal contracts and practice issues would be expected at an application level (26.67%). An examination of the mean (overall *M*=3.22) showed that it is important to include materials about legal contracts and practice issues in a practical training program.

Null hypothesis 45 (H2- IV4)/Financial management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge in financial management by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.33>0.05). Both groups tended to agree that students should command financial management knowledge to an understanding level (34.67%) after finishing their internship. Inferences from the mean value (overall *M*=2.01) suggested that related information about financial management is perceived to be moderately important and even in close proximity to less important to include in an academic internship program.

Null hypothesis 46 (H2- IV4)/Financial management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of financial management knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.69>0.05). Both groups tended to agree that the command of financial management knowledge should be at an application level (26.67%) at that stage. An examination of the mean (overall *M*=3.18) showed that financial management is perceived as an important inclusion in a practical training program.

Null hypothesis 47 (H2- IV5)/Accounting: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in accounting knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.94>0.05). More than a quarter (26.67 %) of the two combined subpopulations believed that accounting knowledge is not at all required (unnecessary) at this stage of students' training. A larger percentage of the population (28%) believed that students should only be exposed to accounting knowledge while 26.67% of them thought that they should be able to discuss accounting concepts at an understanding level. An examination of the mean (overall *M*=1.54) supported the viewpoint of the group with the largest percentage and indicated that accounting information is perceived of less importance to include in an academic internship program curriculum.

Null hypothesis 48 (H2- IV5)/Accounting: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in accounting knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.23>0.05). Both groups tended to agree that the command of accounting knowledge would be expected to progress to an understanding level (28%) after the post-graduate training experience. An examination of the mean (overall *M*=2.53) showed that accounting knowledge becomes a moderately important inclusion in a practical training program.

Null hypothesis 49 (H2- IV6)/Marketing: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of marketing knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.08>0.05). Both groups tended to agree that the command of marketing knowledge should range between an exposure (24%) to an understanding (26.67%) level after this internship. The mean value (overall *M*=2.09) also suggested that related information about marketing is perceived as moderately important during academic internship training.

Null hypothesis 50 (H2- IV6)/Marketing: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of marketing knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.40>0.05). Both groups tended to agree that the command of marketing knowledge should be at an application level (26.67%) at that practical stage. An examination of the mean (overall *M*=3.00) showed that marketing is barely perceived as an important inclusion in a practical training program, being in close proximity to moderately important.

Null hypothesis 51 (H2- IV7)/Client relations: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in client relations knowledge by the completion of an *academic internship* program.

There was sufficient statistical evidence to **reject** null hypothesis 51 (p_{value} =0.01<0.05). This indicated that the two subpopulations were different in their means regarding the perceived level of competence in client relations knowledge by the completion of an academic internship program. An independent-samples T-test was utilized to locate the means difference. Recent graduates and practitioners were different in means between (0.196, 1.628) with 95% probability, regarding perceived command of knowledge about client relations by the completion of an academic internship program (see Appendix-I/Table 30 for details).

Examining the responses of those two subpopulations of the study showed that a 34.04% of recent graduates believed that the command of client relations knowledge should be to a mastery level. More than twenty-eight percent (28.57%) of the surveyed practitioners had a different perspective and believed that the command of client relations knowledge should be at an understanding level only. This disagreement of responses confirmed the results from statistically testing the means difference among the two subpopulations.

Examining the subpopulations' means showed that recent graduates perceived client relations as an important inclusion (M=3.34) while practitioners perceived it as a moderately important inclusion (M=2.43) within an academic internship program (refer to the means in Appendix-I/Table 30).

Null hypothesis 52 (H2- IV7)/ Client relations: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in client relations knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.17>0.05). Both groups tended to agree that the command of client relations knowledge would be expected at a mastery level (37.33%) after completing this practical training experience. An examination of the mean (M=3.71) showed that client relations knowledge is perceived as an important inclusion in a practical training program.

Null hypothesis 53 (H2- IV8)/Risk management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of risk management knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.33>0.05). There was an agreement among both groups that the command of risk management knowledge should range from exposure (24%) to competent level (21.33%). The mean value (overall *M*=2.26) suggested that related information about risk management is perceived as a moderately important inclusion in an academic internship program.

Null hypothesis 54 (H2- IV8)/Risk management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of risk management knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.85>0.05). Both groups agreed that the command of risk management knowledge is expected to stretch through a range from understanding (21.33%) to mastery level (22.67%). The distribution of responses along this stretch indicated the two subpopulation's uncertainty in locating a decisive level of competence for this knowledge area. The overall mean value (*M*=3.08) was better utilized here to reach a decision that risk management knowledge is perceived as an important inclusion within a practical training program.

Null hypothesis 55 (H2- IV6)/Information management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of information management knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.3> 0.05). Both groups tended to agree that students should only be exposed (29.33%) to information management knowledge during this internship experience. The mean value (overall *M*=2.22) also suggested that related knowledge about information management is perceived as moderately important to implement during an academic internship program.

Null hypothesis 56 (H2- IV6)/Information management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of information management knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value}=0.72>0.05). Similar to the previous risk management area of knowledge both groups agreed that the command of information management knowledge is expected to stretch through a range from understanding (21.33%) to mastery level (22.67%) but with a slight preference (25.33%) to a competent command of knowledge. This distribution of responses along this stretch also indicated the subpopulation's uncertainty in locating a decisive level of competence for information management knowledge. The overall mean value (*M*=3.17) was also utilized here to reach a decision that information management knowledge is considered as an important inclusion within a practical training program.

V. Project and Construction Management

The fifth domain of project and construction management included eleven (11) knowledge areas/skills—project acquisition, project financing and funding, project delivery methods, budgeting, scheduling, planning/organizing/and staffing, leading and managing the project team, quality management and control, life safety codes and regulations, construction conflict resolution, and post-occupancy studies. Twenty-two (22) null hypotheses were statistically tested for significance in this domain regarding the perceived command of knowledge for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program. The results for these 22 null hypotheses (null hypotheses 57-78) are as follows:

Null hypothesis 57 (H2- V1)/Project acquisition: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding project acquisition by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} =0.11>0.05$). Both groups tended to agree that students should be only exposed (26.67%) to knowledge related to project acquisition throughout their internship. An examination of the mean (overall M=2.18) showed that information about project acquisition is perceived as a moderately important inclusion in an academic internship program.

Null hypothesis 58 (H2- V1)/Project acquisition: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding project acquisition by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} =0.44>0.05$). Both groups tended to agree that the acquisition of project acquisition knowledge should range from a competent (26.67%) to a mastery (25.33%) level. An examination of the mean (overall M=3.40) showed that it is important to include project acquisition materials within a practical training program.

Null hypothesis 59 (H2- V2)/Project financing and funding: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding project financing and funding by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.58>0.05). Both groups tended to agree that students should be exposed (30.67%) to knowledge related to project financing and funding during their internship. An examination of the mean (overall *M*=1.95) indicated that information about project financing and funding is perceived of less importance to include in an academic internship program.

Null hypothesis 60 (H2- V2)/Project financing and funding: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge regarding project financing and funding by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.45>0.05). Both groups tended to agree that the acquisition of project financing and funding knowledge should be at a competent level (26.67%). An examination of the mean (overall *M*=3.13) showed that it is important to include project financing and funding materials within a practical training program.

Null hypothesis 61 (H2- V3)/Project delivery methods: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge in project delivery methods by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.51>0.05). Both groups tended to agree that the command of knowledge related to project delivery methods should range from an exposure (28%) to an understanding level (30.67%). The mean value (overall *M*=2.09) also suggested that related information about project delivery methods is perceived as moderately important during an academic internship program.

Null hypothesis 62 (H2- V3)/Project delivery methods: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about project delivery methods by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.60>0.05). Both groups tended to agree that the level of acquisition of knowledge related to project delivery methods should be at a competent (29.33%) or application level (29.33%). An examination of the mean (overall *M*=3.23) indicated that this component is perceived as an important inclusion in a practical training program.

Null hypothesis 63 (H2- V4)/Budgeting : There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in budgeting knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.34>0.05). Both groups tended to agree that students should be able to understand (30.67%) related knowledge about budgeting when completing their internship. An examination of the mean (overall *M*=2.40) showed that budgeting information is perceived as moderately important inclusion in an academic internship program curriculum.

Null hypothesis 64 (H2- V4)/Budgeting: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in budgeting knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.72>0.05). Both groups tended to agree that the acquisition of budgeting knowledge should be at a competent (29.33%) or application level (26.67%). An examination of the mean (overall *M*=3.18) showed that it is important to include materials about budgeting within a practical training program.

Null hypothesis 65 (H2- V5)/Scheduling: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in scheduling related knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.12>0.05). Both groups tended to agree that students should have a command of scheduling knowledge at an understanding level (33.33%). An examination of the mean (overall *M*=2.67) showed that scheduling materials is perceived as a moderately important inclusion in an academic internship program.

Null hypothesis 66 (H2- V5)/Scheduling: There are no significant differences between the responses of recent graduates and practitioners related to the command of scheduling knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.99>0.05). Both groups tended to agree that the acquisition of scheduling knowledge should be at an application level (33.33%). An examination of the mean (overall *M*=3.38) showed that it is important to include materials about scheduling within a practical training program.

Null hypothesis 67 (H2- V6)/Planning, organizing, and staffing: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge related to office planning, organizing, and staffing by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.45>0.05). Both groups tended to agree that related knowledge about this office field should be acquired to a competent level (28%). The mean value (overall *M*=2.47) showed that related information about this field is perceived as a moderately important inclusion within the training of students in an academic internship program.

Null hypothesis 68 (H2- V6)/Planning, organizing, and staffing: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge related to office planning, organizing, and staffing by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.86>0.05). Both groups tended to agree that the level of acquisition of knowledge related to this office field should range from competent (30.67%) to application (29.33%). An examination of the mean (overall *M*=3.35) showed that related information to this field is perceived as an important inclusion in a practical training program.

Null hypothesis 69 (H2- V7)/Leading and managing the project team: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to leading and managing the project team by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.08>0.05). There was an agreement among both groups that the command of this knowledge should range from an exposure (17.33%) to a mastery level (16%) with a preference to an understanding level (21.33%). This distribution of responses along this long stretch indicated the subpopulation’s uncertainty in locating a decisive level of competence for knowledge about leading and managing the project team at that time. The overall mean value (*M*=2.65) was utilized to reach a decision that knowledge about leading and managing the project team is considered as a moderately important inclusion in an academic internship program.

Null hypothesis 70 (H2- V7)/Leading and managing the project team: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to leading and managing the project team by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.86>0.05). Both groups tended to agree that the acquisition of knowledge related to this office field should be at an application level (32%). An examination of the mean (overall *M*=3.49) showed that it is important to include materials about leading and managing the project team within a practical training program.

Null hypothesis 71 (H2- V8)/Quality management and control: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge related to quality management and control by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.16>0.05). Both groups tended to agree that the command of quality management and control knowledge should range from exposure (26.67%) to competent level (25.33%). Inferences from the mean value (overall *M*=2.40) suggested that related information about quality management and control is considered as moderately important for an academic internship program.

Null hypothesis 72 (H2- V8)/Quality management and control: There are no significant differences between the responses of recent graduates and practitioners related to the command of quality management and control knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.62 >0.05). Both groups tended to agree that the command of quality management and control knowledge should progress to an application level (33.33%) at that stage of professional training. An examination of the mean (overall *M*=3.38) showed that quality management and control materials is perceived as an important inclusion in a practical training program curriculum.

Null hypothesis 73 (H2- V9)/Life safety codes and regulations: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge in life safety codes and regulations materials by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.67>0.05). Both groups tended to agree that the command of life safety codes and regulations knowledge should range from an exposure (24%) to an understanding level (26.67%). An examination of the mean (overall *M*=2.55) suggested that related information about life safety codes and regulations is perceived as a moderately important inclusion to an academic internship program.

Null hypothesis 74 (H2- V9)/Life safety codes and regulations: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to life safety codes and regulations by the completion of a *practical training* program. This null hypothesis was retained (p_{value}

=0.1> 0.05). Both groups tended to agree that the command of life safety codes and regulations knowledge should progress to an application level (28%). An examination of the mean (overall *M*=3.29) showed that information related to this area is perceived as an important inclusion in a practical training program curriculum.

Null hypothesis 75 (H2- V10)/Construction conflict resolution: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of construction conflict resolution knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.86>0.05). Both groups tended to agree that the command of construction conflict resolution knowledge should be at an exposure level (24%) after this internship experience. The mean value (overall *M*=2.17) suggested that related information about construction conflict resolution is considered to be moderately important during an academic internship program training.

Null hypothesis 76 (H2- V10)/Construction conflict resolution: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of construction conflict resolution knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.34>0.05). Both groups tended to agree that the command of construction conflict resolution knowledge should progress to a competent level (29.33%) after this practical experience. An examination of the mean (overall *M*=3.15) showed that information about construction conflict resolution is perceived as an important inclusion in a practical training program.

Null hypothesis 77 (H2- V11)/Post-occupancy studies: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to post-occupancy studies by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.48>0.05). Both groups tended to agree that students should only be exposed (26.67%) to information about this knowledge area during their training. An examination of the mean (overall *M*=2.35) showed that information related to post-occupancy studies are perceived as a moderately important inclusion in an academic internship program.

Null hypothesis 78 (H2- V11)/Post-occupancy studies: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to post-occupancy studies by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.08>0.05). Both groups tended to agree that the acquisition of knowledge related to post-occupancy studies should progress to an application level (34.67%) at this practical stage. An examination of the mean (overall *M*=3.03) showed that it is important to include materials about post-occupancy studies within a practical training program.

VI. Related Activities and Fields

The sixth domain of related activities and fields included twelve (12) related knowledge areas/skills to architecture. These knowledge areas/fields are building technology, energy conservation, environmental engineering and design, mechanical engineering and design, structural engineering and design, computer-aided design (CAD) and drafting, professional and business ethics, historical preservation and restoration, urban design and planning, interior design, landscape architecture, and real estate development. Twenty-four (24) null hypotheses were statistically tested for significance in this domain regarding the perceived command of knowledge for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program. The results for these 24 null hypotheses (null hypotheses 79-102) are as follows:

Null hypothesis 79 (H2- VI1)/Building technology: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge related to building technology by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.63>0.05). Both groups tended to agree that the command of building technology knowledge should range from understanding (26.67%) to competent level (26.67%). Inferences from the mean value (overall M=2.82) suggested that related information about building technology is perceived as moderately important to include in an academic internship program.

Null hypothesis 80 (H2- VI1)/Building technology: There are no significant differences between the responses of recent graduates and practitioners related to the command of building technology knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.92>0.05). Both groups tended to agree that the command of building technology knowledge should progress to an application level (38.67%). An examination of the mean (overall M=3.64) showed that building technology material is perceived as an important inclusion in a practical training program curriculum.

Null hypothesis 81 (H2- VI2)/Energy conservation: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in energy conservation knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.3> 0.05). Both groups tended to agree that related knowledge about energy conservation should be acquired at a competent level (30.67%). The mean value (overall *M*=2.90) showed that energy conservation is perceived as a moderately important inclusion within an academic internship program.

Null hypothesis 82 (H2- VI2)/Energy conservation: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of energy conservation knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.2>0.05). Both groups tended to agree that knowledge about energy conservation should be acquired at an application (30.67%) or mastery level (34.67%). An examination of the mean (overall *M*=3.65) showed that it is important to include energy conservation information in a practical training program curriculum.

Null hypothesis 83 (H2- VI3)/Environmental engineering and design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in environmental engineering and design knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.74>0.05). Both groups tended to agree that knowledge related to environmental engineering and design should be acquired at the level of application (33.33%). An examination of the mean (overall *M*=3.09) also showed that it is important to include environmental engineering and design knowledge within an academic internship program.

Null hypothesis 84 (H2- VI3)/Environmental engineering and design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in environmental engineering and design knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.61>0.05). Both groups tended to agree that the acquisition of environmental engineering and design knowledge should advance to a mastery level (37.33%) during that practical stage of training. An examination of the mean (overall *M*=3.73) valued this field as an important inclusion in a practical training program.

Null hypothesis 85 (H2- VI4)/Mechanical engineering and design: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to mechanical engineering and design by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.99>0.05). There was an agreement between both groups that the command of mechanical engineering and design knowledge should be to an understanding level (38.67%). An examination of the mean (overall *M*=2.32) showed that information related to mechanical engineering and design is perceived as a moderately important inclusion in an academic internship program.

Null hypothesis 86 (H2- VI4)/Mechanical engineering and design: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to mechanical engineering and design by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} = 0.16 > 0.05$). Both groups tended to agree that the acquisition of mechanical knowledge should be at an application level (28%). An examination of the mean (overall M=3.18) showed that it is important to include mechanical engineering and design materials within a practical training program.

Null hypothesis 87 (H2- VI5)/Structural engineering and design: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge related to structural engineering and design by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.39 > 0.05$). Both groups tended to agree that students should command structural knowledge to an understanding level (32%) after they complete their internship. An examination of the mean (overall M=2.64) showed that information related to structural engineering and design is perceived as a moderately important inclusion in an academic internship program.

Null hypothesis 88 (H2- VI5)/Structural engineering and design: There are no significant differences between the responses of recent graduates and practitioners related to the command of knowledge of structural engineering and design by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} = 0.07 > 0.05$). Both groups tended to agree that the acquisition of knowledge related to this field should be at an application level (33.33%). An examination of the mean (overall *M*=3.40) showed that it is important to include structural engineering and design within a practical training program.

Null hypothesis 89 (H2- VI6)/Computer-aided design (CAD) and drafting: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in CAD and drafting skills by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.46>0.05). Both groups tended to agree that the acquisition of CAD and drafting during this time should range from an application (37.33%) to a mastery level (36%). An examination of the mean (overall *M*=3.88) showed that respondents perceived these skills as an important inclusion within an academic internship program.

Null hypothesis 90 (H2- VI6)/Computer-aided design (CAD) and drafting: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in CAD and drafting skills by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.64>0.05). Both groups tended to agree that CAD and drafting skills should be acquired to an advanced mastery level (48%). An examination of the mean (overall *M*=3.95) showed that it is important and close to very important to include related information about these skills in a practical training program curriculum.

Null hypothesis 91 (H2- VI7)/Professional and business ethics: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about professional and business ethics by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.87 >0.05). There was an agreement between both groups that the acquisition of professional and business ethics knowledge should range from an understanding (24%) to a competent level (24%). The mean value (overall *M*=3.08) showed that knowledge about professional and business ethics is valued as an important inclusion within an academic internship program.

Null hypothesis 92 (H2- VI7)/Professional and business ethics: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in professional and business ethics knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.43>0.05). Both groups tended to agree that knowledge about professional and business ethics should advance to a mastery level (42.67%). An examination of the mean (overall *M*=3.77) showed that it is important to include information about professional and business ethics in a practical training program.

Null hypothesis 93 (H2- VI8)/Historical preservation and restoration: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in historical preservation and restoration knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.38>0.05). Both groups tended to agree that the command of historical preservation and restoration knowledge should range from understanding (25.33%) to competent level (25.33%). Inferences from the mean value (overall

M=2.63) suggested that related information is perceived as moderately important to include in an academic internship program.

Null hypothesis 94 (H2- VI8)/Historical preservation and restoration: There are no significant differences between the responses of recent graduates and practitioners related to the command of historical preservation and restoration knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.37>0.05). Both groups tended to agree that the command of historical preservation and restoration knowledge should progress to an application level (32%). An examination of the mean (overall M=2.90) showed that knowledge of historical preservation and restoration materials is perceived as it was for academic internship, as a moderately important inclusion in a practical training program curriculum.

Null hypothesis 95 (H2- VI9)/Urban planning and design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about urban planning and design by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.76>0.05). Both groups tended to agree that related knowledge about this field should be acquired to a competent level (41.33%). The mean value (overall M=3.22) ranked urban planning and design as an important inclusion within an academic internship program.

Null hypothesis 96 (H2- VI9)/Urban planning and design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in urban design and planning by the completion of a *practical training* program. This null hypothesis was retained (p_{value} $=0.47>0.05$). Both groups tended to agree that knowledge about urban design and planning should progress to an application level (36%). An examination of the mean (overall M=3.56) showed that it is important to include information about urban design and planning in a practical training program.

Null hypothesis 97 (H2- VI10)/Interior design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of interior design knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} $=0.69>0.05$). Both groups tended to agree that interior design knowledge should be acquired to the level of application (37.33%). An examination of the mean (overall M=3.40) also showed that it is important to include interior design knowledge within an academic internship program.

Null hypothesis 98 (H2- VI10)/Interior design: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of interior design knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} $=0.24>0.05$). Both groups tended to agree that the acquisition of interior design knowledge should still be to an application level (33.33%). An examination of the mean (overall M=3.54) points to interior design as an important knowledge area to include in a practical training program.

Null hypothesis 99 (H2- VI11)/ Landscape architecture: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of landscape knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.52>0.05). Both groups tended to agree that landscape knowledge should be acquired to the level of application (34.67%). An examination of the mean (overall *M*=3.40) also showed that it is important to include landscape architecture knowledge within an academic internship program.

Null hypothesis 100 (H2- VI11)/Landscape architecture: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of landscape knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.46>0.05). Both groups tended to agree that the acquisition of landscape knowledge should still be to an application level (36%). An examination of the mean (overall *M*=3.55) showed that landscape architecture is considered as an important knowledge area to include in a practical training program.

Null hypothesis 101 (H2- VI12)/Real estate development: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about real estate development by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.67>0.05). Both groups tended to agree that real estate development knowledge should be acquired to a competent level (25.33%). The mean value (overall *M*=2.79) showed that real estate development is perceived as a moderately important inclusion within an academic internship program.

Null hypothesis 102 (H2- VI12)/ Real estate development: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in real estate development by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} = 0.25 > 0.05$). Both groups tended to agree that knowledge about real estate development should progress a little bit to be acquired at an application level (33.33%). An examination of the mean (overall *M*=3.49) showed that it is important to include information about real estate development in a practical training program.

