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A Case for International Study in Construction Education and Industry Practice

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Introduction

A Construction Management (CM) student at Georgia Southern University was offered a unique opportunity to do an internship with a general contractor from Sri Lanka, named Dwellco (Pvt) Ltd. The company was established in 1989 and was a pioneer of the Design-Build delivery method in Sri Lanka with specialization in customized homes constructed for the Sri Lankan market. In 1996, Dwellco opened its commercial construction arm called Dwellco Developments (Pvt) Ltd and as a result began undertaking small to medium scale commercial projects. The internship experience highlighted in this paper is about two seasonal internship rotations with Dwellco / Dwellco Developments, during summer 2014 and again during the summer of 2015, allowing for involvement in an array of construction project situations at different stages including project formulation of an apartment building called "Skyline Kotte" and the project coordination and management for a BMW Service Center. The paper will examine some of the tasks and challenges experienced by the student intern and attempt to show the relationship between these tasks and the coursework of the CM program at Georgia Southern University. Also, highlights are presented on how the academic background in Construction Management better equipped the student for the duration of his internships and assisted in valuable contributions towards the company business processes. The case study is elected as a research method and it is further augmented with qualitative analysis for findings and exploration.

Methodology

The methodology used in this research study and assessment was one that engaged the experiential learning of the intern and also considered the observations and analysis of feedback obtained from company officials about the inputs and performance of the intern. The case study methodology showcased the student's readiness to perform different tasks while on the job as a result of academic and stimulatory preparations through the construction management program of study.

The following list explains the common case study protocol that guided the researchers' methodology (adapted from Yin, 1994)[1]:

- Purpose and rationale for case study
- Significance of the international industry practice
- Research questions: is an international internship of value to the CM student and if positive can this value be quantified?
- Design based on the unit of analysis and research purpose
- Data collection and recorded experiences of the intern (field method with transcribed notes)
- Mapping major concepts and linking them with major aspects from essential CM courses
- Describing the full case study, including peculiar situations according to the international environment practiced
- Focus the analysis on the industry internship linked to the purpose of construction education
- Analyze findings based on the purpose, rationale and research questions and transferability of information from the CM curriculum to the field

The value of a college education in the field of construction management is also discussed through the intern's inputs and resultant values that were obtained in terms of time and monetary savings on projects undertaken by the company. The documentation and discussion on the two case studies are specifically addressed in the following sections of this paper and refers to two particular construction projects in the Sri Lankan market: BMW Service Center project and Skyline Kotte – Condominium project.

The Construction Management Program

The CM program at Georgia Southern University is administered by the Department of Civil Engineering and Construction Management which comes under the Allen E. Paulson College of Engineering and Information Technology[2]. The CM program at Georgia Southern University is accredited by the American Council of Construction Education[3] and currently serves approximately 320 students within the program with a faculty team of nineteen. These faculty individuals have varying backgrounds in construction, civil and construction engineering education. The Bachelors of Science Construction Management degree at Georgia Southern University consists of 131 hours of course work and has also an in-built minor in Business. This comprehensive degree program provides the students with a vast knowledge of construction responding to the new industry challenges and requirements. With both - a technical and business background - graduates from the program are structured and process oriented for work situations that would involve technical and engineering skills and background; they are also equipped with decision-making skills including the ability to comprehend business procedures related to the legal environment, budget, resource management and implementation of new and emerging technologies in a construction environment. The department suggested layout of the program takes the student through introductory courses that cover broad aspects on construction management during the first year of study through courses such as Introduction to Construction Management, Construction Graphics with plan and specification readings, Building Construction Material & Systems and Construction Safety. As the program advances to the second year, courses that engage a more hands on and experiential learning focus with laboratory class times are explored - such as BIM (Building Information Modeling) for Construction Management, Surveying, introductory courses in Structures and Mechanical & Electrical equipment (see Table 1).

Table 1. First and Second year curriculum in the Construction Management program

1st Year

		Prerequisites
MATH 1112, 1113 or 1441	Trigonometry (3), Pre-Calculus (4) or Calculus I (4)	MATH 1111 w/C
ENGL 1101	Composition I	
HIST 2110	U.S. – A Comp Survey	
POLS 1101	American Government	
TCM 1231	**Intro to Constr. Mgnt.**	
FYE 1220	First Year Experience	

		Prerequisites
PHYS 1111	Intro to Physics I w/ lab	MATH 1112, 1113, or 1441 w/C
COMM 1110*	Public Speaking	ENGL 1101 w/C
ENGL 1102	Composition II	ENGL 1101 w/C
FYE 1410	Global Citizens	FYE 1220
TCM 1232	**Construction Graphics**	**TCM 1231 w/C; MATH 1112, 1113, or 1441 w/C**
TCM 2430	**Construction Safety**	

2nd Year

		Prerequisites
TCM 2235	**Intro to Structures**	**PHYS 1111 w/C**

		Prerequisite
ACCT 2030	Survey of Accounting	

TCM 2233	**Construction Surveying**	**TCM 1232 w/C; MATH 1112, 1113, or 1441 w/C**
HLTH 1520	Healthful Living	
ECON 2105	Econ in a Global Society	
STAT 2231	Intro to Statistics I	MATH 1101 or 1111
KINS _____	Physical Activity	