VII. General Knowledge/Skills

The last and seventh domain in the internship body of knowledge is the general knowledge/skills. It included the last (10) examined knowledge areas/skills within this study. These knowledge areas/skills are oral/written and graphic communications, interpersonal skills, leadership, team building /team management skills, critical thinking, problem solving, conflict resolution, personal time management, and electronic communications. Twenty (20) null hypotheses were statistically tested for significance in this domain regarding the perceived command of knowledge for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program. The results for these 20 null hypotheses (null hypotheses 103-122) are as follows:

Null hypothesis 103 (H2- VII1)/Oral, written and graphic communications: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in oral, written or graphic communications skills by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.91>0.05). Both groups tended to agree that students should master (40%) oral, written or graphic communication skills by the completion of an academic internship program. An examination of the mean (overall *M*=3.79) showed that those skills are perceived as important inclusion within an academic internship program.

Null hypothesis 104 (H2- VII1)/Oral, written and graphic communications: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in oral, written or graphic communication skills by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.83>0.05). Both groups still tended to agree that oral, written and graphic communication skills should be acquired to the level of mastery (41.33%) at this practical stage. An examination of the mean (overall *M*=3.90) also showed that these skills are perceived as important components in the structure of a practical training program.

Null hypothesis 105 (H2- VII2)/Interpersonal skills: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in interpersonal skills by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.35>0.05). Both groups tended to agree that the acquisition of interpersonal skills during this time should range from a competent (28%) to a mastery level (25.33%). An examination of the mean (overall *M*=3.46) showed that respondents perceived the area of developing interpersonal skills as an important inclusion within an academic internship program.

Null hypothesis 106 (H2- VII2)/Interpersonal skills: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in interpersonal skills by the completion of a *practical training* program. This null hypothesis was retained ($p_{value} = 0.85 > 0.05$). Both groups tended to agree that the command of interpersonal skills should range from an application (32%) to a mastery level (32%). An examination of the mean (overall *M*=3.79) showed that it is important to include interpersonal skills materials in a practical training program curriculum.

Null hypothesis 107 (H2- VII3)/Leadership: There are no significant differences between the responses of recent graduates and practitioners related to the command of leadership competency by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.84 > 0.05$). Both groups tended to agree that the acquisition of leadership skills during this time should range from a competent (25.33%) to a mastery level (24%). An examination of the mean (overall *M*=3.41) showed that respondents perceived the area of developing leadership skills as an important inclusion within an academic internship program.

Null hypothesis 108 (H2- VII2)/Leadership: There are no significant differences between the responses of recent graduates and practitioners related to the command of leadership competency by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.92>0.05). Both groups tended to agree that the command of leadership skills after this practical experience should be to a mastery level (37.33%). An examination of the mean (overall *M*=3.95) showed that it is important to include materials about leadership skills development within a practical training program curriculum.

Null hypothesis 109 (H2- VII4)/Team building and team management skills: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of team building and team management skills by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.41>0.05). Both groups tended to agree that team building and team management skills should be commanded to a mastery level (30.67%) by the completion of an academic internship program. An examination of the mean (overall *M*=3.46) showed that those skills are considered as an important inclusion within an academic internship program.

Null hypothesis 110 (H2- VII4)/Team building and team management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of team building and team management skills by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.93>0.05). Both groups tended to agree that team building and team management skills should still be acquired to the level of mastery (44%) at this practical stage. An examination of the mean (overall *M*=4.03) showed that team building and team management skills are highly perceived as a very important inclusion in a practical training program.

Null hypothesis 111 (H2- VII5)/Critical thinking: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of critical thinking skills by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.19>0.05). Both groups tended to agree that critical thinking skills should be commanded to a mastery level (30.67%). An examination of the mean (overall *M*=3.49) showed that critical thinking skills are perceived as an important inclusion within an academic internship program.

Null hypothesis 112 (H2- VII5)/Critical thinking: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of critical thinking skills by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.09>0.05). Both groups tended to agree that critical thinking skills should be acquired to the level of mastery (49.33%). The mean (overall *M*=4.06) value supported this by valuing critical thinking skills as a very important inclusion in a practical training program.

Null hypothesis 113 (H2- VII6)/Problem solving: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of problem solving knowledge by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.49>0.05). Both groups tended to agree that problem solving knowledge should range from an application (30.67%) to a mastery level (34.67%). An examination of the mean (overall M=3.76) showed that problem solving is perceived as an important inclusion in an academic internship program.

Null hypothesis 114 (H2- VII6)/Problem solving: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of problem solving knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.26>0.05). Both groups tended to agree that problem solving should be acquired to a mastery level (57.33%). The mean (overall M=4.26) value supported this by valuing problem solving techniques as a very important inclusion in a practical training program.

Null hypothesis 115 (H2- VII7)/Conflict resolution: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in knowledge about conflict resolution by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.28>0.05). There was an agreement among both groups that the acquisition of conflict resolution knowledge should range from an understanding (22.67%) to a mastery level (25.33%). This distribution of responses along this stretch indicated the subpopulation's uncertainty in locating a decisive level of competence for conflict resolution knowledge. The overall mean value (M=3.24) was utilized to reach a decision that conflict resolution knowledge is considered as an important inclusion in an academic internship program.

Null hypothesis 116 (H2- VII7)/Conflict resolution: There are no significant differences between the responses of recent graduates and practitioners related to the perceived level of competence in conflict resolution knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.14> 0.05). Both groups tended to agree that knowledge about conflict resolution should advance to only a mastery level (38.67%). An examination of the mean (overall *M*=3.85) showed that it is important to include information about conflict resolution in a practical training program.

Null hypothesis 117 (H2- VII8)/Personal time management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge about personal time management by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.53>0.05). Both groups tended to strongly agree that personal time management knowledge should be commanded at a mastery level (44%). An examination of the mean (overall *M*=3.83) showed that personal time management is perceived as important area within an academic internship program.

Null hypothesis 118 (H2- VII8)/Personal time management: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of personal time management knowledge by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.53>0.05). Both groups tended to agree that personal time management skills should still be acquired at the level of mastery (53.33%). The mean (overall *M*=4.17) value supported this by valuing personal time management as a very important inclusion in a practical training program.

Null hypothesis 119 (H2- VII9)/Electronic communications: There are no significant differences between the responses of recent graduates and practitioners related to the command of electronic communications competency by the completion of an *academic internship* program. This null hypothesis was retained ($p_{value} = 0.053 > 0.05$). Both groups tended to agree that the acquisition of knowledge about electronic communications during this time should be at a competent level (30.67%). An examination of the mean (overall *M*=3.32) showed that respondents perceived the area of electronic communications as an important inclusion within an academic internship program.

Null hypothesis 120 (H2- VII9)/Electronic communications: There are no significant differences between the responses of recent graduates and practitioners related to the command of electronic communications competency by the completion of a *practical training* program.

There was sufficient statistical evidence to **reject** null hypothesis 120 ($p_{value} = 0.01 < 0.05$). This indicated that the two subpopulations were different in their means regarding the perceived level of competence in electronic communications knowledge by the completion of a practical training program. An independent-samples T-test was utilized to locate the means difference. Recent graduates and practitioners were different in means between (0.283, 1.335) with 95% probability, regarding perceived command of electronic communications knowledge by the completion of a practical training program (see Appendix-I/Table 33 for details).

Examining the responses of those two subpopulations of the study showed that 21.28% of recent graduates believed that the command of electronic communications knowledge should be acquired to an understanding level, 21.28% at a competent level, 27.66% at an application level, and 21.28% of them believed it should be acquired at a mastery level. The surveyed practitioners distributed between 42.86% who believed that electronic communications knowledge should be acquired to an application level and 39.29 % who believed that it should be acquired to a mastery level. The stretch of frequency distribution for recent graduates responses compared to the application-to-mastery perception of practitioners confirmed the results from statistically testing the means difference among those two subpopulations.

Examining the subpopulations' means showed that recent graduates perceived electronic communications as an important inclusion (M=3.30) while practitioners perceived it as a very important inclusion (M=4.11) in a practical training program (refer to the means in Appendix-I/Table 33).

Null hypothesis 121 (H2- VII10)/Designing and delivering presentations: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge related to designing and delivering presentations by the completion of an *academic internship* program. This null hypothesis was retained (p_{value} =0.62>0.05). Both groups tended to agree that command of designing and delivering presentations should be at a mastery level (49.33%). An examination of the mean (overall *M*=4.12) showed that information about designing and delivering presentations is perceived as a very important inclusion within an academic internship program. It was the first selection among all the participated groups in this study and it was the only skill that was valued, by the surveyed population, as a very important inclusion in an academic internship program.

Null hypothesis 122 (H2- VII10)/Designing and delivering presentations: There are no significant differences between the responses of recent graduates and practitioners related to the perceived command of knowledge about designing and delivering presentations by the completion of a *practical training* program. This null hypothesis was retained (p_{value} =0.43>0.05). Both groups tended to agree that knowledge related to designing and delivering presentations should still be acquired at an advanced mastery level (50.67%). The mean value (overall *M*=4.17) supported this by valuing it as a very important inclusion in a practical training program.

Decision for Hypothesis Two (H2)

The research question that guided this part of the survey questionnaire on the internship body of knowledge was: is there an agreement about specific areas of knowledge necessary for architectural internship programs in Kuwait? The ultimate objective behind raising this question was to determine the top areas of knowledge recommended by the study's population to be considered as curricular components of internship (academic internship and practical training) programs in Kuwait.

This section covered the data analysis associated with testing one-hundred-ten null hypotheses in the second and third parts of the study's self-administered questionnaire instrument. Fifty-five (55) knowledge areas/skills repeated in Parts 2 and 3 of the study were used to test null hypotheses 13-122. These two parts of the questionnaire instrument gave participants the opportunity to respond with their perceptions about the expected level of competence for each knowledge area/skill by the completion of academic internship programs and by the completion of a practical training program.

Only 4 null hypotheses were rejected (null hypotheses 13, 38, 51 and 120) regarding an agreement between two subpopulations of the study (recent graduates and practitioners) about the command of knowledge by the completion of an internship program. Rejecting a minimum of 4 out of the 110 hypotheses (3.6%) in this section of the study led the researcher to conclude that there is no sufficient evidence that there is a major difference between the two subpopulations of the study regarding their expected level of competence for those knowledge areas and skills by the completion of each internship program.

Therefore, a decision was made that there is substantial agreement between the surveyed two subpopulations on the relative importance of knowledge areas/skills necessary for architectural internship programs in Kuwait. According to these data analyses, the *second main hypothesis of this study was "rejected*:"

Hypothesis 2 (H2): There is a disagreement among the surveyed population on the areas of knowledge necessary for architectural internship programs in Kuwait.

Data Analysis of the Qualitative Data

This section represents the qualitative data of the study; it includes observations made from analyzing ten interviews conducted to retrieve opinions and perceptions from key participants about issues related to the research topic (internship programs). The purposes behind incorporating this qualitative component into our study were to avoid possible gaps from the limited quantitative data collected from a limited population size (78 architects) and to increase the credibility of the concluded outcomes of the study. Quantitative and qualitative methods bring with them particular strengths and weaknesses.[180] Therefore, the researcher combined both methods to provide checks against the weak points in each, while simultaneously enabling the benefits to complement one another.[181]

The development of the interview protocol was based on information from sources such as the literature review of similar studies and the reflective feedback from the intense focus group discussion session conducted in an early stage of the study. The last data collection stage utilized these follow-up interviews to compile subjective information from representatives of the surveyed population. The retrieved feedback supplemented the quantitative data compiled from the study's self-administered questionnaire in a subjective manner. It also compiled information about some of the confounding variables that were not accessible from analyzing the quantitative data.

This qualitative part of the study investigated several perceptions and opinions of respondents regarding internship programs (academic internship and practical training). The interviews were recorded, transcribed, and coded through conventional content analysis in order to make sense of the qualitative data and induce objective conclusions. Codes were established for their relevance to the interactions between participants, the conditions under which they occurred, the strategies used by the participants, and the consequences of the interactions.[182] Responses to the interview questions were grouped into categories based on the themes and sub-themes that emerged from the data analysis. The researcher utilized inductive analysis on this collected qualitative data in order to reach conclusions that verify (validate) or falsify (critique) propositions of the previously analyzed objective (quantitative) data from the questionnaire instrument.[183]

Source of Data Collection-The Interviews

The study's follow-up interviews were conducted with 10 representatives from the research population. The researcher's familiarity with the target population enabled him to be selective in identifying potential interviewees. The conducted interviews included 4 intern architects (recent graduates) who previously participated in an academic internship program during college and in the KFAED post-graduate training program. The interviews also targeted 3 principals of small-size architectural firms who personally supervise the work and training of interns. Finally, the researcher interviewed 3 supervisors of large firms who supervise and coordinate the work of trainees (architectural students or recent graduates) in their firms.

The average time of the interviews was 1-2 hours. All interviews were tape recorded to supplement the researcher's handwritten notes and field observations. By the end of each interview, the researcher utilized a member check strategy where he briefly reemphasized the key points from the interview. Most of the time, interviewees added further details and elaborated on certain points during this recap.

The next step was transcription; the researcher transcribed each interview on the same day it was conducted. If time allowed, he went directly from the interview to incorporate his field notes and observations with the information on the tape. After completing each transcription, the researcher journalized the interview and emphasized the most important information and facts learned from each interview. The researcher was able to successfully follow that consistent process of conducting, transcribing, and journalizing each interview before the start of the next interview.

Interviews with principals of small-size firms and supervisors of large firms were conducted on-site inside their firms during working hours. Being on-site offered the researcher the advantage of observing the setting and environment inside small and large architectural firms; he even had the occasional chance to communicate with other professionals and staff while he was waiting to be hosted by the interviewee. Interviews with interns (recent graduates) were conducted in semi-public places. The researcher and interviewees always sought quiet places away from noise and interruption.

Creating and maintaining a level of trust throughout each interview was an important factor in collecting credible data. In order to build a decent level of trust between the researcher and the interviewees, the researcher communicated a few detailed items when making his first contact with any prospective interviewee: 1) his status as a doctoral student at Texas A&M University, 2) the nature and value of the study he was pursuing, 3) the nature of the information he was seeking, and 4) the anticipated length of the interview. Once the individual agreed to schedule an interview, then, by the time of the interview the researcher: 1) showed on time and well dressed, 2) elaborated his interest in the study, 3) conveyed the message of data confidentiality, and 4) informed the intent of sharing his discoveries with the interviewees.

The level of trust between the researcher as an investigator and all the interviewees of this study was well-established and maintained throughout all interviews. The researcher believes that he was able to establish and maintain an excellent level of trust between him and all the interviewees.

Data Content Analysis

Unitizing and categorizing the data of these interviews was the next challenge. The researcher waited until completing all interviews in order to start this process. The cycle of data collection was very organized—interview, transcribe, and journalize each interview on the same day.

The unitizing process started by locating the units of data in each interview. All transcripts were printed out and the manual search started in order—from interview one to interview ten. The data were unitized using an electronic index card unitizing tool integrated on Windows XP, Microsoft Word 2003. An electronic index card file was created for each interview.

Next, the search for common themes was started by investigating all printed cards. There were a total of 351 index cards and the categorizing process produced around 50 additional duplicate cards. The total number of cards rounded down to 400 index cards. By sorting the masses of interview data according to keywords and refining the themes that began to emerge, the researcher was able to draw hidden values from the data, not from his personal inferences or past literature review. The researcher laid out all the cards and tried to match up the study's themes wherever they appeared.

Open selective coding of the data was utilized to develop an inductive understanding of the participants' perceptions about the internship topic and any other related topics. Glaser and Strauss developed an inductive qualitative data analysis process called constant comparison or constant comparative analysis.[184] This data analysis concept refers to the process by which data are ordered into primary categories and coded as open or first level codes according to their conceptual context. The open coded content is then constantly compared with each other to establish the second level codes that hold a group of open codes together. The second level codes are more abstract and organize the open or first level codes. The open codes from the major categories that induce the conceptual relationships among the categories are referred to as selective code or core category.

This approach of qualitative data analysis supplemented the interpretation of the quantitative data of the study and provided information and insight which was not addressed in the quantitative data analysis. The repetition of themes triggered the major themes and sub-themes of this qualitative analysis, which will be introduced in the following section.

Overview of the Findings

Five central themes and several sub-themes emerged from the data gathered in this process to include:

1) Internship Programs
   a) Academic internship
      i) Value and benefits
      ii) Current problems and proposed solutions
      iii) Important fields of knowledge/skills
   b) Practical training
      i) Supporters of implementation, expected problems, and suggested solutions
      ii) Value and benefits
      iii) Important fields of knowledge/skills
2) Problems of Young Architects
   a) Recent Graduates perspective
   b) Employers'/supervisors' perspective
3) Commitment of Parties Involved in Internship Programs
   a) Commitment of firms
   b) Commitment of trainees
4) Training Capability of Architectural Firms
5) Additional Ways/Tools to Expose Students to Architectural Practice

The order of these themes was categorized and subcategorized according to their importance and appearance throughout the content analysis process.

Interpretation of the Findings (Themes)

Internship Programs

Internship is a directed activity in the practice of architecture during architectural education and/or following receipt of a professional degree but usually prior to registration/licensing/certification.[185] This study defined the internship experience during architectural education as academic internship and following receipt of a professional degree as practical training. We first shed the light on the value and benefits of academic internship programs as emphasized by most of the interviewees, who participated in this qualitative part of the study, move to cite academic internship current problems and their related proposed solutions, and identify the respondents' recommended areas of knowledge/skills for the academic internship experience. The second part of this internship programs section will start by identifying interviewees who supported the initiation of practical training programs and document what kind of implementation problems they envisioned and their suggested solutions. We then move to clarify the respondents' perceived value and benefits and their recommended areas of knowledge/skills for this practical training experience.

The Value and Benefits of Academic Internship

Several interviewees asserted that this experience could *open the door for an exposure to many fields of architecture* and *assist students in learning about the gaps in their field*. One supervisor of a large firm asserted that "students are done with three years of school before they come here for training. They come and we expose them to different stages of design. Sometimes we put them in concept design, sometimes in design development, sometimes in construction drawings, sometimes they go to the site, and sometimes we just show them critical details. So we try to put them in an exposure to different stages of the problem" [8M.LFSUPERVISOR/1]. A recent graduate, on the other hand, noted that "when we went outside and exposed ourselves to the market, we were shocked. We knew our many weaknesses. The market is wide and has so many fields. If you go outside and sense what the field's needs, then when you go back to complete your last two years in school, you will concentrate on what is important and try to strength your skills in those fields of knowledge. You know what will benefit you when you go out to practice" [9M.RG/1].

A recent graduate and a supervisor also agreed upon the value of academic internship as a *link between school (theory) and practice (application).* A recent graduate asserted that "it serves as a connection between the theoretical base in the school and the applicable side of practice. It is all about application not about theory. During that time you are directly exposed to real problems that may arise in practice" [1M.RG/1]. Another supervisor believed that "it enforces what the students learn in architecture school. It opens their minds; they study something and they have to relate it to reality. So, it reinforces what they have learned and actually it will improve them" [10M.LFSUPERVISOR/1].

More benefits of the academic internship experience were perceived by the interviewees. Two owners/supervisors of small size firms, two supervisors working in large firms, and a recent graduate believed that this is a great *opportunity for students to familiarize themselves with the professional office environment*.

The first small firm's owner asserted that "students will get sucked in the practice and sense what the real practice is all about. Then they don't need that much time to familiarize themselves with the environment of the office when they start their work after graduation. They already sensed and lived in the office environment before. At a starting point, recent graduates may be disoriented and have some fear and this internship experience can break the ice" [2M.SFOWNER/1]. The second small firm's owner supported that by adding that "it gives the students a chance to live and sense the reality of practice. It prevents the shock that a recent graduate might experience on his first job. When he joins the market with a sense of what might actually happen there, he will be productive. A student when he experiences the practice settings, he will notice the reality of everyday work. After this experience a graduate can directly merge with the office environment and waste no time trying to accommodate with the real work environment" [3M.SFOWNER/1].

The two large firm's supervisors perceived this benefit from a professional perspective. One believed that "students get the sense of the environment and learn how to deal with people around. They also get the value from being in an office and see how the office structure looks like and sense responsibility—they are not students now; they are part of a real working group" [10M.LFSUPERVISOR/1]. The other supervisor supported his colleague by asserting that "students will know how a professional office is working. When they come out of college they already know how the work goes—coming to an office on time, coming well dressed, and sitting for eight hours. It is not like you sit for an hour in a class and leave to have some coffee. It is an office environment" [8M.LFSUPERVISOR/1]. A recent graduate also briefly stated this benefit by noting that "the first thing that you get used to the professional work environment" [6M.RG/1].

There was agreement on the value and benefits of an academic internship experience for *improving the students' professional skills*. A small firm's owner commented on his own previous academic internship experience "when I got back from my internship experience I remember I was much more mature. My communication skills improved and I was able to explain my project better and justify every part on it" [2M.SFOWNER/1]. Another small firm's owner, who previously served on the architectural faculty in the Department of Architecture at Kuwait University for five years, added that "you feel the difference next semester when a student comes back from the training experience. You see that his level of performance has changed. He speaks in professional terms" [3M.SFOWNER/1].

Two large firms' supervisors who are in constant contact with training students pointed out that "I think that a good thing that is learned in an office is that you are a team player and you need a team to put together a good building with lots of inputs," and "the level of details performed here, that details, they will never work in a college accurately. Here whatever they will see, it is a real thing; somebody will construct this detail" [7M.LFSUPERVISOR/1] and [8M.LFSUPERVISOR/1].

The participants in these interviews also believed that the academic internship program might *set a direction for a future career in architecture*. A small firm's owner asserted that "this experience might motivate architectural students to a specific field or direction" [2M.SFOWNER/1]. Another added that "the students get exposed to many fields during their internship during college time. Therefore, one will decide his future career based on his training experience" [3M.SFOWNER/1]. A recent graduate also shared this belief by noting that "these training experiences should set the road for you to where to head in your architectural career. Architecture is not only design; this training experience opens the door for more options to choose from in the field of architecture" [9M.RG/1&2].

The benefits of academic internship programs were not only valued in terms of trainees, but *architectural firms* were also perceived by the interviewees to share a piece of the cake in *benefiting from these academic internships*. A small firm's owner believed that "firms benefit from training especially when they train students. Students work for free and serve as drafters for the firm. Third year student in architecture has enough drafting abilities and skills to produce some work for the firm. Firms can cut short some of their drafters and utilize these trainees." He continued to add, "another benefit to the employing firms is they deal with fresh minds. The students are eager and have the capability to work creatively. Firms are looking for creative minds. Some firms utilize our students to redesign many facades of buildings" [3M.SFOWNER/2].

A supervisor in a large firm added in the same subject that "it is a good way for us to know who the talented people are. In a way it kind of a test drive, you try a car and in a time later you buy it. A lot of students when they graduate they are really good and you can go after them" [7M.LFSUPERVISOR/2]. Another recent graduate pointed that "there is another important related issue, which is future recruitment. Firms might agree with a trainee about a future job offer during this internship" [6M.RG/1].

Academic Internship—Current Problems and Some Proposed Solutions

Many current problems were raised by this qualitative investigation regarding the existing academic internship program of the architectural program at Kuwait University. The main perceived problem was related to time and timing. First, the *two-month current duration* of the current academic internship program was perceived *as a short time period for internship* training. Second, the *part time dedication* for this internship (students being in school in the morning and coming to office only in the afternoon) was considered as *insufficient* time to train the students according to a defined program. Third, the *summer timing* for this internship was also considered *as bad timing* especially for small-size firms.

Participating interviewees cited several problems and proposed some instant solutions. A small firm's owner asserted "in Kuwait, I think the academic internship for only one summer is not enough. It is better to be a whole year" [3M.SFOWNER/3]. Another recent graduate added "here internship during the undergraduate stage is only two months during the summer. This is not enough for training. At least they have to expand this program to one year" [4M.RG/1]. And two supervisors of large firms supported this stand by noting that "internship during school is so important. You cannot have it for eight weeks. I mean Kuwait University's students come for eight weeks. The time is very limited. I don't know what to do with them during this time"

[10M.LFSUPERVISOR/1]. And “I have your students coming here for eight weeks; that is not enough time to orient them probably” [8M.LFSUPERVISOR/1].

The second perceived problem of time dedication was also addressed by many interviewees, most of them calling for full-time dedication. This problem was mainly cited by supervisors of large firms who usually deal with the part-time trainees. One of them asserted that “students study in the mornings before they come here. So the training becomes as a part-time. You will never learn in a part-time. One half day thing cannot teach you what is happening in the whole day. My opinion that the training program should be dedicated and plus one full semester should be the time for that. That is how I see it done right” [8M.LFSUPERVISOR/1]. Another supervisor supported this by noting “Kuwait University’s students come to train here for only eight weeks and they also come for few hours a day. They come from 1:30 to 5:00 in the afternoon. Some times they have morning classes and by the time the come here they cannot do any thing” [10M.LFSUPERVISOR/3]. A third supervisor also asserted that “I noticed here sometimes we have students who have school in the morning and then they come in the afternoon. This does not work; you have to separate them. When you are in school you are only in school and when you are working you are only working. That would help but other than that, I don’t know” [7M.LFSUPERVISOR/1].

A recent graduate who supported a dedicated period for this training experience proposed “I prefer that we have this experience and take some time off from school and concentrate on that experience. We will go back from that experience with a professional system of thinking that eases our way to finish the program” [6M.RG/1].

Another noted “let the students do internship for at least a year and dedicate that year to training experience only” [9M.RG/1].

The third problem of bad summer timing for conducting this training experience was emphasized by a small firm’s owner who actively supervises the work of training students on his office. He pointed out that “if you come during the summer a lot of people are in the off season. So they don’t have that much of time and they have to catch up. So this is going to be little choppy in a small office. In a bigger office it might be different; they have to go big during this time” [5M.SFOWNER/1].

There were also other problems related to the current situation of academic internship programs in Kuwait. One of those problems was the *insufficient follow up and coordination of the existing academic internship program* by Kuwait University. One recent graduate expressed his dissatisfaction upon his previous internship experience by saying “to tell the truth, the training course we had during our school was a complete disaster. We only had to fulfill some imaginary requirements and report back to the instructor for that course. We did not have a real sense of the practice during that time. There was no coordination between the school and the professional offices and the kind of work we were exposed to was not properly organized.” He continued to add “I think it is worse now because the department of architecture is no longer responsible to supervise these training experiences. It is now arranged and supervised by the major training office of the College of Engineering. So there is nobody from the architectural program that follows and keeps track of training the students in the program. The students only present their work to the class instructor by the end of the semester but the work during the training is supervised by the staff of the College of Engineering head training office" [1M.RG/1]. Another recent graduate briefly supported this by asserting that "unfortunately the university's follow up was not up to the picture. They don't make sure if the student is really benefiting from that experience or not" [6M.RG/1].

Solutions for this poor follow-up and coordination were brought to the table by some of the study's interviewees. One supervisor proposed that "if somehow in the school credit system, the supervisor who is giving the training has a say that it goes into the university curriculum—as I am a professor of a university and I am evaluating. My evaluation somehow gets built into their system of assessment. Then I think these people will feel much more involved." Another proposed solution by a supervisor was "to make a portfolio that shows exactly what a student produced after this training experience" [8M.LFSUPERVISOR/2]. Another solution was to conduct a seminar or a lecture to present and highlight the outcomes of this training experience. This feedback may help the university in differentiating good from bad offices for training the next group of students" [3M.SFOWNER/2].

Another cited problem in the current academic internship program was its *open structure*. A recent graduate cited that "the problem that there is no defined training program to fulfill and even if they try to define your training tasks, there is no supervision or follow up of what you are really doing during your training" [1M.RG/1]. A small firm's owner supported the idea of defining a specific program for this internship experience. He asserted that "if Kuwait University has special tasks to fulfill during this training period, it will make it easier on the training office. It is better directed experience. Not to make it I want to be trained in general architecture. Then the office will gear the training experience especially toward the needs of the students. That should help" [5M.SFOWNER/1]. Another supervisor took the same stand by asserting that "in my opinion when these trainees come they must follow a program. That you are going to do these tasks in a set of duration and at the end of the training you see how much exactly they have done. When they show that in these months we produced this work then the evaluation will be easier" [8M.LFSUPERVISOR/2].

Important Areas of Knowledge/Skills for Academic Internship

The practice of architecture in Kuwait requires people who will be involved in practice to be equipped with some skills or fields of knowledge that are directly related to the architectural practice settings in the country. The qualitative data analysis presented several areas of knowledge/skills recommended for inclusion in an academic internship program (see Table 16).

A recent graduate justified his selection by asserting that "during the college you want to be trained on fields that will benefit or complement your school knowledge. Therefore, I still want to increase my knowledge in CAD and computer graphics software. Graphical presentation and the design skills are still important during this stage and a minimum exposure to other different fields of architecture" [6M.RG/2]. Another recent graduate based his selection by noting that "most of what we studied during college is not applicable to the real practice; there is a great gap. We have some code requirements that we deal with every day in practice but it was partially covered during our school courses. Also the fire and safety codes which is a major part of the construction process and it was neglected during our school" [1M.RG/1].

Table 16. Interviewees' Recommended Areas of Knowledge/Skills to Include in an Academic Internship Program

Knowledge/Skill Area	Frequency if more than 1
Building code requirements	3
Basics of business management	3
General specifications	3
Building materials	2
Building systems integration	2
CAD and computer graphics software	2
Construction working drawings	2
Contracting	2
Design development	2
Free hand sketching and drafting skills	2
Graphical skills	2
Human behavior	2
Project communication	2
Schematic design	2
Site observation	2
Acquiring building approvals and permits	
Architectural detailing	
Bill of quantities	
Client communications	
Construction methods	
Dealing with governmental agencies	
Fire and safety codes	
Minimum exposure to rules and regulations	

Practical Training—Supporters of Implementation, Expected Problems, and Suggested Solutions

One embedded aim behind conducting interviews in this research was to accumulate different perspectives about the initiation of a formal structural practical training program in the architectural practice arena in Kuwait. Most people who agreed upon the importance of developing such a post-graduate program envisioned some accompanying problems and proposed solutions to possibly mitigate those problems.

Among the ten interviewees included in the interviews, two supported the initiation of formal practical training programs with few prior settings. Five supported this initiation but emphasized several key points they would like to see addressed before this happens. The remaining three interviewees rejected the idea of creating a formal post-graduate practical training program in Kuwait.

Interviewees who agreed upon this establishment with minor pre-settings were one recent graduate and a supervisor of a large famous architectural firm. The recent graduate noted that “we have to think of that training program as a component of a professional practice system as in the United States or England. Maybe we can start as a joint program with an international professional entity.” In order to do that he believes that “we cannot enforce a system without having some entity to run and control the quality of that program. We need a pure architectural organization that has a say even on governmental ministries” [9M.RG/2]. The supervisor, on the other hand, asserted that he “would agree hundred percent with creating such an experience.” But “the university or some sort of an organization has to enforce this training before anyone can go and take the professional exam. Ok, you pass the exam and you can sign documents now. It should go through years of training and experience to mature an architect. At least two years to collect all your value units then start applying for the professional exam. And I think the exam should also be similar whether to the UK or the US but not like this” [10M.LFSUPERVISOR/2].

The second dominant group who supported the creation of formal practical program, but only after addressing specific key issues and preparing the profession to deal with expected future problems, were represented by 3 recent graduates and 2 owners of small architectural firms. One recent graduate from that group presented his concerns by noting that “a real problem in creating such a program is mentoring. Mentors have to be specialized people who can train and guide you. Also firms who will train architects should really care about architecture. So, first you should emphasize on mentoring then the type of firms who will do the training.” He expected ethics to be a major problem when implementing this program because trainees will try to abuse the system and earn false credits. He envisioned a solution for this expected ethical problem by asserting that “from my point of view the solution to control this problem goes back to mentoring. We should create an organization that mentors the work of supervisors (mentors) who are responsible for training these young architects. So the ethical problem can be minimized by creating a specialized architectural entity that regulates and operates this training program in Kuwait. It is a process of mentoring the work of mentors” [1M.RG/2]. Another recent graduate presented his concerns about this issue by saying “we cannot deny that we need a training program but how it will be adopted is what matters to me. Is it going to be mixed with education like the British system or after college like the US system? We should carefully examine our needs before we think to implement such training program” [6M.RG/1].

On the professional side of the picture, owners of small firms believed that if such a system ought to be applied then there should be careful selection of firms and entities that will run and host this program. One of those owners commented that” it will be really nice if recent graduates will have an alternative option to train abroad of

Kuwait in a country with an organized professional practice system"[2M.SFOWNER/1]. Another owner who supported the initiation of a post-graduate training program also envisioned the rise of ethical problems with the implementation of that system but proposed a solution similar to what the state of California is adopting on its CIDP training program. He asserted that "there will be an exposure to this problem but if at the end of a particular work a competency test is taken. That will evaluate that person's competency on that skill or knowledge and show who is really knowledgeable on that field. If it is a skill, you cannot go back to the books because it is not there; you really have to know it by heart" [5M.SFOWNER/2].

The last group of the interviewees declined the idea of creating formal post-graduate training programs. Among this group were two supervisors of large firms and a small firm owner. This small firm's owner justified his rejection stand by noting that "the problem here is who is going to mentor and coordinate such a program? I don't think that the Kuwait Society of Engineers is capable of taking care of this program. Therefore, I think that it is better to just stick with the summer training program during the college that is closely monitored by the university staff" [3M.SFOWNER/3]. A large firm supervisor commented that" in this country, architecture is not regulated as a profession. An engineer can take the role of an architect and design a building. So the first thing is you have to separate engineering from architecture and there has to be some kind of professional regulations that states that an engineer cannot design a building. But until that happens, why would anybody commit himself to training" [7M.LFSUPERVISOR/2].

The Value and Benefits of Practical Training

There were many perceived values and benefits of practical training programs. Since no formal post-graduate architectural practical training program exists in Kuwait, those benefits were based on the past experience of the four recent graduates (interviewees) who participated in KFAED's optional post-graduate practical training program. They were also based on the perceptions of the three participating supervisors who had previous experience in training recent graduates from that program.

One cited benefit was the *exposure to a variety of important fields of architecture emphasizing the business side of this field*. One recent graduate asserted that "it was an exposure to different aspects of practice. You can take what is good and leave what is bad. We were directly exposed to the management side of architecture either inside the firm or in projects" [1M.RG/2]. Another recent graduate similarly emphasized "I was exposed to different fields of the business side of architecture such as finance and marketing. We had weekly short courses in a variation of fields; from value engineering to many other fields" [4M.RG/2].

Another perceived benefit was *elevating the communication level to a professional status*. A supervisor noted that "yes there are values from this experience. You can coordinate with other professionals who are involved in the building process during this experience. We sometimes take our trainees to a progress meeting with the client to see how we communicate with our clients" [10M.LFSUPERVISOR/2]. A recent graduate added on the same subject saying "we communicated with a variety of people who were involved in projects. We had a chance to meet with representatives of giant clients who own many companies. I attended so many sessions that dealt with solving a design or a construction problem" [6M.RG/1].

The last retrieved value was *future recruitment*. A recent graduate asserted that "enforcing this system will create some work opportunities beside its main goal, which is professional training, especially in the private sector" [9M.RG/2]. A small firm's owner clarified that "one thing I noticed with Kuwait University's graduates who trained in big offices that they got good offers from these offices after the training and they continued to work with them" [5M.SFOWNER/2]. A supervisor in one of those large firms confirmed that during an interview and pointed to one of those graduates and said "Omar is a good example of a trainee who followed our program and then applied for a position here and got it" [10M.LFSUPERVISOR/1].

Important Areas of Knowledge/Skills for Practical training

Most interviewed professionals believed that a post-graduate practical training program must be defined and specialized. A recent graduate commented on that by asserting "after graduation I want to be trained on specialized fields" [9M.RG/2]. A small firm's owner took a similar stand when he asserted in detail that this post-graduate training "should concentrate on specific fields of architecture according to the needs of the market. Let us say the management field; the student during his training experience is not trained on management because we want him to get exposed to some fields that are more important during the school stage. The management field is always presented at a master level not in the bachelor. Then if this is a required field at a mature level then we can create a specialized training course in management. Not all bachelor holders have the capability to pursue a master degree in management. Then we give those the opportunity to join a training program in management." The same owner went on to specify potential specialized training fields by asserting "for example you have another new trends in the market which are claims, contract administration, and many other fields. You won't be exposed to those fields during school so we should have training programs on those fields; how to read a contract and how to answer work requests is another possible specialized field" [3M.SFOWNER/2].

Other interviewed professionals shared different points of view about structuring a practical training program, but also emphasized areas of knowledge that are more important at this practical stage. One recent graduate asserted that "my vision for post-graduate training is to have a full exposure to a variation of knowledge and skills related to the field of architecture. This might define your future career or direction. But in the same time I want to concentrate on topics such as marketing, tendering, and many other businesses related fields" [6M.RG/2].

Problems of Young Architects

Several problems facing young architects in Kuwait were raised by the recent graduates, small firm owners, and supervisors who participated in the study's follow-up interviews. We will first examine those problems from the recent graduates' perspective and then move to compare it to the problems raised by the employers and supervisors who deal with those graduates.

Recent Graduates Perspective

A recent graduate started his conversation in the interview by saying “it is normal especially in Kuwait to face many problems” [4M.RG/1]. The analysis for recent graduates’ responses classified existing problems of young architects into two main categories: First, the *gap between education and practice* and second, *job related problems*.

The recent graduates attributed the gap that exists in Kuwait between the education and practice of architecture to many reasons. The first reason was the *pure concentration of the architectural faculty in academia*. Professors of architecture at Kuwait University are prohibited by law to practice architecture unless it is under the full supervision of the university. One recent graduate asserted that “one problem evolved from the professors who taught us in the architecture school; most of them are pure academic with no sense of practice. They should open the door for practitioners to be involved in the design studios at least” [1M.RG/1]. Another recent graduate supported this by saying “the staff of the architectural program at Kuwait University has no practical experience. We were taught architecture in term of theory. When you go out to the field, you see that you need a practical base of knowledge beside your learned theories. The crew who took care of our education had minimum exposure to the reality of practice” [4M.RG/1].

The second emphasized reason behind this separation was the *program’s dominant concentration on design* neglecting other necessary fields of architecture. One recent graduate commented that “architecture is not only design. Our program here is single oriented to design only. There are so many other fields that they have to think of beside design." He continued to clarify "we did not have a background about what the real practice is really about. We did not rotate probably between most of the architectural fields during college; it was only design based. There are so many things that should have been covered beside the concept design such as detailing and building technology. We had weaknesses more than strengths during our college time. We graduated from Kuwait University with a mentality that we will be designers. There are so many other fields that we can work with" [9M.RG/1].

A third emphasized reason which may have caused the separation between architectural education and practice in Kuwait was an *unawareness of the needs of architectural practice*. This may be related to the first reason of the faculty's emphasis on pure academia. One recent graduate emphasized "most of what we studied during college is not applicable to the real practice; there is a great gap. We have some code requirements that we deal with every day in practice but it was partially covered during our school courses. Also the fire and safety codes which is a major part of the construction process and it was neglected during our school." He added "even AutoCAD, I feel that I don't have a good base on it. We are weak on the technical side and we are even worse on working drawings" [1M.RG/1]. Another recent graduate presented his view about this problem by saying "I was shocked on my early days of practice that everything has to be practical and realistic in order to be considered. I asked my self where the room for creativity is. Detailing and connections are what is needed in practice." He continued to assert that "the first problem is the amount of details required in projects and the nature of work itself. During college it was an ideal work frame with no limitations on budget or anything else" [6M.RG/1].

The second main category of the problems facing young architects in Kuwait consisted of problems related to the job. There were many problems raised by the interviewed recent graduates, which related to their everyday jobs. The first problem was the *takeover fear,* where supervisors and even firms' owners sometimes try to limit young architects' opportunities in a way that would prevent them from making a significant jump in their careers. One recent graduate mentioned that "the fear of young Kuwaiti architects to take over their tasks and titles is present everywhere" [6M.RG/1].

A second emphasized job related problem was a *lack of proper management.* A recent graduate asserted that "in Kuwait we have all the required resources but the people who are in charge are not capable of handling the profession in a proper way. It is a problem of management here because it is more of a business based practice than a practice based profession here. We need good managers" [4M.RG/1].

A third emphasized problem was a *lack of sufficient coordination systems,* whereas a recent graduate noted "another problem is the problem of coordination; between the architect and his group of engineers. This problem is due to the lack of sophisticated coordination systems that organize the work in architectural firms in Kuwait." He presented his view about this problem by asserting "we have everything in-house; so we should not have problems in coordinating the project information" [4M.RG/1].

The fourth emphasized problem was the *poor performance of senior directors*. One recent graduate noted "another problem is directors. Directors here in Kuwait are people with outdated minds with minimum computer skills. This is the mentality of directors here. Directors I saw when I worked in the UK were of 70-75 years of age but updated to the latest technology in architecture. They work in AutoCAD, Photoshop, and other software that I don't recognize." He continued on the same subject "the director of my work now has minimum knowledge about architecture. He is a civil engineer. One of the basics that we have to comply with is that every architectural office has to be directed by an architect. We have few firms that are directed by architects here in Kuwait; may be five or six. Our firm is one of the large architectural firms in Kuwait but it is managed and directed by a civil and an electrical engineers. When they criticize my work I know that they are not architects. They always give us feedback and say that the final decision is up to us based on our architectural background. I respect that but I prefer that a senior architect is responsible of critiquing my work. So this is a major problem; most of the people who are directing the work of architects are not themselves architects" [4M.RG/1].

The last emphasized job related problem was the *weak firm culture,* especially in large firms. One recent graduate asserted that "a problem that you might face when you go to large firms is the segregated culture. You notice that each group who share the same nationality, language, or culture tries to communicate and work by themselves. Large firms in Kuwait lack a unified culture that brings all the employees together" [6M.RG/1]. Another recent graduate supported this by noting "another major problem is the lack of a positive work environment. Most of the firm's employees are non-Kuwaitis and we don't have chemistry between us. It is a weak firm's culture; we don't socialize with each other" [4M.RG/1].

Employers'/Supervisors' Perspective

The analysis for responses of small firms' owners and large firms' supervisors classified problems of young architects into three main categories: first, a *mentality problem* of the young architects, second, *problems related to their previous education*, and third, the *fear that they will take over high positions*.

In addressing the first problem, a small firm's owner asserted that "a young architect diffidently faces problems. He was geared to work with freedom. During his education he was able to think with an open mind with no limitation in the budget or the even the applicability of a project. For him to come in any office; it is very difficult to deal with this mentality" [5M.SFOWNER/1]. The mentality of graduates coming out of the architectural program at Kuwait univesity was specifically subjected to critisism. One supervisor said "I'll tell you with Kuwait University's graduates, people come with stiff minds. They have something in their minds that they want to do. They don't want to comply with a program" [10M.LFSUPERVISOR/1]. Another supervisor generalized the mentality of young architects in the Arab world as overenthusiastic. He asserted that "the biggest problem I noticed maybe it is just the mentality in the Arab world—young architects always want to start big. I think the biggest problem is that I don't think that the education system here or in the Arab world teach students that when you graduate you still have a lot of learning to do. They need to be taught at a young age that there is no need for them to have their first building at the age of twenty five. What they need to do is to have a great piece of architecture in their sixties" [7M.LFSUPERVISOR/1].

Next, problems related to the previous education of young architects are presented from the perspective of employers and supervisors who deal with those architects. The qualitative data analysis showed that there was a lack in the young architects' previous education system in areas/skills such as graphical skills, architectural documents, building materials, human behavior, professional practice, and practical experiences that could illuminate the needs of the market to those students.

On the lack of graphical skills, one small firm's owner noted that "in Kuwait, there is a lack of full understanding of graphical presentation. If you look at drawings by a recent graduate, they look nice to you but technically they don't make sense. There are plans, sections and elevations but they don't talk to each other." He continued to cite more problems "other problems are they don't have a sense of practice, they don't know how to prepare a proper architectural document, and understanding of materials is a huge lack. Everything goes to how you put the materials together and some famous architects are known of how they dealt with materials" [2M.SFOWNER/1]. Another owner noted that "a major lack of young designers here is full understanding of human behavior" [3M.SFOWNER/2]. A large firm supervisor also noted that "they did not have enough exposure during their study to practical experience" [10M.LFSUPERVISOR/1].

Another problem for young architects in Kuwait, from the perspective of senior practitioners, was the fear that they would take high positions from the senior practitioners. Similar to what recent graduates perceived, two owners of small firms agreed that the fear of takeover exists within the practice of architecture in Kuwait. One of them asserted “some senior architects do not give a real opportunity for young architects if they see that this opportunity might jeopardize their position and control over a department or a project. They don’t want you to progress and take over their tasks and position” [3M.SFOWNER/1]. The second owner supported this viewpoint by asserting that “unfortunately here in Kuwait when you get a young Kuwaiti architect in your office you might say that he is going to be my future competition because everybody’s dream is to have his own office” [5M.SFOWNER/2].

Commitment of Parties Involved in Internship Programs

The commitment of parties involved in internship programs was the third main theme resulting from the qualitative data content analysis. This theme is subcategorized to examine the commitment of architectural firms to host and administer the training experiences and the commitment of the trainees themselves to participate in the internship programs’ training.

Commitment of Firms

There were three groups of thoughts regarding the commitment of architectural firms in Kuwait to invest in training students and recent graduates. The first dominant group believed that firms are willing to participate in this training task, the second believed that they are committed if they can expect a payback, and a small group of interviewees believed that architectural firms have no commitment whatsoever to dedicate some time and effort to the trainees.

One recent graduate who was positive about the firms' commitment to training asserted "when you go to the private sector for training they will invest on you. They will dedicate some of their time to spend with you but it differs from firm to firm and from supervisor to supervisor. I think they give 60 to 70 percent from their capability but sometimes they are restricted with the time to spend with you because of the load of the projects. They are at least willing to help as much as they can. This is my point of view according to my college and post-graduate training experience" [9M.RG/1].

A small firm's owner showed his interest in training students by saying "I advise the students to go big but if they don't find an opportunity they are welcomed here; I'll take care of anybody who wants to train in my office. I know a lot of students who contacted me. I personally have no problem because I like to teach. I don't mind training and supervising students but for me to do this probably I need enough projects. I like to explain everything as I do with my employees here. Because I design myself and I follow everything individually" [5M.SFOWNER/1].

From the perspective of the large firms' supervisors, all of them (3 interviewees) agreed that firms are committed to the training task in Kuwait. One asserted "yes firms are willing to invest. A company like ours with our leader is very willing to give that to the society. It is also a good way for us to know who the talented people are" [7M.LFSUPERVISOR/2]. Another supervisor supported this view by asserting "KEO is offering a lot of training and opportunities for people. I think it is difficult to generalize this for other firms but from my common sense I know that there are many offices who are taking trainees other than KEO. But KEO in my opinion is investing a lot of money. Every year we train people. We are giving them places to set, computers to work, stationary to use, plus senior people like me, we spend time to train them." [8M.LFSUPERVISOR/2]. The third supervisor also commented on the commitment of firms, "definitely they are committed because it is a tool to promote the field of architecture through doing internships and getting people excited about the field. All the time we have to work in promoting this field. We are doing our best in this field and I think other firms are doing similar job" [10M.LFSUPERVISOR/2].

The second group believed that architectural firms are committed to training if they can expect a payback, a benefit to them. This group represented the views of some recent graduates and one small firm's owner. This owner asserted "it is an exchange of benefits between the trainee and the employing office. I will invest on a person who I believe that he deserves this investment. It is very personal to me" [2M.SFOWNER/2]. An intern supported this belief by asserting "it is all about money. They will not invest on any trainee unless they are assured that his training will pay them back. So they will take care of you as much as they will benefit from you. It is bad but that is the truth" [1M.RG/2].

A recent graduate among the third small group who believed that architectural firms have no commitment to dedicate some time and effort for trainees stated that "people in charge of architectural offices are not willing to do this. Most of firms are not interested to do so. They are willing to pay for foreigners more than to invest on training locals" [4M.RG/2]. Another recent graduate had a similar viewpoint and asserted "no, they are not willing to invest on locals. Exporting an architect from outside is much cheaper to them from training a young Kuwaiti architect. Firms have narrow thinking on this. You might be a good future asset for them but they don't want to spend anything on you at the time being. Firms during training give you minor tasks and they don't even trust you to accomplish these tasks. They regularly check on you" [6M.RG/1].

Commitment of Trainees

There were also three groups of thoughts regarding the commitment of trainees (architectural students and recent graduates) to professional training. The first group believed that it is a personal issue evenly divided between committed and uncommitted trainees. The second group believed that they are uncommitted and a small third group of interviewees believed that architectural students and recent graduates are committed to look for good training opportunities.

A supervisor in a large firm who was among the first undecided group justified his viewpoint by asserting that "you will always find about three types of people; some people are very willing to work, some are average, and some know that they will open their own office and they will rush their training. You cannot generalize their commitment; we are experiencing people with different aptitude" [8M.LFSUPERVISOR/2]. A recent graduate added, from his experience as a graduate from the architectural program at Kuwait University, "in general, I vision at least the graduates of our architectural program to form three categories. The first category is the top of the pyramid which represents 10-15 % with constant commitment. The majority of our graduates fall into the second category which represents people who will test the commitment of the training firm in order to justify their commitment accordingly. If they feel that the firm cares about training and tries its best to train them then they will be committed to participate with good manners. The third category is people who are not committed whatsoever in wasting their time on training" [6M.RG/2].

A recent graduate in the second small group who believed that architectural students and young architects are uncommitted to training noted "I think the majority of our students and architects are not very committed to the training subject" [4M.RG/2]. Another recent graduate added his input on this by saying "from what I see, some of the students don't take advantage of the training option that is offered in the program at Kuwait University. For the graduates; I also don't vision a great level of commitment to participate on post-graduate training programs. We have an existing optional training program that covers all the engineering and architecture majors. Even though it is only a one-year of combined local and global training, some people see it as a waste of time and they prefer to search for a decent job rather than joining this training experience" [1M.RG/2].

Also two supervisors in large architectural firms supported this negative view of the commitment of trainees by asserting "the majority no" [10M.LFSUPERVISOR/2]. And "personally if you did any training here, I would not be committed to do it if I am a student or a young architect. Because if I want to do a building here all you need is an engineering title. An engineer theoretically can design a building here" [7M.LFSUPERVISOR/2].

A small firm's owner and a recent graduate in the third group who rated the commitment of trainees positively asserted that "most of students are eager to participate in a training experience. Some of them specify certain firms that they want to train in" [2M.SFOWNER/2]. And "I am seeing some level of commitment now. So I believe that recent graduates will be committed to participate in formal training programs" [9M.RG/2].

Training Capability of Architectural Firms

The training capability of architectural firms is the fourth main theme resulting from the data content analysis of this qualitative examination. One purpose of integrating a qualitative component into this study was to examine the capability of architectural firms in Kuwait to host and administer internship programs. There was agreement on the fact that some, not all, architectural firms in Kuwait have the capability (required finance and resources) to train students and recent graduates. Interviewees were divided in their judgment of this capability between a group who believed that it has to do with the firm's size and another group who believed that this capability is directly related to the quality of people (supervisors and owners) inside these offices who take care of the trainees.

The first group (firm size related) shared some viewpoints whereas a recent graduate asserted "when you look for really professional training, few firms can manage that. Small offices are not capable of training. You will be very limited in tasks if you go train in a small office. Only big offices can deal with training" [9M.RG/2]. A small firm's owner added to this "only the bigger offices can handle training. It has to do with offices that have enough projects that they will be able to put trainees on" [5M.SFOWNER/2]. Supervisors who work in the big firms emphasized their sole capability by noting, “training doesn’t affect us big but if you go to an office that has five people, then they might not be able to do it. It takes a lot of their time” [7M.LFSUPERVISOR/2]. And “I know few offices who are involved in training; mostly large firms” [8M.LFSUPERVISOR/2].

The second group related the capability of firms’ training to the supervisors who direct and manage the training experiences. A recent graduate in that group believed that “even large firms are sometimes bad. Senior architects in Kuwait are not up to this task. They are not prepared to train students or young architects. You have exceptions but in general I don’t think we have that much of professionals who can create a good base of trainers” [6M.RG/2]. Another recent graduate shared the same concern and asserted “even some big names in Kuwait do not have the infrastructure and resources for training. I was trained in a big name and large firm but my work was not properly coordinated or supervised because the supervisor was always busy dealing with the mass of projects everyday” [1M.RG/2].

On the other side of the picture, professionals (owners of small firms and supervisors working in large firms) shared the ideas of the second group. One supervisor asserted “not only big firms can handle training; there are some small offices in Kuwait with great architects willing to supervise the training experiences by themselves. So you have to make sure who is inside this office that takes care of your trainees. I talked with some trainees who went to large big names offices but experienced bad training because of the bad people who supervised their training. So, it varies from place to place and from person to person” [10M.LFSUPERVISOR/3]. A small firm's owner talked about his memories as a faculty member at the architectural program at Kuwait University; he asserted "we didn't used to send our students to any firm. We were very selective on these firms who train our students. We know their capability and performance. Either we sent them to well known large firms or to small firms that are supervised and managed by a good architect who supervise this experience by himself" [3M.SFOWNER/2].

Additional Ways/Tools to Expose Students to Architectural Practice

The last main theme on this examination of the qualitative data of the study generated many recommended ways and tools, besides internship, to expose architectural students, in particular, to the field of practice (see Table 17).

Table 17. Interviewees' Recommended Additional Ways/Tools to Expose Architectural Students to Architectural Practice

1) Exposure to real projects
2) Site visits
3) Materials workshop
4) Participation in design competitions
5) Exhibitions for students' work
6) Seminars and lecture series

Many interviewees emphasized the first point of offering exposure to a real project. A small firm's owner asserted "during their study, students should get exposed to a real work. Look for a senior architect specialized in controlling drawings, a set of drawings. And let the students do a full document. He follows them up from stage zero to the final stage. He guides them through the documents and then they get exposed to the specifications and materials" [2M.SFOWNER/1].

A recent graduate had a similar viewpoint and asserted that “professional practice courses can be utilized to expose the students to real projects that include major fields of the practice. Bring outsiders and let them teach the students. Let the students sense what they might face in the real practice. This will ease their transition from school to practice. This is one way of indirect training.” He continued to detail “also expose them to a project that they deal with its documentation from A to Z; how to start and finish a project. I know that there is a design phase, a tendering phase, and a contracting phase. Each one is subdivided to sub-phases. The design starts by documenting the requirements of the client and creating the required program. You then communicate with the client the first design concept. Then the tendering phase starts. Students should be exposed to all of such information. We were exposed to some of this knowledge during our school years but it was according to what the books states not to what the reality of work states. I wish that we were exposed to real drawings that deal with all of these tasks” [4M.RG/1].   Another recent graduate added “an example might be a small project with a defined budget and students have to deal with pricing and specifying the materials according to the real prices and availability of the materials in the local market” [6M.RG/1].

A recent graduate suggested a material workshop and asserted “let’s say 20 or 30 hours a month, students work in materials workshops. Either you bring professionals from firms or you send students to the field to see by their eyes and deal with real materials” [9M.RG/1].

A small firm's owner emphasized points 4 and 5 by asserting "first of all, don't spare any competition. Get students involved on every possible competition. At least you are marketing the students work indirectly and you are exposing them to real projects. Plus any winning design from a student will be finally modified and applied by a professional entity or office. Architecture is about concepts and this is what is given on a competition. The architectural student can compete with a senior architect by his strong concept." Also "another thing is architectural exhibitions. The university should spare some money for the students to present their work in exhibitions in order to expose their work to the market and show their level of work" [3M.SFOWNER/1].

Finally, a supervisor of a large firm pointed out the value of seminars and lecture series by asserting "if the university can pinpoint the qualifications of some designers or senior architects in offices and formulate a class that includes a collection of professionals. Let's say a speaker comes every week and it is a class, which each week someone comes and presents something about the practical life. It might be a one hour class, each week, with scheduled speakers to take them all over the practice and firms realities" [10M.LFSUPERVISOR/1].

CHAPTER VI

SUMMARY AND CONCLUSIONS

This chapter provides a summary of the purpose, the main questions and hypotheses, the methodology, the findings and conclusions of the study. Finally, related topics for possible further study and research are presented at the end of this chapter.

Purpose

This critical study stressed and reflected a professional concern for the state of architecture in Kuwait, with specific emphasis on the development of professional knowledge, skills, and competence of architectural students and architects. The study assessed the importance (perceived value, perceived need, and recommended time period) of internship programs in Kuwait and proposed recommended areas of knowledge for the architectural internship experience, before and after graduation from college. These recommended areas of knowledge could act as a base of information for curricular guidelines for the initiation of future internship programs in Kuwait as integral parts of a professional architectural practice model. For the purpose of this study, the internship experience during college was defined as academic internship and the internship experience after graduation as practical training.

Research Questions and Hypotheses

The research addressed two primary questions and the data analysis tested two related primary hypotheses:

Question 1: Are architectural internship programs important components in the preparation of architectural students and architects in Kuwait?

Hypothesis 1: Architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait.

Question 2: Is there agreement about specific areas of knowledge necessary for architectural internship programs in Kuwait?

Hypothesis 2: There is disagreement among the surveyed population on the areas of knowledge necessary for architectural internship programs in Kuwait.

Twelve (12) sub-hypotheses were statistically tested for significance to reach a conclusion on hypothesis 1 and another one hundred-ten (110) null hypotheses were statistically tested for significance to reach a conclusion on hypothesis 2.

Methodology

The study utilized a descriptive survey design to obtain knowledge from people involved in the field of architecture in Kuwait. The research design was quantitative in nature (utilizing a self-administered questionnaire) with an introduction of elements of qualitative research procedures (follow up interviews) in order to support the objective data in a subjective manner. Therefore, it was a combined research design consistent with the Creswell and Groat dominant-less dominant design model—the researcher presented the study within a single, dominant paradigm (quantitative) with small components of the overall study drawn from the alternative paradigm (qualitative).[186]

The self-administered questionnaire was divided into five sections: (1) internship importance; (2) academic internship areas of knowledge; (3) practical training areas of knowledge; (4) professional information; and (5) demographic background. The survey questionnaire was pilot tested with eight representatives of the target population. The instrument was then modified according to the participants' feedback and the researcher produced the final draft of the self-administered questionnaire.

The theoretical population of this study consisted of architects in Kuwait. The self-administered questionnaire was delivered to the entire accessible population (N=100). There were seventy-eight (n=78) returned questionnaires, for a high response rate of 78%. Forty-one (52.6%) male architects and thirty-seven (47.4%) female architects participated in responding to this self-administered questionnaire. On the other hand, ten (10) follow-up interviews were conducted with representatives from the research population (4 recent graduates, 3 owners/supervisors of small-size firms, and 3 supervisors of large firms).

Findings and Drawn Conclusions

The following section summarizes the conclusions drawn from the findings of the study, combining the quantitative results of the self-administered questionnaires data analysis with the results from the qualitative data drawn from analyzing the follow-up interviews. The aim of this section is to synthesize the outcomes of the research and draw up the initial sub-conclusions that form the primary findings and conclusions of the study. An inductive analysis of the qualitative data was utilized to reach conclusions that verify or falsify propositions of the quantitative data.

The Importance of Internship Programs

Internship Perceived Value

Five sub-hypotheses (H1-1 to H1-5) related to the value of internship programs were statistically tested for significance in analyzing the *quantitative data* from the self-administered questionnaire. Failing to reject all five sub-hypotheses directed the researcher to retain the combined hypothesis about the internship value: there are no significant differences between the responses of recent graduates and practitioners related to the *value* of internship in the training of students and architects.

In summary, recent graduates and practitioners agreed that (1) the establishment of internship programs would complement architectural education in Kuwait; (2) the majority of technical and practical knowledge is best learned in the workplace itself, under the guidance of experienced professionals; (3) academic internship programs are the most essential links connecting education to the reality of practice; (4) formal practical training programs ensure some guided practical experience in various technical and practice issues for a participating intern architect; and (5) internship programs play an important role in developing the professional abilities of architectural students and architects. In addition, the three senior practitioners who responded to the study's self-administered questionnaire agreed and strongly agreed with those internship value statements.

The content analysis of the *qualitative data* verified this encouraging perception and presented several perceived values of internship programs. Most interviewees agreed that this experience opens the door for exposure to many fields of architecture, assists students with learning about gaps in their field, acts as a link between school (theory) and practice (application), familiarizes students with the professional office environment, improves the students' professional skills, and might set a direction for a future career in architecture.

Academic internship programs were also perceived to be of value to architectural firms. Most interviewees who participated in the qualitative part of the study agreed that firms utilize the drafting skills of students to serve them as free drafters. Another value to the employing firms was their utilization of the students' fresh and creative minds in design. An additional firm value was the identification of talented people for future recruitment.

In conclusion, we can affirm that both the quantitative and qualitative data spoke the same language regarding the positive value of internship programs: both the value for students participating in an academic internship program during college and the value for recent graduates who participate in a post-graduate practical training program.

Internship Perceived Need

Another five sub-hypotheses (H1-6 to H1-10) related to the need for internship programs were statistically tested for significance in analyzing the *quantitative data* from the self-administered questionnaire. We failed to reject all five sub-hypotheses. There were no significant differences between the responses of recent graduates and practitioners related to the need for the initiation of internship programs. Failing to reject any of these five sub-hypotheses determined that there is a perceived need for the initiation of internship programs within the architectural education and practice fields in Kuwait. This need was supported by the majority of the entire population who responded to the quantitative instrument (self-administered questionnaire) of the study (82.1% for both academic internship and practical training programs).

In summary recent graduates practitioners and practitioners agreed that (1) internship programs should be considered in Kuwait in order to respond to the changing realities of architectural practice; (2) internship programs should be part of the training and professional development process of students and architects in Kuwait; (3) practical training programs should be developed in Kuwait to enrich the knowledge of recent graduates from architectural schools; (4) an academic internship experience should be required as a condition of graduation from the architectural program at Kuwait University (81.3% agreement); and (5) a practical training experience should be required to take place in the practice of architecture in Kuwait (81.3% agreement). In addition, all three senior practitioners who responded to the study's self-administered questionnaire agreed and strongly agreed with statements 1-3 and fully supported (answered yes to statements 4 and 5) mandatory academic internship and practical training programs in Kuwait.

Additionally, the content analysis of the *qualitative data* verified this perceived need for internship programs. All ten interviewees agreed upon the need for requiring an academic internship experience for all students attending the architectural program at Kuwait University. Most of them recommended a longer period than what is enforced now (2 months during the summer) and if possible, full-time dedication for this experience.

For post-graduate practical training experience, seven out of the ten interviewees included in this study supported the initiation of such formal practical training programs: two supporters encouraged adoption with few prior adjustments and five supporters suggested addressing several key points prior to implementation. Three interviewees opposed the idea of creating post-graduate practical training programs in the country.

The quantitative data analysis produced an 82.1% agreement between the populations on requiring an academic internship experience for all students and the qualitative part showed a total agreement with such enforcement. For the post-graduate practical training programs, an 82.1 percent in the quantitative part of the study supported the initiation of such programs while 7 out of the 10 interviewees supported the implementation of a formal post-graduate practical training program with some prior considerations.

In conclusion, we observe that the results from both the quantitative and the qualitative data verified that there is a perceived need for internship programs (academic internship and practical training) in Kuwait, at least from the perspective of the population included in this study.

Internship Recommended Time Period

Two sub-hypotheses (H1-11 to H1-12) related to the time period for internship programs were statistically tested for significance in analyzing the *quantitative data* from the self-administered questionnaire. There were no significant differences between the responses of recent graduates and practitioners regarding their recommended time period for internship programs. We concluded that it is possible that there is no relationship between these recommended periods and the two subpopulations. The 64 combined recent graduates, practitioners, and senior practitioners calling for an obligatory academic internship program agreed that this experience should be at least 2 months to 10 months in length, with a 4 months preference (see Figure 1 for a total of 95.3%). On the other hand, recent graduates, practitioners, and senior practitioners supporting the inclusion of a formal post-graduate practical training program within the practice of architecture in Kuwait recommended 1-2 years as the proper length for this training experience (see Figure 2 for a total of 87.5%).

Subsequently, the content analysis of the *qualitative data* showed that 8 of the 10 interviewees also recommended a range from one-semester (4 months) to a whole school year (10 months) for an academic internship experience. One of the interviewees who supervise the training of students in a very large architectural firm proposed a different scheme for this academic internship—three internships starting from the second school year, three months each year, for a total of 9 months.

Two interviewees who supported the obligatory inclusion of an academic internship program during school did not specify a recommended time period for that experience. One of them who owns a small architectural firm and supervises the training of students himself only emphasized that the timing of this experience should not be during the summer, especially if students want to train in a small office like his. This is because some small firms cut off staff during the summer and suffer from a shortage of employees to handle projects. The other interviewee who did not specify a proper time period for this experience only emphasized that this experience must change from a part-time afternoon training to a full-time whole day dedication to training.

Figure 1. Recommended Length of an Academic Internship Program (by Percent)

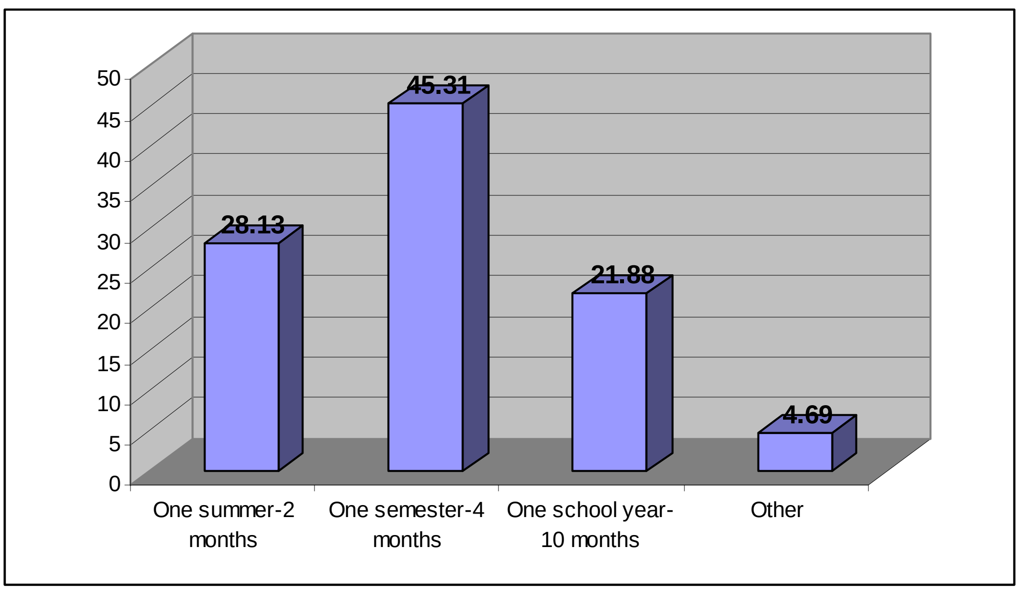
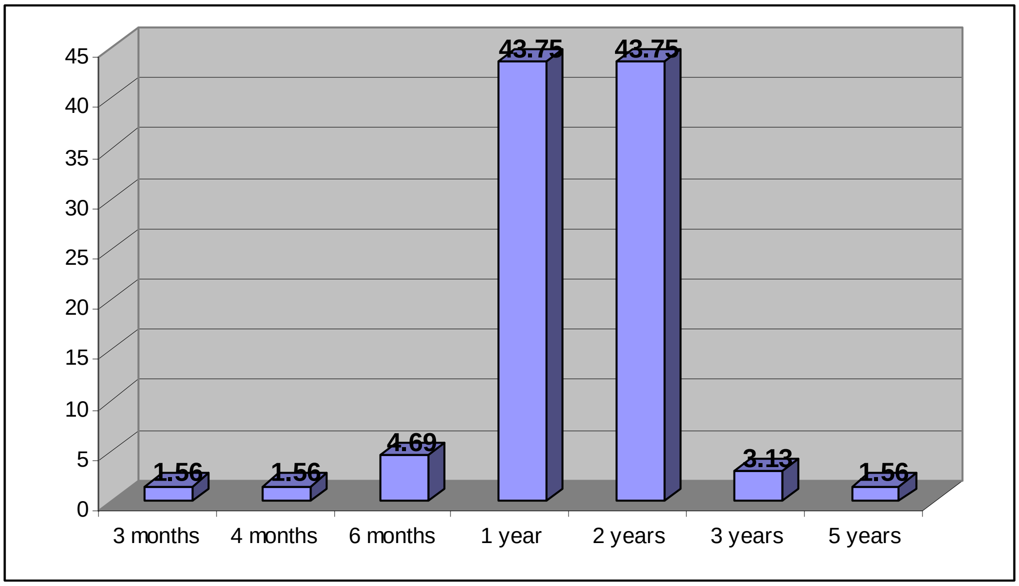


Figure 2. Recommended Length of a Practical Training Program (by Percent)



At the post-graduate stage, 6 out of the 7 interviewees supporting the inclusion of a formal post-graduate practical training program within the practice of architecture in Kuwait recommended 1-2 years as a proper length for this training experience. One supporter of implementation did not prefer a specific time for this post-graduate training experience but emphasized the value of training in specialized fields (according to the market needs) at this practical stage.

We can conclude to a confident degree that the quantitative analysis of the self-administered questionnaire agreed with the outcomes of the content analysis of the study's follow-up interviews. The quantitative data analysis stated that 95.3% of the included population recommended 2-10 months for an academic internship experience while the qualitative data analysis showed that 8 out of the 10 included interviewees recommended 4-10 months for that experience.

Similarly, the quantitative data analysis stated that 87.5% of the included population recommended 1-2 years for a post-graduate practical training experience while the qualitative data analysis showed that 6 out of the 7 interviewees recommended the same range (1-2 years) for that experience.

Conclusion: The Importance of the Initiation of Internship Programs in Kuwait

The previous section covered the combination of inferences made from reporting the findings of testing twelve sub-hypotheses in the first part of the self-administered questionnaire and some related inferences drawn from the outcomes of the data analysis of the follow-up interviews. This synthesis of results found that: (1) internship programs are perceived as a constructive value for students participating in an academic internship program during college or for recent graduates who participate in a post-graduate practical training program, (2) there is a perceived need for internship programs (academic internship and practical training) in Kuwait, at least from the perspective of the population included in this study, and (3) the recommended time period for an academic internship program ranges from 2-10 months while the recommended time period for a practical training program ranges from 1-2 years.

All of the previous conclusive inferences, both *quantitative* and *qualitative*, supported the study's first main hypothesis and concluded that architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait.

Recommended Body of Knowledge for Internships

The research question that guided the section on the recommended body of knowledge tested the agreement about specific areas of knowledge necessary for the architectural internship programs in Kuwait. The goal behind this inquiry was to determine the top areas of knowledge recommended by the study's population to be considered as curricular components of internship (academic internship and practical training) programs in Kuwait.

This research question requested the participants' responses in the form of their perception about the expected level of competence for each knowledge area/skill by the completion of an academic internship program and by the completion of a practical training program. Only 4 null hypotheses were rejected (null hypotheses 13, 38, 51 and 120) and a difference existed between two subpopulations of the study (recent graduates and practitioners) regarding the command of knowledge by the completion of an internship program. Therefore, a decision was made that there is considerable agreement among the two surveyed population on the areas of knowledge necessary for architectural internship programs in Kuwait (we failed to reject 106 out of 110 null hypotheses).

The results compiled from the previous findings chapter, which represent the perceived competence of knowledge areas/skills are utilized in this section in order to determine the relative importance of those knowledge areas/skills to include in internship programs curricula. The relative importance of the inclusion of a knowledge area/skill in an internship program was determined by the overall mean value for the entire population (generated in Appendix-F). Scores between 4.00 and 5.00 were classified as very important inclusions. Scores between 3.00 and 3.99 were important inclusions. Scores between 2.00 and 2.99 were moderately important inclusions. Scores between 1.00 and 1.99 were of less importance and scores below 1.00 were considered of no importance to include in an internship program curriculum.

Academic Internship Programs

The grouping of the recommended knowledge areas/skills for inclusion in an academic internship program according to their relative importance is shown in Table 18. One can clearly interpret that the study's population perceived most of the 55 knowledge areas/skills included in the study as important or moderately important inclusions in an academic internship program. A great majority of those knowledge areas/skills (52) fell within this range of moderately important (31) to important (21). Only "knowledge about designing and delivering presentations" was perceived as a very important inclusion within an academic internship program. "Information about project financing/funding and accounting" was perceived by the study's population as less important to include in an academic internship program curriculum.

Examining the seven main domains of internship body of knowledge that were included in this study shows that knowledge areas/skills within the *pre-design* domain were considered as important inclusions in an academic internship program. Knowledge areas/skills within the *design* domain were distributed between moderately important and important. The knowledge areas/skills in the third *construction documentation and administration (office and field)* were all perceived as moderately important inclusions.

The fourth and fifth main domains of *practice (office) management* and *project and construction management* included knowledge areas/skills that were mostly perceived as moderately important inclusions in an academic internship program curriculum. Each domain had one knowledge area/skill that was considered of less importance to include in the program.

The sixth main domain of *related activities and fields* was evenly distributed between knowledge areas/skills that were perceived as moderately important and important parts of an academic internship program. Knowledge areas/skills within the seventh main domain of *general knowledge/skills* were dominantly perceived as important inclusions within an academic internship program, except for “designing and delivering presentations,” which was considered as very important to include in the program.

Tables 19, 20, and 21 classify the top ten recommended knowledge areas/skills to include in an academic internship program by all the subpopulations of the study (including senior practitioners). Many common top knowledge areas/skills were shared by the three subpopulations. This is another indicator of substantial agreement on knowledge areas/skills necessary for an architectural academic internship program in Kuwait. The three subpopulations shared their perception of the priority of five knowledge areas/skills as top selections. These knowledge areas/skills are: 1) designing and delivering presentations, 2) personal time management, 3) oral, written and graphic communications, 4) design development, and 5) computer-aided design (CAD) and drafting.

Table 18. Relative Importance of Knowledge Area/Skill in an Academic Internship Program (Entire Population, n=78)

Relative Importance	Knowledge Area/Skill	Mean
Very Important (Overall Mean = 4 and above)	Designing and delivering presentations	4.12
Important (Overall Mean 3.00-3.99)	1. Computer-aided design (CAD) and drafting	3.88
	2. Personal time management	3.83
	3. Oral, written and graphic communications	3.79
	4. Design development	3.77
	5. Problem solving	3.76
	6. Schematic design	3.63
	7. Critical thinking	3.49
	8. Interpersonal skills	3.46
	9. Team building /team management skills	3.46
	10. Analysis and selection of building materials and systems	3.41
	11. Leadership	3.41
	12. Interior design	3.40
	13. Landscape architecture	3.40
	14. Electronic communications	3.32
	15. Conflict resolution	3.24
	16. Urban planning and design	3.22
	17. Programming	3.19
	18. Site and environmental design	3.14
	19. Building systems integration	3.10
	20. Environmental engineering and design	3.09
	21. Professional and business ethics	3.08
Moderately Important (Overall Mean 2.00-2.99)	1. Client relations	2.95
	2. Energy conservation	2.90
	3. Observing construction for conformity with drawings & specification	2.86
	4. Building technology	2.82
	5. Specifications and building code requirements and constraints	2.79
	6. Real estate development	2.79
	7. Architectural construction documents	2.77
	8. Scheduling	2.67
	9. Leading and managing the project team	2.65
	10. Cost analysis	2.64
	11. Structural engineering and design	2.64
	12. Historical preservation and restoration	2.63
	13. Facilitating project communication	2.62
	14. Life safety codes and regulations	2.55
	15. Planning, organizing, and staffing	2.47
	16. Maintaining project documents and records	2.40
	17. Budgeting	2.40
	18. Quality management and control	2.40
	19. Post-occupancy studies	2.35
	20. Mechanical engineering and design	2.32
	21. Strategic planning	2.26
	22. Risk management	2.26
	23. Information management	2.22
	24. Project acquisition	2.18
	25. Construction conflict resolution	2.17
	26. Bidding and contract negotiation	2.13
	27. Marketing	2.09
	28. Project delivery methods	2.09
	29. Preparing change orders	2.06
	30. Legal contracts and practice issues	2.01
	31. Financial management	2.01
Less Important (Overall Mean 1.00-1.99)	1. Project financing and funding	1.95
	2. Accounting	1.54

Table 19. Top Ten Recommended Knowledge Areas/Skills to Include in an Academic Internship Program (by Recent Graduates, n=47)

Knowledge Areas/Skills	Mean
1. Designing and delivering presentations	4.04
2. Personal time management	3.91
3. Oral, written and graphic communications	3.81
4. Design development	3.77
5. Computer-aided design (CAD) and drafting	3.77
6. Problem solving	3.77
7. Schematic design	3.68
8. Analysis and selection of building materials and systems	3.55
9. Landscape architecture	3.51
10. Programming	3.49

Table 20. Top Ten Recommended Knowledge Areas/Skills to Include in an Academic Internship Program (by Practitioners, n=28)

Knowledge Areas/Skills	Mean
1. Designing and delivering presentations	4.21
2. Computer-aided design (CAD) and drafting	4.04
3. Problem solving	3.86
4. Design development	3.79
5. Oral, written and graphic communications	3.79
6. Personal time management	3.75
7. Critical thinking	3.71
8. Electronic communications	3.71
9. Interpersonal skills	3.64
10. Team building /team management skills	3.61

Table 21. Top Ten Recommended Knowledge Areas/Skills to Include in an Academic Internship Program (by Senior Practitioners, n=3)

Knowledge Areas/Skills	Mean
1. Designing and delivering presentations	4.33
2. Computer-aided design (CAD) and drafting	4.33
3. Building systems integration	4.00
4. Leadership	4.00
5. Design development	3.67
6. Oral, written and graphic communications	3.67
7. Interpersonal skills	3.67
8. Team building /team management skills	3.67
9. Electronic communications	3.67
10. Schematic design	3.33
10R. Critical thinking	3.33
10R. Personal time management	3.33
10R. Site and environmental design	3.33

In addition, the content analysis of the *qualitative data* presented some recommended skills and fields of knowledge that are directly related to the architectural practice settings in Kuwait. They were recommended for inclusion in an academic internship program to complement educational knowledge (refer to Table 16 for a list of those knowledge areas/skills). Those knowledge areas/skills recommended by the interviewees of this qualitative part of the study were more geared toward the professional side of architecture where participants recommended areas such as dealing with governmental agencies; acquiring building approvals and permits; exposures to rules and regulations, fire and safety codes, building code requirements, and contracting issues.

At the same time, the study's interviewees shared other recommended knowledge areas/skills that were present in the top ten recommended knowledge areas/skills of inclusion in an academic internship program by each of the three subpopulations of the study. Some of those knowledge areas/skills are: 1) computer graphics (CAD) and drafting skills, 2) schematic design, 3) design development, 4) building materials, 5) building systems integration, and 6) project communication.

The combination of both *quantitative* and *qualitative* inferences about the recommended body of knowledge for inclusion in an architectural academic internship program in Kuwait verified the agreement among the surveyed populations on the areas of knowledge necessary for architectural academic internship programs in Kuwait.

Practical Training Programs

The grouping of the recommended knowledge areas/skills for inclusion in a practical training program according to their relative importance is shown in Table 22. This table indicates that 48 of the 55 knowledge areas/skills are included in the "important" category of inclusions for a practical training program. Five knowledge areas/skills were perceived by the study's population as "very important" while knowledge about 1) historical preservation and restoration and 2) accounting was perceived of less importance to include in a practical training program curriculum.

Examining the seven main domains of internship body of knowledge that were included in this study showed that all knowledge areas/skills in the first main domain of *pre-design*, the second domain of *design*, the third domain of *construction documentation and administration*, and the fifth domain of *project and construction management* were perceived as important inclusions in a practical training program.

The fourth domain of *practice (office) management* included knowledge areas/skills that were perceived as important inclusions in a practical training program except for accounting knowledge which was considered to be moderately important.

Knowledge areas/skills in the sixth main domain of *related activities and fields* were mostly considered as important inclusions except for historical preservation and restoration, which was perceived as a moderately important inclusion.

Half of the knowledge areas/skills under the seventh main domain of *related activities and fields* were perceived to be very important inclusions in a practical training program, whereas the rest were considered as important.

Table 22. Relative Importance of Knowledge Area/Skill in a Practical Training Program (Entire Population, n=78)

Relative Importance	Knowledge Area/Skill	Mean
Very Important (Overall Mean = 4 and above)	1. Problem solving	4.26
	2. Personal time management	4.17
	3. Designing and delivering presentations	4.17
	4. Critical thinking	4.06
	5. Team building /team management skills	4.03
Important (Overall Mean 3.00-3.99)	1. Analysis and selection of building materials and systems	3.97
	2. Computer-aided design (CAD) and drafting	3.95
	3. Leadership	3.95
	4. Building systems integration	3.92
	5. Oral, written and graphic communications	3.90
	6. Design development	3.85
	7. Conflict resolution	3.85
	8. Observing construction for conformity with drawings & specification	3.83
	9. Interpersonal skills	3.79
	10. Professional and business ethics	3.77
	11. Environmental engineering and design	3.73
	12. Client relations	3.71
	13. Specifications and building code requirements and constraints	3.65
	14. Energy conservation	3.65
	15. Building technology	3.64
	16. Schematic design	3.63
	17. Cost analysis	3.62
	18. Electronic communications	3.60
	19. Urban planning and design	3.56
	20. Architectural construction documents	3.55
	21. Landscape architecture	3.55
	22. Interior design	3.54
	23. Programming	3.50
	24. Leading and managing the project team	3.49
	25. Real estate development	3.49
	26. Strategic planning	3.46
	27. Site and environmental design	3.45
	28. Project acquisition	3.40
	29. Structural engineering and design	3.40
	30. Scheduling	3.38
	31. Quality management and control	3.38
	32. Planning, organizing, and staffing	3.35
	33. Life safety codes and regulations	3.29
	34. Bidding and contract negotiation	3.27
	35. Facilitating project communication	3.24
	36. Project delivery methods	3.23
	37. Legal contracts and practice issues	3.22
	38. Preparing change orders	3.18
	39. Financial management	3.18
	40. Budgeting	3.18
	41. Mechanical engineering and design	3.18
	42. Information management	3.17
	43. Maintaining project documents and records	3.15
	44. Construction conflict resolution	3.15
	45. Project financing and funding	3.13
	46. Risk management	3.08
	47. Post-occupancy studies	3.03
	48. Marketing	3.00
Moderately Important (Overall Mean 2.00-2.99)	1. Historical preservation and restoration	2.90
	2. Accounting	2.53

Tables 23, 24, and 25 classify the top ten recommended knowledge areas/skills to include in a post-graduate practical training program by all the three subpopulations of the study. Several top knowledge areas/skills were shared by the subpopulations of the study (recent graduates, practitioners, and senior practitioners). This commonality indicated that there was also considerable agreement on knowledge areas/skills necessary for an architectural practical training program in Kuwait. The three subpopulations shared their perception on the priority of five knowledge areas/skills in this top category. These knowledge areas/skills are: 1) designing and delivering presentations, 2) personal time management, 3) problem solving, 4) team building /team management skills, and 5) analysis and selection of building materials and systems

On the other hand of the picture, the content analysis of the *qualitative data* clarified that most interviewees believed that training must be defined and specialized according to the needs of the architectural profession and the market trends at this practical stage of life. Some proposed specialized training fields were management, claims, contract administration, and professional work communications.

The qualitative analysis also showed that other interviewees supported the initiation of a formal post-graduate practical training program with full exposure to a variety of knowledge and skills related to the field of architecture and a choice for an emphasis on certain topics such as marketing, tendering, and many other businesses related fields. Therefore the recommended knowledge areas/skills compiled from the qualitative data of the study considered both the professional and the business side of architecture.

Table 23. Top Ten Recommended Knowledge Areas/Skills to Include in a Practical Training Program (by Recent Graduates, n=47)

Knowledge Areas/Skills	Mean
1. Designing and delivering presentations	4.21
2. Problem solving	4.17
3. Personal time management	4.11
4. Building systems integration	4.06
5. Observing construction for conformity with drawings & specification	4.02
6. Team building /team management skills	4.02
7. Critical thinking	4.00
8. Analysis and selection of building materials and systems	3.96
9. Leadership	3.94
10. Computer-aided design (CAD) and drafting	3.91

Table 24. Top Ten Recommended Knowledge Areas/Skills to Include in a Practical Training Program (by Practitioners, n=28)

Knowledge Areas/Skills	Mean
1. Problem solving	4.39
2. Personal time management	4.25
3. Critical thinking	4.21
4. Schematic design	4.11
5. Design development	4.11
6. Electronic communications	4.11
7. Conflict resolution	4.07
8. Designing and delivering presentations	4.07
9. Computer-aided design (CAD) and drafting	4.04
10. Analysis and selection of building materials and systems	4.00
10R. Team building /team management skills	4.00

Table 25. Top Ten Recommended Knowledge Areas/Skills to Include in a Practical Training Program (by Senior Practitioners, n=3)

Knowledge Areas/Skills	Mean
1. Programming	4.33
2. Oral, written and graphic communications	4.33
3. Interpersonal skills	4.33
4. Leadership	4.33
5. Team building /team management skills	4.33
6. Problem solving	4.33
7. Personal time management	4.33
8. Designing and delivering presentations	4.33
9. Schematic design	4.00
10. Design development	4.00
10R. Analysis and selection of building materials and systems	4.00
10R. Observing construction for conformity with drawings & specification	4.00

It was difficult to communicate the quantitative and qualitative inferences about the recommended body of knowledge for inclusion in a practical training program in Kuwait, since most interviewees adopted the idea of implementing responsive specialized training according to market needs without specifying certain knowledge areas/skills.

Summary of Primary Conclusions

This study utilized descriptive survey design. The research design was quantitative in nature with the introduction of elements of qualitative research procedures. The following conclusions are the results of analyzing, communicating, and synthesizing the information gathered from the self-administered questionnaires (from recent graduates, practitioners, and senior practitioners) and the follow-up interviews (from recent graduates, small firms' owners/supervisors, and large firms' supervisors).

1. Internship programs are perceived to be of value for students participating in an academic internship program during college or for recent graduates who participate in a post-graduate practical training program.

2. There is a perceived need for internship programs (academic internship and practical training) in Kuwait, from the perspective of the population surveyed in this study.

3. The surveyed population recommended a time period for an academic internship program that ranges from 2-10 months while they recommended a time period for a practical training program that ranges from 1-2 years.

- Architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait.

4. There is substantial agreement among the surveyed population on the areas of knowledge necessary for architectural academic internship programs in Kuwait.

5. The analysis of the quantitative data showed extensive agreement among the surveyed population on the relative importance of areas of knowledge necessary for post-graduate practical training programs in Kuwait.

- There is agreement among the surveyed population on the areas of knowledge necessary for architectural internship programs in Kuwait.

Recommendations for Further Study

This critical research was by no means a definitive study, but it stressed and reflected a professional concern for the state of architecture in Kuwait, with a specific emphasis on the development of professional knowledge and skills of architectural students and architects. There are several possible areas of further study discovered throughout the course of this study. Some of them are directly related to architectural internship and others concern architectural education and practice in Kuwait. The following are some recommendations based on these discoveries:

1. Since the researcher (primary investigator) of this study is not only interested in the current status of internship but aims to propose recommendations that would help create and improve a future internship system within a regulated architectural practice

model in Kuwait, it is recommended that the study be replicated acquiring a larger sample and greater statistical power for all constituencies. Although the responses were sufficient to reveal preliminary distinct characteristics across architectural internship programs, and were also sufficient to reveal a commonality of responses regarding internship, the low number of senior practitioners who participated in this study was of concern to the researcher.

2. A participant (a supervisor of a well-known large architectural firm in Kuwait) recommended that a future study be conducted to measure the caliber of architectural firms and the qualifications of senior architects/supervisors in training architectural students and recent graduates in order to limit the credit-granting sites to only qualified firms and supervisors.

3. It is recommended that a future study be conducted to address issues of acquiring necessary resources (both expertise and financial) in order to implement future compulsory internship programs in Kuwait.

4. This study investigated the need and recommended body of knowledge for internship programs but it did not examine a preferred model to implement those programs within the architectural practice system in Kuwait. A study is needed to determine a suitable model for implementing those internship programs—are they going to adopt the U.S internship model, the English and European model of integrated education and practice, or another alternative?

5. Another component that was not examined by the current study is delivery systems. It is recommended that a study be conducted to compile recommendations

about the delivery systems for internship programs to define the roles of involved professionals and entities in initiating, planning, coordinating, implementing, and evaluating those internship programs.

6. There is currently no official professional architectural association in Kuwait. Neither is there a nationally recognized professional licensing board. Only a subcommittee (Kuwait League of Architects) has been in existence since 2004 under the umbrella of the Kuwait Society of Engineers in order to deal with issues related to the profession of architecture (internship being one of those issues). Therefore, a study should be pursued to determine the implications involved in initiating a separate professional organization or licensing board for architecture and how this might contribute to improving the state of architecture in general and internship in particular.

7. Since only PhD holders are allowed to teach design studios at the Department of Architecture at Kuwait University, a study should be conducted to define alternatives for involving outside practitioners in the education of architectural students without breaking these strict rules and regulations of Kuwait University.

8. The outcomes of this study indicate that there is a need for architectural internship programs in Kuwait. The study also documents that local graduates from the Department of Architecture at Kuwait University were unsatisfied with their previous education in the program. Local graduates blamed the program’s faculty for their pure concentration in academia, which make them unaware of the needs of architectural practice.

Since professors in the architectural program at Kuwait University are prohibited by the university's law from combining teaching and practice unless the practice experience is under the full supervision of Kuwait University, a study could be conducted to locate alternatives for faculty that would enable them to sense the field of practice. In the case of Kuwait, faculty utilizing one of their sabbatical leaves for practical experience instead of for research might help mitigate the gap between pure academic professors and the reality of architectural practice.

NOTES

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APPENDIX A

FOCUS GROUP QUESTIONS OUTLINE

Focus Group Questions

Regulation:

1. Should architecture be recognized as a regulated profession in Kuwait?

2. What are the benefits from regulating the architectural profession?

3. Who will benefit from regulating the architectural profession?

Young Practitioners:

4. How do you evaluate the practical performance of the Kuwaiti architect?

5. What are the knowledge and skills young practitioners need to practice architecture in Kuwait?

6. What do you think are the issues and problems surrounding the transition of young practitioners of architecture from education to practice in Kuwait?

Education:

7. Is it necessary that architectural students have practical experience before graduation?

8. How can we expose architectural students to real practical experiences during school years?

9. How can we increase the mutual appreciation, cooperation and understanding between educators and practitioners of architecture in Kuwait?

10. Do you think that the university education sufficiently supplements the Kuwaiti graduate with all the tools, knowledge, and skills he/she needs to be fully prepared to enter the broad architectural profession?

Experience and Training Programs:

11. Do you think that job experience can sufficiently educate young practitioners of architecture the skills that they miss from university education?

12. Do you think that a structured training program for post-graduate architectural (internship) should be developed in Kuwait to ensure that all architects have undergone proper training on various technical and practice issues?

13. If yes to the previous question; what do you believe are the most important fields that the young Kuwaiti practitioners of architecture should be exposed to during these training years?

14. What do you think are the resources needed by firms and public agencies in Kuwait in order to implement such training programs?

APPENDIX B

TABLE 26

Table 26. Emerging Themes and Supporting Quotes from Analyzing the Study's Focus Group

Themes	Supporting Quotes
1. The regulation of the architectural profession in Kuwait:	➢ "My point on whether we should regulate or not, I think we should. The reason is regulation sets the potential for better performance. Often people don't appreciate the amount of time and the visual process that goes through the architect mind until he transfers that into a design. Unless you have a regulation to protect that profession, the performance will go down and down. There should be an agency or institute who lock a minimum fee for architectural work as an example of what regulation might enforce." FG-MHD.PROFESSOR/2
a. Purpose and benefits of regulation	➢ "What I understand from regulating here is making the architect a person with an authority." FG-MTS.PRACTITIONER/2 ➢ "This is one of the purposes of regulating the architectural profession-is to protect the society and the end-users as well as to make sure that each architect has a certain level of minimum competency to safely practice the profession." FG-MM.RECEARCHER/2 ➢ "Why you want to regulate? You want to regulate the thoughts or you want to regulate the end-user or the clients through regulating the architect's work or giving set of regulations so the architect feels a backup. If you want to regulate, you want to give recognition to the architect so that ultimately when he stamps drawings, he is recognized." FG-MAQ.PRACTITIONER/3 ➢ "I think both the profession itself, there are lots of benefits and the architect will know exactly his obligations." FG-MLS.PRACTITIONER/1 ➢ "In order to protect the dignity of the profession, regulation helps a lot, both in term of the client and the architect himself in order to make a decent level of fees in order to continue on his practice." FG-MHD.PROFESSOR/3 ➢ "If we regulate the architectural profession, I think we can control the market at a certain level of excellence." FG-MTS.PRACTITIONER/2 ➢ "What I am trying to say that regulation is definitely good but you need to know the reason behind it-it should back up the architect." FG-MAQ.PRACTITIONER/4 ➢ "Regulation is a must; we can not live without it. Without regulation, there is no respect; there is no awareness from the public." FG-MOK.PROFESSOR/4 ➢ "I just want to highlight one thing; by regulating the profession you are already filtering the intruders who try to enter the market here." FG-MTS.PRACTITIONER/4 ➢ "If we do have a system that regulates the practice of architecture in Kuwait then this might take care of the ethical problems. Give architects a system that protects their profession and their work as well as defines minimum fees for their services and then you will see a better outcome out of the architectural services." FG-MTS.PRACTITIONER/11

Table 26 Continued

Themes	Supporting Quotes
b. Regulation requirements	➢ "We know that architects usually in different countries go to about five years of training and this is considered as a comprehensive experience in all the fields from drafting to design. Then there is a professional test that they have to take and pass at least in the states. I think the test is something good and can also refresh the knowledge of practitioners. So, yes I am pro regulating the architectural profession here." FG-MLS.PRACTITIONER/1 ➢ "Regulation should start at a ministerial level and it would not start unless a related institute or committee like the Architects League in the Kuwait Society of Engineers leads to make the case to the decision makers to regulate the profession to save the city from degrading." FG-MOK.PROFESSOR/4 ➢ "Enforcing rules and regulations will not work unless we respect our profession and agree on a way to regulate our profession. We have to adopt carefully examined rules and regulations and whoever breaks these rules and regulations should be punished." FG-MTS.PRACTITIONER/12 ➢ "There should be architecture license that is supplemented by continuing development of courses and practice. If I have the license and I don't practice and develop myself then there is no meaning for this license." FG-MYM.PROFESSOR/12
c. Regulation and the reality of the architectural profession in Kuwait	➢ "There is a big problem here in Kuwait; yes we are seeking to have the architects in Kuwait to follow a specific regulation route but unfortunately everything else is not regulated. We really don't know where to start. Should this be initiated from other close professions who we deal with them a lot; should they regulate first to create a unified regulated cross-professional system? We might adopt a professional system and perform our job at a professional level but in the other hand the end user can not appreciate this." FG-MLS.PRACTITIONER/1&2 ➢ "We have to stop intruders from doing our job; people with half education and from other engineering disciplines doing the architect's job because of this ambiguity of what is architecture mean." FG-MOK.PROFESSOR/4 ➢ "Here nobody is monitoring and guiding your work. Outside of Kuwait, architectural practice follows sets of rules and guidelines that regulate this profession." FG-MTS.PRACTITIONER/8 ➢ "I want to add one point; whatever regulation we have or a training program we initiate, in Kuwait, the infrastructure does not fully support that. You will always have people who try to abuse the system. It is not easy to enforce a specific set of rules and regulations and follow them in Kuwait." FG-MAM.PROFESSOR/12

Table 26 Continued

Themes	Supporting Quotes
d. The role of an architect in the regulation process	➢ "I think that regulation has to start at a ministerial level especially at the level of the Ministry of Planning where the architect has to be recognized as the leader of the building process because he is the one who can start any project." FG-MOK.PROFESSOR/4 ➢ "Architects have to take an active role and have to make the case. I don't think it is difficult; around the world, there are regulating bodies and we can associate with them and make the case that we need to regulate our architectural profession." FG-MOK.PROFESSOR/4
2. The performance of recent architectural graduates:	
a. Recent graduates attitude	➢ "In general they are very motivated during school years; they are creative and enthusiastic about perfecting their work. I really don't know what happens outside; when they go out I don't think they have the same attitude, they are really good in school but I don't know what happens outside; I don't thing he or she is the same person who was in school." FG-MLS.PRACTITIONER/4 ➢ "I tried to hire as much as I can, but not all of them are negative. Architects communicate first by drawing; talking and other skills are secondary. They give me the first impression by their drawings; what I noticed is that they want to directly be involved in design and not go through the stages of preliminary work." FG-MLS.PRACTITIONER/5 ➢ "This is the kind of attitude I get most of the times with a young Kuwaiti architect applying for a job at my office. The first question he asks is how much you are going to pay me. If I request to see his portfolio, he won't show it to me till he knows his expected salary. Sometimes they even come without a portfolio and ask only for the amount of money they will get. " FG-MLS.PRACTITIONER/6
b. Recent graduates lacking knowledge and skills	➢ "Integrating plans with sections and elevations is one of the weak skills I noticed on the department's graduates. The most important skills that they lack are integration of plans and drawings." FG-MLS.PRACTITIONER/5 ➢ "From my point of view as a monitor to their work is a drafting problem." FG-MLS.PRACTITIONER/7
c. The lack of a filtering system for recent graduates	➢ "I want to clarify one point. If you want to regulate the profession, we have to make sure that architects pass a filtering process that would assure that they have the minimum standards of competency to practice architecture." FG-MAM.PROFESSOR/5 ➢ "When they go to real practice, there is no other filtering test that would define good from bad architects. " FG-MAM.PROFESSOR/6 ➢ "There is no filtering system in practicing architecture; at least we should start to initiate one during school years to somewhat ensure the quality of people who graduate from our department." FG-MAM.PROFESSOR/6

Table 26 Continued

Themes	Supporting Quotes
3. The sufficiency of the Kuwaiti's architectural education program as a preparation for professional practice:	
a. The lack of a filtering system during school time	➢ "But because we don't have a filtering system during school years, you have graduates with many problems. I think we should not pass students who are weak in design because this is the base of architecture but we can not target those students because we don't have a filtering system." FG-MAM.PROFESSOR/6 ➢ "When I was the department head couple of years a go, I suggested that we employ a test that filters our students and keep students with decent potentials only because when they go to real practice, there is no other filtering test that would define good from bad architects. " FG-MAM.PROFESSOR/6
b. Bridging the gap between architectural education and practice	➢ "I think training should be compulsory for all architectural students. Students should be exposed to the field of practice before they graduate, at least for two semesters. We should sense the professional practice field before we graduate to be fully prepared when we graduate." FG-MAH.RGRADUATE/7 ➢ "First thing, make your professors work. Don't let them be only involved in theory. Let them have their own offices. A professor who does not practice will not deliver for me a good outcome." MLS.PRACTITIONER/10 ➢ "When the university professor is exposed to the market he can transfer that knowledge to his students and he will know the real problems of the marketplace." FG-MTS.PRACTITIONER/10 ➢ "So it is either the PhD holder has an architectural office or opens the teaching positions for design studios for non-PhD holders." FG-MAM.PROFESSOR/10 ➢ "The third point I have if we want to bridge is that we have to apply all the theories into practice. The projects that we give to students have to have connections to the real market outside." FG-MAM.PROFESSOR/10 ➢ "I go back to the point of how to expose architectural students to real practice; is by involving them in architectural competitions that deals with actual projects to be exposed to the real market outside the university boundaries." FG-MTS.PRACTITIONER/10

Table 26 Continued

Themes	Supporting Quotes
4. The importance of internship and practical training programs as an integral part of the experience of architectural students and young architects:	➢ "I think here it should be required that all students take some experience in the field within their second or third year of school." FG-MLS.PRACTITIONER/8 ➢ "I think either you graduate from Kuwait University or from abroad, an architect should spend some years of training after graduation to gain additional knowledge and refresh his memory." FG-MAH.RGRADUATE/7 ➢ "I think training, during and after school, is a must for us given the current settings of our architectural education and practice in Kuwait." FG-MAH.RGRADUATE/7 ➢ "I want to emphasize and concentrate on training. Ok, we graduate from Kuwait University with decent skills and we use most of these skills in our daily work tasks. But I need to be trained on these skills before I practice." FG-MAH.RGRADUATE/7 ➢ "I think you should start expose your students to the field of practice from the second or third year of school. Let them spend sometime in the field." MLS.PRACTITIONER/8 ➢ "And also we go back to regulation and emphasize that a graduate from an architectural program has to satisfy certain unit or years of training before he acquires the title architect. You have an architectural degree but you will not be called an architect unless you satisfy these training requirements. So after graduation, you enter a training program, and then take the architectural examination to acquire the architect title." FG-MAM.PROFESSOR/10 ➢ "The world is changing and university education is not enough for architects to prepare them with the different aspects involved in the practice of architecture. It is impossible to convey the complete information package to the architect in the five years of school. There should be a program that supplements the university education." FG-MYM.PROFESSOR/12
a. The lack of internship and practical training systems for architectural students and young architects	➢ "We spend an optional two months of training during school; I don't think this is enough. At least students should spend there fourth and fifth years in training or an entire semester abroad or with an architectural firm." FG-MAH.RGRADUATE/7 ➢ "The problem that we don't have a specific system that we follow for preparing architect starting from school years and even it is worst when they go into the field of practice; everything is random and depends on personal choices." FG-MAM.PROFESSOR/8 ➢ "Another point is to make the training course within school years as a compulsory course." FG-MAM.PROFESSOR/10 ➢ "We don't have internship; this is our problem. Internship is a very crucial stage where you are exposed to work for an entire year to gain this practical experience." FG-MHD.PROFESSOR/10

Table 26 Continued

Themes	Supporting Quotes
b. Possibility of initiating systematic formal internship and practical training programs	➢ "I thought that we can not limit architects in Kuwait to a certain training process but with the attitude we have today, I think systematic approach is more appropriate; may be just as a minimum requirement for all architects to satisfy." FG-MLS.PRACTITIONER/11 ➢ "I think that public agencies will have problems in implementing such training program." FG-MM.RECEARCHER/11 ➢ "It depends on a couple of things. First, the potential and the commitment of the trainer as architect Luai said and second if we want to enforce a training program we should know how to run and control it because we have ethical problems here in Kuwait." FG-MTS.PRACTITIONER/11 ➢ "If you have to do it, then it will be done. But not all architectural firms will be illegible for training architects." FG-MYM.PROFESSOR/12
c. Expected ethical problems in the satisfying the requirements of systematic formal internship and practical training programs	➢ "Ethics plays a major part in this." FG-MTS.PRACTITIONER/11 ➢ "If we want to enforce a training program we should know how to run and control it because we have ethical problems here in Kuwait. We don't go by and rely on professional ethics here. Some people might abuse the system and gain training credits without really spending time in training." FG-MTS.PRACTITIONER/11 ➢ "This is the problem; we don't have problems with supplying the tools and resources needed to create a systematic training program but I am afraid of the misuse of this system." FG-MTS.PRACTITIONER/11 ➢ "We will not have any financial or other problems if we want to create a training program but again ethics is the problem." FG-MTS.PRACTITIONER/11

APPENDIX C

THE PRIMARY RESEARCH INSTRUMENT

(SELF-ADMINISTERED QUESTIONNAIRE)

ARCHITECTURAL INTERNSHIP SURVEY QUESTIONNAIRE

Introduction

This questionnaire is part of a study that stresses and reflects a professional concern for the state of architecture in Kuwait, with a specific emphasis on the development of professional knowledge, skills, and competence of architectural students and architects.

The PURPOSE of the study is to define the need and propose recommended areas of knowledge for an architectural **internship** experience in Kuwait, before and after graduation from college.

Internship refers to *a directed field-based practical training experience* for either architectural students during college time and/or newly graduated architects following the receipt of a professional degree.

For the purpose of this study, the internship experience during college time is defined as (**academic internship**) and the internship experience after graduation is defined as (**practical training**).

The majority of **academic internship** programs start at the junior (3^{rd}) year in an architectural school whereas students participate in a practical training experience in a professional office setting.

Practical training programs usually start after graduation from an architectural school. In countries where an architectural registration/licensing/certification system exists, practical training during early years of practice is a significant professional development period in the career of architects.

Your input in this study will help in determining the need for internship programs in Kuwait and will provide a base of information for the initiation of future architectural internship programs in the country.

PART 1: The importance of internship programs. The aim of this section is to define the value, need, and recommended time period for internship programs. Read statements 1- 8 and check the one answer that best represents your opinion. If you agree with statement 9, choose the time you prefer for an *academic internship* program. And if you agree with statement 10, then indicate the number of years you recommend for a *practical training* program.

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1. In general, the establishment of internship programs would complement the architectural education in Kuwait.	☐	☐	☐	☐	☐
2. The majority of technical and practical knowledge are best learned in the workplace itself, under the guidance of experienced professionals.	☐	☐	☐	☐	☐
3. **Academic internship** programs *during college years* are the most essential links connecting education to the world of practice.	☐	☐	☐	☐	☐
4. **Practical training** programs *after graduation* ensure a certain amount of guided practical experience on various technical and practice issues for all architects.	☐	☐	☐	☐	☐
5. Overall, internship programs play an important role in developing the professional abilities of architectural students and architects.	☐	☐	☐	☐	☐
6. Internship programs should be considered in Kuwait in order to respond to the changing realities of architectural practice.	☐	☐	☐	☐	☐
7. Internship programs should be part of the training and professional development process for students and architects in Kuwait.	☐	☐	☐	☐	☐
8. Formal structured **practical training** programs *after graduation* should be developed in Kuwait to enrich the knowledge of fresh graduates from architectural schools.	☐	☐	☐	☐	☐

9. Do you think that architectural students should be required to have some **academic internship** experience as a condition of graduation?

☐ No

☐ Yes

9a. If yes, The length of an internship program *during college* should be:

------ One summer (2 months) ------ One semester (4 months) ------ One school year (10 months) ------- Other ( )

10. Do you think that **practical training** experience *after graduation* should be required to take place in the practice of architecture in Kuwait?

☐ No

☐ Yes

10a. If yes, the length of a practical training program *during early years of practice* should be:

------ Year/Years

PART 2: **<u>Academic Internship</u> Areas of Knowledge.** The aim of this section is to define the level of competence on areas of knowledge that might be included in an architectural **academic internship** program *during college years*. Here is a list of possible related areas of knowledge; please indicate the <u>level of competence</u> you believe should be acquired on a **knowledge area** <u>by the completion</u> of an **academic internship** program during college time.

0. Unnecessary—Not required at all
1. Exposure—Sufficiently aware of the knowledge to be able to look it up
2. Understanding —Able to discuss the concepts involved
3. Competent—Having sufficient knowledge to decide upon a plan or perspective
4. Application—Able to use the knowledge to solve common problems
5. Mastery—Able to apply the knowledge to new problems, to integrate information and to create\evaluate solutions

knowledge Area:	**Unnecessary**	**Exposure**	**Understanding**	**Competent**	**Application**	**Mastery**
I. Pre –Design						
1. Programming	☐	☐	☐	☐	☐	☐
2. Site and environmental analysis	☐	☐	☐	☐	☐	☐
II. Design						
1. Schematic design	☐	☐	☐	☐	☐	☐
2. Design Development	☐	☐	☐	☐	☐	☐
3. Analysis and selection of building materials and systems	☐	☐	☐	☐	☐	☐
4. Cost analysis	☐	☐	☐	☐	☐	☐
5. Architectural Construction Documents	☐	☐	☐	☐	☐	☐
6. Specifications and building code requirements and constrains	☐	☐	☐	☐	☐	☐
7. Building systems integration	☐	☐	☐	☐	☐	☐
III. Construction Documentation and Administration						
a. Office:						
1. Facilitating project communication	☐	☐	☐	☐	☐	☐
2. Maintaining project documents and records	☐	☐	☐	☐	☐	☐
3. Preparing change orders	☐	☐	☐	☐	☐	☐
b. Field:						
Observing construction for conformity with drawings and specification	☐	☐	☐	☐	☐	☐
IV. Practice (Office) Management						
1. Bidding and contract negotiation	☐	☐	☐	☐	☐	☐
2. Strategic planning	☐	☐	☐	☐	☐	☐
3. Legal contracts and practice issues	☐	☐	☐	☐	☐	☐
4. Financial management	☐	☐	☐	☐	☐	☐
5. Accounting	☐	☐	☐	☐	☐	☐
6. Marketing	☐	☐	☐	☐	☐	☐
7. Client relations	☐	☐	☐	☐	☐	☐
8. Risk management	☐	☐	☐	☐	☐	☐
9. Information management	☐	☐	☐	☐	☐	☐
V. Project and Construction Management						
1. Project acquisition (Looking for and winning new projects' contracts)	☐	☐	☐	☐	☐	☐
2. Project financing and funding	☐	☐	☐	☐	☐	☐
3. Project delivery methods	☐	☐	☐	☐	☐	☐
4. Budgeting	☐	☐	☐	☐	☐	☐
5. Scheduling	☐	☐	☐	☐	☐	☐
6. Planning, organizing, and staffing	☐	☐	☐	☐	☐	☐
7. Leading and managing the project team	☐	☐	☐	☐	☐	☐
8. Quality management and control	☐	☐	☐	☐	☐	☐
9. Life safety codes and regulations	☐	☐	☐	☐	☐	☐
10. Construction conflict resolution	☐	☐	☐	☐	☐	☐
11. Post-occupancy studies	☐	☐	☐	☐	☐	☐

knowledge Area:	Unnecessary	Exposure	Understanding	Competent	Application	Mastery
VI. Related Activities and Fields						
1. Building technology	☐	☐	☐	☐	☐	☐
2. Energy conservation	☐	☐	☐	☐	☐	☐
3. Environmental engineering and design	☐	☐	☐	☐	☐	☐
4. Mechanical engineering and design	☐	☐	☐	☐	☐	☐
5. Structural engineering and design	☐	☐	☐	☐	☐	☐
6. Computer-aided design (CAD) and drafting	☐	☐	☐	☐	☐	☐
7. Professional and business ethics	☐	☐	☐	☐	☐	☐
8. Historical preservation and restoration	☐	☐	☐	☐	☐	☐
9. Urban design and planning	☐	☐	☐	☐	☐	☐
10. Interior design	☐	☐	☐	☐	☐	☐
11. Landscape architecture	☐	☐	☐	☐	☐	☐
12. Real estate development	☐	☐	☐	☐	☐	☐
VII. General knowledge/skills						
1. Oral, written and graphic communications	☐	☐	☐	☐	☐	☐
2. Interpersonal skills	☐	☐	☐	☐	☐	☐
3. Leadership	☐	☐	☐	☐	☐	☐
4. Team building/Team management skills	☐	☐	☐	☐	☐	☐
5. Critical thinking	☐	☐	☐	☐	☐	☐
6. Problem solving	☐	☐	☐	☐	☐	☐
7. Conflict resolution	☐	☐	☐	☐	☐	☐
8. Personal time management	☐	☐	☐	☐	☐	☐
9. Electronic communications	☐	☐	☐	☐	☐	☐
10. Designing and delivering presentations	☐	☐	☐	☐	☐	☐

PART 3: Practical Training Areas of Knowledge. The aim of this section is to define the level of competence on areas of knowledge that might be included in an architectural **practical training** program after graduation during the early years of practice. Again, here is the same previous list of possible related areas of knowledge. Please indicate the level of competence you believe should be acquired on a **knowledge area** by the completion of a **practical training** program.

0. Unnecessary—Not required at all
1. Exposure—Sufficiently aware of the knowledge to be able to look it up
2. Understanding —Able to discuss the concepts involved
3. Competent—Having sufficient knowledge to decide upon a plan or perspective
4. Application—Able to use the knowledge to solve common problems
5. Mastery—Able to apply the knowledge to new problems, to integrate information and to create\evaluate solutions

knowledge Area:	Unnecessary	Exposure	Understanding	Competent	Application	Mastery
I. Pre –Design						
1. Programming	☐	☐	☐	☐	☐	☐
2. Site and environmental analysis	☐	☐	☐	☐	☐	☐
II. Design						
1. Schematic design	☐	☐	☐	☐	☐	☐
2. Design Development	☐	☐	☐	☐	☐	☐
3. Analysis and selection of building materials and systems	☐	☐	☐	☐	☐	☐
4. Cost analysis	☐	☐	☐	☐	☐	☐
5. Architectural Construction Documents	☐	☐	☐	☐	☐	☐
6. Specifications and building code requirements and constrains	☐	☐	☐	☐	☐	☐
7. Building systems integration	☐	☐	☐	☐	☐	☐

knowledge Area:	Unnecessary	Exposure	Under-standing	Competent	Application	Mastery
III. Construction Documentation and Administration						
a. Office: 1. Facilitating project communication	☐	☐	☐	☐	☐	☐
2. Maintaining project documents and records	☐	☐	☐	☐	☐	☐
3. Preparing change orders	☐	☐	☐	☐	☐	☐
b. Field: Observing construction for conformity with drawings & specification	☐	☐	☐	☐	☐	☐
IV. Practice (Office) Management						
1. Bidding and contract negotiation	☐	☐	☐	☐	☐	☐
2. Strategic planning	☐	☐	☐	☐	☐	☐
3. Legal contracts and practice issues	☐	☐	☐	☐	☐	☐
4. Financial management	☐	☐	☐	☐	☐	☐
5. Accounting	☐	☐	☐	☐	☐	☐
6. Marketing	☐	☐	☐	☐	☐	☐
7. Client relations	☐	☐	☐	☐	☐	☐
8. Risk management	☐	☐	☐	☐	☐	☐
9. Information management	☐	☐	☐	☐	☐	☐
V. Project and Construction Management						
1. Project acquisition (Looking for and winning new projects' contracts)	☐	☐	☐	☐	☐	☐
2. Project financing and funding	☐	☐	☐	☐	☐	☐
3. Project delivery methods	☐	☐	☐	☐	☐	☐
4. Budgeting	☐	☐	☐	☐	☐	☐
5. Scheduling	☐	☐	☐	☐	☐	☐
6. Planning, organizing, and staffing	☐	☐	☐	☐	☐	☐
7. Leading and managing the project team	☐	☐	☐	☐	☐	☐
8. Quality management and control	☐	☐	☐	☐	☐	☐
9. Life safety codes and regulations	☐	☐	☐	☐	☐	☐
10. Construction conflict resolution	☐	☐	☐	☐	☐	☐
11. Post-occupancy studies	☐	☐	☐	☐	☐	☐
VI. Related Activities and Fields						
1. Building technology	☐	☐	☐	☐	☐	☐
2. Energy conservation	☐	☐	☐	☐	☐	☐
3. Environmental engineering and design	☐	☐	☐	☐	☐	☐
4. Mechanical engineering and design	☐	☐	☐	☐	☐	☐
5. Structural engineering and design	☐	☐	☐	☐	☐	☐
6. Computer-aided design (CAD) and drafting	☐	☐	☐	☐	☐	☐
7. Professional and business ethics	☐	☐	☐	☐	☐	☐
8. Historical preservation and restoration	☐	☐	☐	☐	☐	☐
9. Urban design and planning	☐	☐	☐	☐	☐	☐
10. Interior design	☐	☐	☐	☐	☐	☐
11. Landscape architecture	☐	☐	☐	☐	☐	☐
12. Real estate development	☐	☐	☐	☐	☐	☐
VII. General knowledge/skills						
1. Oral, written and graphic communications	☐	☐	☐	☐	☐	☐
2. Interpersonal skills	☐	☐	☐	☐	☐	☐
3. Leadership	☐	☐	☐	☐	☐	☐
4. Team building/Team management skills	☐	☐	☐	☐	☐	☐
5. Critical thinking	☐	☐	☐	☐	☐	☐
6. Problem solving	☐	☐	☐	☐	☐	☐
7. Conflict resolution	☐	☐	☐	☐	☐	☐
8. Personal time management	☐	☐	☐	☐	☐	☐
9. Electronic communications	☐	☐	☐	☐	☐	☐
10. Designing and delivering presentations	☐	☐	☐	☐	☐	☐

Part 4: Professional Information. We would like to ask you some questions about your architectural education, training, and career.

	Not at all Satisfied	Not Very Satisfied	Satisfied	Very Satisfied	Extremely Satisfied
1. Overall, how satisfied are you with your school education in preparing you for the realities of architectural practice?	☐	☐	☐	☐	☐
2. Did you participate in an **academic internship** program in a professional office setting during your study in architectural school? ☐ No ☐ Yes → 2a. If yes, how satisfied were you with your previous **academic internship** experience?	☐	☐	☐	☐	☐

	Not at all Likely	less Likely	Likely	More Likely	Very Likely
3. Overall, did the experience of attending architecture school makes it less likely or more likely, that you would pursue a career in architecture?	☐	☐	☐	☐	☐
4. If you had to do it over, how likely is it that you would still attend the architectural school you graduated from?	☐	☐	☐	☐	☐
5. If you had to do it over, how likely is it that you would attend any school of architecture?	☐	☐	☐	☐	☐
6. Have you taken the Professional Architect Examination? ☐ No ☐ Yes → 6a. If no, how likely is it that you will take the Professional Architect Examination and be classified as "Professional Architect?"	☐	☐	☐	☐	☐

7. Are you currently employed primarily in:

☐ Private practice, by yourself ☐ Private firm (Approximate number of employees: ____) ☐ Government work ☐ Other (Please describe) ---------------------------

8. Please describe your current position within the architectural field:

☐ Principal/partner of architectural firm ☐ High-rank architect/ manager/supervisor ☐ Middle-level architect/manager ☐ Entry level architect ☐ Other (Please specify) --------------------------

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Part 5: Demographic Background. Finally, we would like to learn some things about you.

1. What is your gender?
☐ Female ☐ Male

2. What is your nationality?
☐ Kuwaiti ☐ Other

3. Approximately, how long ago did you graduate from architectural school?
------ Year/Years

4. Did you graduate from:
☐ The architectural program at Kuwait University
☐ Another architectural program abroad of Kuwait (Please specify name of university)

APPENDIX D

THE SECONDARY RESEARCH INSTRUMENT

(FOLLOW-UP INTERVIEW)

INTERVIEW PROTOCOL

1. What do you think are the *issues and problems* surrounding the transition of young architects from education to practice in Kuwait?

2. How do you believe we can expose architectural students to the field of practice before they graduate?

3. What are the *benefits and values* of architectural **academic internship** programs during college?

4. Do you believe that we have to create a systematic post-graduate **practical training** program that guides the architectural graduates through a rotation of various technical and practice issues? 4a. If yes, what are the *benefits and values* of architectural **practical training** after graduation during the first years of practice?

5. Do you believe that implementing internship and practical training programs within architectural offices would compromise their productivity and profitability?
Ie. Do you think that firms are *willing to invest on training* architectural students and newly graduates?

6. The quality of an internship is highly dependent on the *ability* and *commitment* of the employing firm; Do you think that all architectural firms in Kuwait are *capable of training* architectural students and newly graduates (ie. Have the required finance and resources)?

7. Do you believe that architectural students and newly graduated architects will be *committed* to participate in structured formal internship and practical training programs?

8. If formal practical training programs are implemented, some people might abuse this system and gain training credits without really spending time in training. Do you consider ethics as a major problem here or there is a way to control this possible limitation?

9. What do you believe are the most important *fields of practice* that *architectural students* should be exposed to during their training experience?

10. What do you believe are the most important *fields of practice* that *newly graduated architects* need to better serve the practice of architecture in Kuwait?

11. Are there any things you can think of, that are important to the professional training of architectural students and architect, but we have not covered?

APPENDIX E

PILOT SURVEY COVER LETTER

Name: ____

Daytime telephone number: ____

Best time to call this number: ____

E-mail address: ____

<u>Please respond to each of the following questions after you have responded to the questionnaire</u>.

1) How much time did it take you to complete the questionnaire?

Introduction

2) Is the purpose of the survey questionnaire clear?

3) Do you perceive that the ways in which the results of the survey may be used as positive ones?

PART 1: The importance of internship programs

4) Are the directions for completing this part of the questionnaire clear?

5) Are the questions clear and relevant?

6) Are the rating scales for questions 1- 8 clear?

7) Are the response categories for questions 9a comprehensive?

PART 2: <u>Academic Internship</u> Areas of Knowledge

8) Are the directions for completing this part of the questionnaire clear?

9) Are the rating scales (level of competence) clear?

10) Are the main knowledge areas (I. Pre –Design, II. Design …) ordered in a logical way?

11) Are the main knowledge areas clearly defined?

12) Are the sub-knowledge areas such as (1. Programming, 2. Site and environmental analysis) in the major knowledge area (Pre-Design) comprehensive?

13) Are there any knowledge areas that require revision?

14) Do you believe that additional knowledge areas should be added on this part of the questionnaire? If yes; what are they?

PART 3: Practical Training Areas of Knowledge

15) Are the directions for completing this part of the questionnaire clear?

16) Do you believe that additional knowledge areas should be added on this part of the questionnaire? If yes; what are they?

PART 4: Professional Information

17) Are the questions clear and relevant?

18) Are the rating scales for questions 1 and 2a clear?

19) Are the rating scales for questions 3-5 and 6a clear?

20) Are the response categories for question 7-8 comprehensive?

PART 5: Demographic Background

21) Are the questions clear?

22) Are the response categories for question 4 comprehensive?

APPENDIX F

OVERALL MEAN VALUES FOR INTERNSHIP KNOWLEDGE AREAS

(ENTIRE POPULATION, N=78)

Domains & Knowledge Areas/Skills	Academic Internship Overall Mean	Practical Training Overall Mean
I. Pre-Design		
1. Programming	3.19	3.50
2. Site and environmental analysis	3.14	3.45
II. Design		
1. Schematic design	3.63	3.63
2. Design development	3.77	3.85
3. Analysis and selection of building materials and systems	3.41	3.97
4. Cost analysis	2.64	3.62
5.Architectural construction documents	2.77	3.55
6.Specifications and building code requirements and constrains	2.79	3.65
7. Building systems integration	3.10	3.92
III. Construction Documentation and Administration		
III a. Office		
1. Facilitating project communication	2.62	3.24
2. Maintaining project documents and records	2.40	3.15
3. Preparing change orders	2.06	3.18
III b. Field		
Observing construction for conformity with drawings and specification	2.86	3.83
IV. Practice (Office) Management		
1. Bidding and contract negotiation	2.13	3.27
2. Strategic planning	2.26	3.46
3.Legal contracts and practice issues	2.01	3.22
4. Financial management	2.01	3.18
5. Accounting	1.54	2.53
6. Marketing	2.09	3.00
7. Client relations	2.95	3.71
8. Risk management	2.26	3.08
9. Information management	2.22	3.17
V. Project and Construction Management		
1. Project acquisition	2.18	3.40
2. Project financing and funding	1.95	3.13
3. Project delivery methods	2.09	3.23
4. Budgeting	2.40	3.18
5. Scheduling	2.67	3.38
6. Planning, organizing, and staffing	2.47	3.35
7. Leading and managing the project team	2.65	3.49
8. Quality management and control	2.40	3.38
9. Life safety codes and regulations	2.55	3.29
10. Construction conflict resolution	2.17	3.15
11. Post-occupancy studies	2.35	3.03

Domains & Knowledge Areas/Skills	Academic Internship Overall Mean	Practical Training Overall Mean
VI. Related Activities and Fields		
1. Building technology	2.82	3.64
2. Energy Conservation	2.90	3.65
3. Environmental engineering/design	3.09	3.73
4. Mechanical engineering/design	2.32	3.18
5. Structural engineering/design	2.64	3.40
6. Computer-aided design (CAD) and drafting	3.88	3.95
7. Professional and business ethics	3.08	3.77
8. Historical preservation and restoration	2.63	2.90
9. Urban planning and design	3.22	3.56
10. Interior design	3.40	3.54
11. Landscape architecture	3.40	3.55
12. Real estate development	2.79	3.49
VII. General Knowledge/Skills		
1. Oral, written and graphic communications	3.79	3.90
2. Interpersonal skills	3.46	3.79
3. Leadership	3.41	3.95
4. Team building/Team management skills	3.46	4.03
5. Critical thinking	3.49	4.06
6. Problem solving	3.76	4.26
7. Conflict resolution	3.24	3.85
8. Personal time management	3.83	4.17
9. Electronic communications	3.32	3.60
10. Designing and delivering presentations	4.12	4.17

APPENDIX G

COMPOSITE FREQUENCY DISTRIBUTION OF RESPONSES BY PERCENT

FOR INTERNSHIP KNOWLEDGE AREAS

Domains & Knowledge Areas/Skills	Command of Knowledge by the Completion of an *Academic Internship* Program						Command of Knowledge by the Completion of a *Practical Training* Program					
	Unnecessary	Exposure	Understanding	Competent	Application	Mastery	Unnecessary	Exposure	Understanding	Competent	Application	Mastery
I. Pre-Design												
1. Programming	0.00	18.67	12.00	21.33	25.33	22.67	6.67	5.33	13.33	20.00	18.67	36.00
2. Site and environmental analysis	0.00	17.33	16.00	22.67	24.00	20.00	6.67	8.00	14.67	9.33	28.00	33.33
II. Design												
1. Schematic design	0.00	10.67	10.67	17.33	26.67	34.67	6.67	5.33	6.67	17.33	29.33	34.67
2. Design development	0.00	5.33	10.67	20.00	29.33	34.67	5.33	2.67	9.33	9.33	32.00	41.33
3. Analysis and selection of building materials and systems	0.00	6.67	14.67	29.33	25.33	24.00	1.33	4.00	4.00	16.00	36.00	38.67
4. Cost analysis	5.33	21.33	21.33	21.33	14.67	16.00	1.33	4.00	13.33	24.00	25.33	32.00
5.Architectural construction documents	1.33	17.33	22.67	29.33	18.67	10.67	2.67	5.33	14.67	14.67	36.00	26.67
6.Specifications and building code requirements and constrains	5.33	12.00	26.67	21.33	21.33	13.33	5.33	2.67	9.33	17.33	33.33	32.00
7. Building systems integration	2.67	4.00	29.33	25.33	25.33	13.33	1.33	1.33	9.33	17.33	30.67	40.00
III. Construction Documentation and Administration												
III a. Office												
1. Facilitating project communication	2.67	16.00	28.00	28.00	16.00	9.33	1.33	4.00	20.00	32.00	29.33	13.33
2. Maintaining project documents and records	8.00	20.00	24.00	25.33	13.33	9.33	2.67	6.67	16.00	34.67	26.67	13.33
3. Preparing change orders	13.33	22.67	28.00	18.67	12.00	5.33	2.67	6.67	21.33	28.00	21.33	20.00

Domains & Knowledge Areas/Skills	Command of Knowledge by the Completion of an *Academic Internship* Program						Command of Knowledge by the Completion of a *Practical Training* Program					
	Unnecessary	Exposure	Understanding	Competent	Application	Mastery	Unnecessary	Exposure	Understanding	Competent	Application	Mastery
III b. Field												
Observing construction for conformity with drawings and specification	1.33	10.67	25.33	34.67	16.00	12.00	0.00	1.33	13.33	20.00	32.00	33.33
IV. Practice (Office) Management												
1. Bidding and contract negotiation	9.33	24.00	29.33	22.67	9.33	5.33	0.00	9.33	22.67	18.67	28.00	21.33
2. Strategic planning	9.33	22.67	24.00	25.33	12.00	6.67	0.00	8.00	17.33	21.33	25.33	28.00
3.Legal contracts and practice issues	12.00	24.00	32.00	18.67	6.67	6.67	0.00	9.33	24.00	20.00	26.67	20.00
4. Financial management	10.67	25.33	34.67	16.00	5.33	8.00	0.00	14.67	17.33	21.33	26.67	20.00
5. Accounting	26.67	28.00	26.67	8.00	4.00	6.67	5.33	21.33	28.00	18.67	13.33	13.33
6. Marketing	16.00	24.00	26.67	10.67	10.67	12.00	1.33	18.67	20.00	14.67	26.67	18.67
7. Client relations	5.33	13.33	22.67	18.67	14.67	25.33	1.33	4.00	16.00	14.67	26.67	37.33
8. Risk management	10.67	24.00	22.67	21.33	10.67	10.67	1.33	14.67	21.33	21.33	18.67	22.67
9. Information management	9.33	29.33	21.33	17.33	13.33	9.33	1.33	10.67	21.33	25.33	18.67	22.67
V. Project and Construction Management												
1. Project acquisition	12.00	26.67	22.67	20.00	8.00	10.67	2.67	5.33	16.00	26.67	24.00	25.33
2. Project financing and funding	14.67	30.67	26.67	10.67	6.67	10.67	0.00	10.67	22.67	26.67	20.00	20.00
3. Project delivery methods	9.33	28.00	30.67	17.33	6.67	8.00	0.00	6.67	20.00	29.33	29.33	14.67
4. Budgeting	9.33	17.33	30.67	21.33	10.67	10.67	0.00	9.33	18.67	29.33	26.67	16.00
5. Scheduling	4.00	14.67	33.33	20.00	14.67	13.33	0.00	6.67	14.67	26.67	33.33	18.67
6. Planning, organizing, and staffing	8.00	21.33	21.33	28.00	8.00	13.33	1.33	6.67	13.33	30.67	29.33	18.67

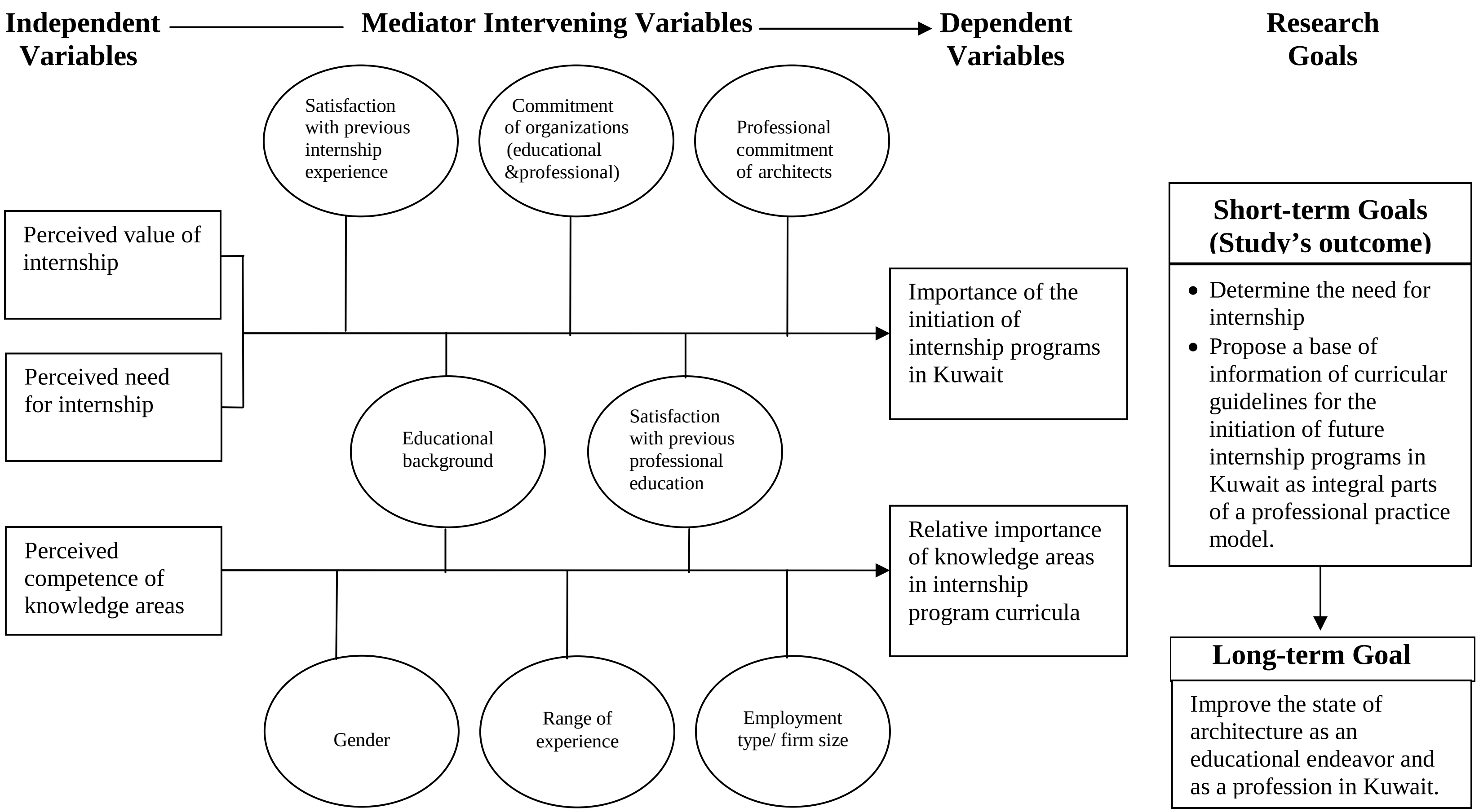
Domains & Knowledge Areas/Skills	Command of Knowledge by the Completion of an *Academic Internship* Program						Command of Knowledge by the Completion of a *Practical Training* Program					
	Unnecessary	Exposure	Understanding	Competent	Application	Mastery	Unnecessary	Exposure	Understanding	Competent	Application	Mastery
7. Leading and managing the project team	9.33	17.33	21.33	17.33	18.67	16.00	4.00	2.67	20.00	13.33	32.00	28.00
8. Quality management and control	5.33	26.67	22.67	25.33	9.33	10.67	0.00	10.67	16.00	17.33	33.33	22.67
9. Life safety codes and regulations	4.00	24.00	26.67	18.67	12.00	14.67	0.00	10.67	17.33	22.67	28.00	21.33
10. Construction conflict resolution	14.67	24.00	21.33	18.67	13.33	8.00	1.33	9.33	18.67	29.33	24.00	17.33
11. Post-occupancy studies	9.33	26.67	22.67	17.33	10.67	13.33	4.00	13.33	20.00	14.67	34.67	13.33
VI. Related Activities and Fields												
1. Building technology	1.33	14.67	26.67	26.67	18.67	12.00	1.33	4.00	13.33	17.33	38.67	25.33
2. Energy Conservation	4.00	13.33	18.67	30.67	17.33	16.00	2.67	6.67	10.67	14.67	30.67	34.67
3. Environmental engineering/design	1.33	13.33	17.33	21.33	33.33	13.33	1.33	4.00	13.33	17.33	26.67	37.33
4. Mechanical engineering/design	1.33	24.00	38.67	17.33	12.00	6.67	1.33	9.33	21.33	21.33	28.00	18.67
5. Structural engineering/design	1.33	20.00	32.00	16.00	18.67	12.00	1.33	8.00	17.33	16.00	33.33	24.00
6. Computer-aided design (CAD) and drafting	2.67	4.00	6.67	13.33	37.33	36.00	2.67	5.33	6.67	12.00	25.33	48.00
7. Professional and business ethics	2.67	9.33	24.00	24.00	20.00	20.00	0.00	6.67	17.33	10.67	22.67	42.67
8. Historical preservation and restoration	5.33	14.67	25.33	25.33	22.67	6.67	8.00	14.67	18.67	12.00	32.00	14.67
9. Urban planning and design	0.00	5.33	14.67	41.33	26.67	12.00	0.00	4.00	20.00	14.67	36.00	25.33
10. Interior design	1.33	6.67	16.00	18.67	37.33	20.00	0.00	4.00	24.00	10.67	33.33	28.00
11. Landscape architecture	0.00	4.00	17.33	26.67	34.67	17.33	0.00	5.33	20.00	12.00	36.00	26.67
12. Real estate development	5.33	16.00	20.00	25.33	16.00	17.33	1.33	10.67	12.00	16.00	33.33	26.67

Domains & Knowledge Areas/Skills	Command of Knowledge by the Completion of an *Academic Internship* Program						Command of Knowledge by the Completion of a *Practical Training* Program					
	Unnecessary	Exposure	Understanding	Competent	Application	Mastery	Unnecessary	Exposure	Understanding	Competent	Application	Mastery
VII. General Knowledge/Skills												
1. Oral, written and graphic communications	4.00	1.33	8.00	24.00	22.67	40.00	2.67	1.33	12.00	14.67	26.67	41.33
2. Interpersonal skills	5.33	1.33	13.33	28.00	26.67	25.33	1.33	2.67	9.33	22.67	32.00	32.00
3. Leadership	2.67	4.00	18.67	25.33	25.33	24.00	0.00	0.00	10.67	22.67	29.33	37.33
4. Team building/Team management skills	1.33	6.67	18.67	22.67	20.00	30.67	0.00	1.33	8.00	22.67	24.00	44.00
5. Critical thinking	2.67	4.00	18.67	21.33	22.67	30.67	0.00	2.67	10.67	12.00	25.33	49.33
6. Problem solving	1.33	1.33	13.33	18.67	30.67	34.67	1.33	1.33	8.00	6.67	25.33	57.33
7. Conflict resolution	4.00	5.33	22.67	20.00	22.67	25.33	0.00	2.67	13.33	18.67	26.67	38.67
8. Personal time management	1.33	6.67	8.00	17.33	22.67	44.00	0.00	2.67	8.00	13.33	22.67	53.33
9. Electronic communications	4.00	8.00	17.33	17.33	30.67	22.67	1.33	4.00	17.33	16.00	33.33	28.00
10. Designing and delivering presentations	1.33	2.67	8.00	9.33	29.33	49.33	2.67	1.33	5.33	9.33	30.67	50.67

APPENDIX H

FIGURE 3

FIGURE 3. Framework of the Research Variables



Hypothesis 1: Architectural internship programs are perceived by the surveyed population as important integral components in the preparation of architectural students and architects in Kuwait.
Hypothesis 2: There is a disagreement among the surveyed population on the areas of knowledge necessary for architectural internship programs in Kuwait.

APPENDIX I

COMPOSITE TABLES 27-33

(TESTING NULL HYPOTHESES 13-122)

Table 27. Composite Table for Testing Null Hypotheses 13-16: Pre-Design

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program	Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
13&14. I1: Programming								
Mean	3.49	2.75	3.21	**0.03***	3.40	3.57	3.47	0.98
SD	1.37	1.40	1.42	Significant	1.72	1.23	1.54	N.S.
N	47	28	75		47	28	75	
15&16. I2: Site and environmental design								
Mean	3.23	2.96	3.13	0.38	3.28	3.71	3.44	0.63
SD	1.42	1.32	1.38	N.S.	1.78	1.18	1.59	N.S.
N	47	28	75		47	28	78	

Significance level = 0.05

* Null hypothesis 13:

- Run an Independent-Samples T Test;
- Check Levene's Test for Equality of Variances (p_{value} =0.743 > 0.05) => Use assumed equal variances row (top);
- 95% confidence interval of the difference (0.083, 1.396) and (p_{value} =0.03 < 0.05);
- Therefore, we reject the null hypothesis;
- Subpopulation 1 (recent graduates) and subpopulation 2 (practitioners) are different in means between (0.083, 1.396) with 95% probability.

Table 28. Composite Table for Testing Null Hypotheses 17-30: Design

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program		Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
17&18. II1: Schematic design	*Mean*	3.68	3.57	3.64	0.81	3.32	4.11	3.61	0.06
	SD	1.30	1.43	1.34	N.S.	1.66	0.99	1.49	N.S.
	N	47	28	75		47	28	75	
19&20. II2: Design development	*Mean*	3.77	3.79	3.77	0.84	3.68	4.11	3.84	0.54
	SD	1.16	1.26	1.19	N.S.	1.60	0.96	1.41	N.S.
	N	47	28	75		47	28	75	
21&22. II3: Analysis and selection of building materials and systems	*Mean*	3.55	3.29	3.45	0.39	3.96	4.00	3.97	0.87
	SD	1.10	1.36	1.20	N.S.	1.22	1.02	1.14	N.S.
	N	47	28	75		47	28	75	
23&24. II4: Cost analysis	*Mean*	2.70	2.61	2.67	0.86	3.57	3.75	3.64	0.39
	SD	1.56	1.42	1.50	N.S.	1.19	1.35	1.25	N.S.
	N	47	28	75		47	28	75	
25&26. II5: Architectural construction documents	*Mean*	2.74	2.86	2.79	0.74	3.55	3.57	3.56	0.91
	SD	1.29	1.27	1.28	N.S.	1.30	1.37	1.32	N.S.
	N	47	28	75		47	28	75	
27&28. II6: Specifications and building code requirements and constrains	*Mean*	2.72	2.96	2.81	0.53	3.64	3.71	3.67	0.94
	SD	1.38	1.45	1.40	N.S.	1.42	1.30	1.37	N.S.
	N	47	28	75		47	28	75	
29&30. II7: Building systems integration	*Mean*	3.02	3.14	3.07	0.66	4.06	3.75	3.95	0.26
	SD	1.24	1.21	1.22	N.S.	1.07	1.24	1.14	N.S.
	N	47	28	75		47	28	75	

Significance level = 0.05

Table 29. Composite Table for Testing Sub-hypotheses 31-38: Construction Documentation and Administration

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program		Academic Internship (During College): Recent Graduates	Academic Internship (During College): Practitioners	Academic Internship (During College): Totals	Academic Internship (During College): P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practical Training (Post-Graduate): Practitioners	Practical Training (Post-Graduate): Totals	Practical Training (Post-Graduate): P_{value} / Significance
31&32. IIIa1: Facilitating project communication	*Mean*	2.70	2.61	2.67	0.88	3.32	3.11	3.24	0.60
	SD	1.32	1.20	1.27	N.S.	1.07	1.23	1.13	N.S.
	N	47	28	75		47	28	75	
33&34. IIIa2: Maintaining project documents and records	*Mean*	2.45	2.43	2.44	0.91	3.28	2.96	3.16	0.46
	SD	1.52	1.23	1.41	N.S.	1.06	1.43	1.21	N.S.
	N	47	28	75		47	28	75	
35&36. IIIa2: Preparing change orders	*Mean*	2.17	1.96	2.09	0.55	3.34	2.93	3.19	0.31
	SD	1.42	1.35	1.39	N.S.	1.20	1.46	1.31	N.S.
	N	47	28	75		47	28	75	
37&38. IIIb: Observing construction for conformity with drawings & specification	*Mean*	2.96	2.79	2.89	0.43	4.02	3.50	3.83	**0.046***
	SD	1.33	0.96	1.20	N.S.	1.01	1.14	1.07	Significant
	N	47	28	75		47	28	75	

Significance level = 0.05

* Null hypothesis 38:

- Run an Independent-Samples T Test;
- Check Levene's Test for Equality of Variances (p_{value} =0.092 > 0.05) => Use assumed equal variances row (top);
- 95% confidence interval of the difference (0.017, 1.025) and (p_{value} =0.04 < 0.05);
- Therefore, we reject the null hypothesis;
- Subpopulation 1 (recent graduates) and subpopulation 2 (practitioners) are different in means between (0.017, 1.025) with 95% probability.

Table 30. Composite Table for Testing Null Hypotheses 39-56: Practice (Office) Management

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program	Academic Internship (During College)				Practical Training (Post-Graduate)			
	Recent Graduates	Practitioners	Totals	P_{value} / Significance	Recent Graduates	Practitioners	Totals	P_{value} / Significance
39&40. IV1: Bidding and contract negotiation								
Mean	2.28	1.93	2.13	0.22	3.40	3.11	3.27	0.36
SD	1.36	1.18	1.28	N.S.	1.26	1.34	1.30	N.S.
N	47	28	75		47	28	75	
41&42. IV2: Strategic planning								
Mean	2.49	1.93	2.26	0.08	3.66	3.18	3.46	0.16
SD	1.40	1.27	1.35	N.S.	1.17	1.44	1.31	N.S.
N	47	28	75		47	28	75	
43&44. IV3: Legal contracts and practice issues								
Mean	1.98	2.14	2.01	0.83	3.26	3.21	3.22	0.95
SD	1.21	1.56	1.32	N.S.	1.26	1.34	1.29	N.S.
N	47	28	75		47	28	75	
45&46. IV4:Financial management								
Mean	2.15	1.86	2.01	0.33	3.17	3.25	3.18	0.69
SD	1.33	1.35	1.32	N.S.	1.26	1.51	1.35	N.S.
N	47	28	75		47	28	75	
47&48. IV5: Accounting								
Mean	1.53	1.57	1.54	0.94	2.36	2.82	2.53	0.23
SD	1.43	1.43	1.39	N.S.	1.29	1.66	1.44	N.S.
N	47	28	75		47	28	75	
49&50. IV6: Marketing								
Mean	2.38	1.68	2.09	0.08	3.15	2.82	3.00	0.40
SD	1.70	1.28	1.56	N.S.	1.37	1.59	1.45	N.S.
N	47	28	75		47	28	75	

Significance level = 0.05

Table 30 Continued

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program		Academic Internship (During College) Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate) Recent Graduates	Practitioners	Totals	P_{value} / Significance
51&52. IV7: Client relations									
	Mean	3.34	2.43	2.95	**0.01***	3.89	3.46	3.71	0.17
	SD	1.54	1.45	1.55	Significant	1.22	1.40	1.31	N.S.
	N	47	28	75		47	28	75	
53&54. IV8: Risk management									
	Mean	2.43	2.07	2.26	0.33	3.13	3.04	3.08	0.85
	SD	1.50	1.46	1.48	N.S.	1.35	1.57	1.42	N.S.
	N	47	28	75		47	28	75	
55&56. IV9: Information management									
	Mean	2.38	2.00	2.22	0.3	3.23	3.07	3.17	0.72
	SD	1.50	1.44	1.46	N.S.	1.29	1.49	1.36	N.S.
	N	47	28	75		47	28	75	

Significance level = 0.05

* Null hypothesis 51:
- Run an Independent-Samples T Test;
- Check Levene's Test for Equality of Variances
  (p_{value} =0.502 > 0.05) => Use assumed equal variances row (top);
- 95% confidence interval of the difference (0.196, 1.628) and (p_{value} =0.01 < 0.05);
- Therefore, we reject the null hypothesis;
- Subpopulation 1 (recent graduates) and subpopulation 2 (practitioners) are different in means between (0.196, 1.628) with 95% probability.

Table 31. Composite Table for Testing Null Hypotheses 57-78: Project and Construction Management

	Academic Internship (During College)				Practical Training (Post-Graduate)			
Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program	Recent Graduates	Practitioners	Totals	P_{value} / Significance	Recent Graduates	Practitioners	Totals	P_{value} / Significance
57&58. V1: Project acquisition								
Mean	2.38	1.82	2.18	0.11	3.49	3.25	3.40	0.44
SD	1.53	1.39	1.48	N.S.	1.33	1.29	1.29	N.S.
N	47	28	75		47	28	75	
59&60. V2: Project financing and funding								
Mean	2.02	1.86	1.95	0.58	3.09	3.29	3.13	0.45
SD	1.47	1.58	1.51	N.S.	1.27	1.33	1.28	N.S.
N	47	28	75		47	28	75	
61&62. V3: Project delivery methods								
Mean	2.15	1.96	2.09	0.51	3.19	3.36	3.23	0.47
SD	1.43	1.23	1.35	N.S.	1.14	1.16	1.15	N.S.
N	47	28	75		47	28	75	
63&64. V4: Budgeting								
Mean	2.49	2.21	2.40	0.34	3.19	3.25	3.18	0.72
SD	1.47	1.34	1.42	N.S.	1.10	1.38	1.20	N.S.
N	47	28	76		47	28	75	
65&66. V5: Scheduling								
Mean	2.85	2.36	2.67	0.12	3.47	3.36	3.38	0.99
SD	1.40	1.28	1.36	N.S.	1.02	1.37	1.16	N.S.
N	47	28	75		47	28	75	
67&68. V6: Planning, organizing, and staffing								
Mean	2.55	2.32	2.47	0.45	3.38	3.32	3.35	0.86
SD	1.49	1.44	1.46	N.S.	1.11	1.36	1.21	N.S.
N	47	28	75		47	28	75	

Significance level = 0.05

Table 31 Continued

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program	Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
69&70. V7: Leading and managing the project team								
Mean	2.91	2.25	2.65	0.08	3.55	3.43	3.49	0.86
SD	1.59	1.51	1.57	N.S.	1.18	1.67	1.37	N.S.
N	47	28	75		47	28	75	
71&72. V8: Quality management and control								
Mean	2.53	2.14	2.40	0.16	3.38	3.46	3.38	0.62
SD	1.35	1.46	1.39	N.S.	1.23	1.43	1.30	N.S.
N	47	28	75		47	28	75	
73&74. V9: Life safety codes and regulations								
Mean	2.62	2.43	2.55	0.67	3.13	3.64	3.29	0.10
SD	1.51	1.37	1.45	N.S.	1.33	1.16	1.29	N.S.
N	47	28	75		47	28	75	
75&76. V10: Construction conflict resolution								
Mean	2.17	2.14	2.17	0.86	3.06	3.36	3.15	0.34
SD	1.51	1.53	1.50	N.S.	1.31	1.19	1.27	N.S.
N	47	28	75		47	28	75	
77&78.V11: Post-occupancy studies								
Mean	2.45	2.14	2.35	0.48	2.81	3.39	3.03	0.08
SD	1.60	1.43	1.55	N.S.	1.42	1.34	1.42	N.S.
N	47	28	75		47	28	75	

Significance level = 0.05

Table 32. Composite Table for Testing Null Hypotheses 79-102: Related Activities and Fields

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program		Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
79&80. VI1: Building technology	*Mean*	2.77	2.93	2.82	0.63	3.64	3.64	3.64	0.92
	SD	1.20	1.41	1.28	N.S.	1.19	1.22	1.18	N.S.
	N	47	28	75		47	28	75	
81&82. VI2: Energy conservation	*Mean*	2.79	3.14	2.90	0.30	3.55	3.89	3.65	0.20
	SD	1.41	1.33	1.38	N.S.	1.38	1.34	1.38	N.S.
	N	47	28	75		47	28	75	
83&84. VI3: Environmental engineering and design	*Mean*	3.15	3.07	3.09	0.74	3.81	3.68	3.73	0.61
	SD	1.32	1.30	1.31	N.S.	1.28	1.28	1.30	N.S.
	N	47	28	75		47	28	75	
85&86. VI4: Mechanical engineering and design	*Mean*	2.32	2.39	2.32	0.99	3.06	3.46	3.18	0.16
	SD	1.16	1.29	1.19		1.28	1.35	1.31	
	N	47	28	75	N.S.	47	28	75	N.S.
87&88. VI5: Structural engineering and design	*Mean*	2.53	2.89	2.64	0.39	3.26	3.75	3.40	0.07
	SD	1.23	1.52	1.34	N.S.	1.26	1.38	1.32	N.S.
	N	47	28	75		47	28	75	
89&90. VI6: Computer-aided design (CAD) and drafting	*Mean*	3.77	4.04	3.88	0.46	3.91	4.04	3.95	0.64
	SD	1.34	1.07	1.23	N.S.	1.38	1.29	1.37	N.S.
	N	47	28	75		47	28	75	

Significance level = 0.05

Table 32 Continued

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program		Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
91&92. VI7: Professional and business ethics	*Mean*	3.11	3.07	3.08	0.87	3.91	3.54	3.77	0.43
	SD	1.48	1.18	1.37	N.S.	1.18	1.57	1.32	N.S.
	N	47	28	75		47	28	75	
93&94. VI8: Historical preservation and restoration	*Mean*	2.74	2.50	2.63	0.38	2.79	3.07	2.90	0.37
	SD	1.29	1.35	1.30	N.S.	1.50	1.65	1.53	N.S.
	N	47	28	75		47	28	75	
95&96. VI9: Urban planning and design	*Mean*	3.23	3.29	3.22	0.76	3.66	3.46	3.56	0.47
	SD	0.98	1.12	1.04	N.S.	1.18	1.20	1.20	N.S.
	N	47	28	75		47	28	75	
97&98. VI10: Interior design	*Mean*	3.47	3.39	3.40	0.69	3.70	3.36	3.54	0.24
	SD	1.27	1.23	1.25	N.S.	1.21	1.28	1.26	N.S.
	N	47	28	75		47	28	75	
99&100. VI11: Landscape architecture	*Mean*	3.51	3.32	3.40	0.52	3.66	3.46	3.55	0.46
	SD	1.04	1.19	1.11	N.S.	1.24	1.23	1.24	N.S.
	N	47	28	75		47	28	75	
101&102. VI12: Real estate development	*Mean*	2.87	2.75	2.79	0.67	3.64	3.25	3.49	0.25
	SD	1.47	1.51	1.46	N.S.	1.29	1.46	1.37	N.S.
	N	47	28	75		47	28	75	

Significance level = 0.05

Table 33. Composite Table for Testing Null Hypotheses 103-122: General Knowledge/Skills

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program		Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
103&104. VII1: Oral, written and graphic communications									
	Mean	3.81	3.79	3.79	0.91	3.83	3.96	3.90	0.83
	SD	1.31	1.32	1.33	N.S.	1.36	1.13	1.26	N.S.
	N	47	28	75		47	27	74	
105&106.VII2: Interpersonal skills									
	Mean	3.34	3.64	3.46	0.35	3.74	3.82	3.79	0.85
	SD	1.37	1.25	1.36	N.S.	1.19	1.12	1.15	N.S.
	N	47	28	75		47	28	75	
107&108. VII3: Leadership									
	Mean	3.36	3.43	3.41	0.84	3.94	3.93	3.95	0.92
	SD	1.33	1.26	1.28	N.S.	0.99	1.09	1.02	N.S.
	N	47	28	75		47	28	75	
109&110. VII4: Team building /team management skills									
	Mean	3.36	3.61	3.46	0.41	4.02	4.00	4.03	0.93
	SD	1.37	1.31	1.34	N.S.	1.01	1.15	1.06	N.S.
	N	47	28	75		47	28	75	
111&112. VII5: Critical thinking									
	Mean	3.36	3.71	3.49	0.19	4.00	4.21	4.06	0.09
	SD	1.29	1.44	1.37	N.S.	1.00	1.34	1.18	N.S.
	N	47	28	75		47	28	75	
113&114. VII6: Problem solving									
	Mean	3.77	3.86	3.76	0.49	4.17	4.39	4.26	0.26
	SD	1.09	1.33	1.22	N.S.	1.17	1.03	1.11	N.S.
	N	47	28	75		47	28	75	

Significance level = 0.05

Table 33 Continued

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program	Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
115&116.VII7: Conflict resolution								
Mean	3.15	3.50	3.24	0.28	3.72	4.07	3.85	0.14
SD	1.43	1.37	1.44	N.S.	1.14	1.18	1.20	N.S.
N	47	28	75		47	28	75	
117&118. VII8: Personal time management								
Mean	3.91	3.75	3.83	0.53	4.11	4.25	4.17	0.53
SD	1.32	1.35	1.34	N.S.	1.11	1.11	1.10	N.S.
N	47	28	75		47	28	75	
119&120. VII9: Electronic communications								
Mean	3.06	3.71	3.32	0.053	3.30	4.11	3.60	**0.01***
SD	1.44	1.30	1.44	N.S.	1.32	0.96	1.28	Significant
N	47	28	75		47	28	75	

Significance level = 0.05

* Null hypothesis 120:
- Run an Independent-Samples T Test;
- Check Levene's Test for Equality of Variances (p_{value} =0.012 < 0.05) => Use not assumed equal variances row (bottom);
- 95% confidence interval of the difference (-1.335, -0.283) and (p_{value} =0.003 < 0.05);
- Therefore, we reject the null hypothesis;
- Subpopulation 1 (recent graduates) and subpopulation 2 (practitioners) are different in means between (0.283, 1.335) with 95% probability.

Table 33 Continued

Hypotheses Testing: Perceived level of competence for each knowledge area by the completion of an internship program	Academic Internship (During College): Recent Graduates	Practitioners	Totals	P_{value} / Significance	Practical Training (Post-Graduate): Recent Graduates	Practitioners	Totals	P_{value} / Significance
121&122.VII10: Designing and delivering presentations								
Mean	4.04	4.21	4.12	0.62	4.21	4.07	4.17	0.43
SD	1.25	1.03	1.16	N.S.	1.21	1.09	1.16	N.S.
N	47	28	75		47	28	78	

Significance level = 0.05

VITA

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