TCM 2333	**BIM for Constr. Mgnt.**	**TCM 1232 w/C**
TCM 2234	**Mech. & Elec. Equip. Systems**	**TCM 1232 & PHYS 1111 w/C**
TCM 1131	**Building Materials & Systems**	
WRIT 2130	Technical Communications	ENGL 1102 w/C
KINS _____	Physical Activity	

Many students are prepared and ready for internships and Co-Ops based on their academic exposure by the end of the second year. The third and fourth years begin to explore more in depth topics such as Steel & Concrete Structures, Quantity & Cost Estimating, Project Planning & Scheduling, Construction Administration, Green Building and Sustainable Construction and other technical courses which enhances the students ability to use software, processes and strategies that can help better manage resources, reduce time and increase cost efficiency during construction phases (see Table 2). The program certainly prepares students to become leaders in the construction industry and had produced a number of respected professionals who lead construction companies and projects of various sizes and scales through the Civil Engineering and Construction Management Department[4]. In the following sections, the two case studies mentioned before are presented and discussed with their peculiar tasks and activities that have been enriching the student international internship experiences.

Table 2. Third and Fourth year curriculum in the Construction Management program

3rd Year

		Prerequisites
TCM 3231	**Steel Structures**	**TCM 1232 w/C and TCM 2230**
TCM 3232	**Concrete Structures**	**TCM 1232 w/C and TCM 2230**
** ENGL 211__	World Literature I or II	
HIST 1112	World History II	
***	Environmental Science w/ Lab	
TCM 3890	**Minimum of 400 hours of Internship**	**Coreq COOP 4090Z and Dept. Approval**

		Prerequisites
TCM 3331	**Construction Finance**	**ECON 2105 w/C and ACCT 2030 w/C**
MGNT 3130	Principles of Mgnt.	Junior Status
TCM 3330	**Quantity Estimating**	**TCM 1131 w/C; TCM 3231 w/C; and TCM 3232 w/C**
LSTD 3230	Bldg. Construction Law	
TCM 3332	**Const. Equip. Mgnt.**	**MATH 1112, 1113, or 1441 w/C**
TCM 3333	**Building Codes**	

4th Year

		Prerequisites
TCM 5433	**Project Planning & Scheduling**	**Prereq/Coreq STAT 2231; TCM 1231 w/C**
TCM 4432	**Const. Administration**	**TCM 3331 w/C; Junior Status**
TCM 5431	**Const. Cost Estimating**	**TCM 3330 w/C and TCM 3331 w/C**
TCM 5330	**Green Bldg. & Sustainable Construction**	**Prereq/Coreq TCM 1131 and TCM 2231**
TCM 4518	**Intro to Senior Project**	**COMM 1110 & STAT 2231**
	Business Elective I	Approval by COBA

		Prerequisites
TCM 4530	**Senior Project**	**TCM 4518**
TCM 4434	**Soils and Foundations**	**TCM 2233 w/C and TCM 3332 w/C**
	Free Elective (SACS)	
****	Social Science Elective	
	Business Elective II	Approval by COBA

BMW Service Center project – Case Study 1

The role played on this project by the intern at Dwellco / Dwellco Developments, was very similar to that of the Project Engineer's job description which included site coordination, maintaining of site minutes and carrying out other tasks as instructed by the project manager and senior management personnel of the company. The BMW service center construction project could be considered a very interesting project to work on from the intern's viewpoint because of the many logistical challenges posed to the construction team; performing construction activities next to an existing service center, poor soil conditions, unforeseen challenges with regards to local authority permits and approvals, sub-contractor staffing and significant safety challenges due to site location and design.

The initial scope of demolition work and site preparation was not possible during the daily operations of the existing BMW service center and there was no possibility of having the facility cease operations for any period of time as the service center would receive bookings for car servicing months in advance. Therefore, it was critical for the project kick-off to be around a long holiday weekend, so that the working environment of the client could go undisturbed. In construction management courses, such as Introduction to Construction Management and Project Planning and Scheduling, students are taught about logistical challenges posed by various construction projects and the importance of developing appropriate solutions in order to ensure a smooth progress on the project to achieve on-time completion. However, the experience of having to coordinate construction activities to take place within the short time window available for demolition and site preparation was an eye-opener to the intern, specifically about the reality and critical nature of the challenges posed by complex construction projects. "The project scope and size was approximately 20,000 Square Feet and the type of contract was a negotiated lump-sum contract as agreed upon with the initial Bill of Quantities"[5], the margin of error during the project was very slim due to the nature of both the contract and the on-site challenges posed to the construction team. Maintaining good relationships with the client, proved to be very important throughout the duration of the project and ensuring that the client was happy and able to conduct its business operations without any hindrance as a result of the construction project teams presence on site, was something that was constantly being considered.

One of the responsibilities related to the internship was obtaining quotations for different samples and also to have samples present on site at the weekly meetings. This task is reported to have been one that required very good coordination and communication. Lessons learned and training through the mandatory Technical Communication program's course proved to be very valuable in relation to structuring requests for quotations and clarifications on sample specifications. The intern was commended multiple times by many of the project team members for effectively transmitting the information via e-mail and having everyone informed and on the same page in terms of communications in relation to the project. There were times that information may have been recorded erroneously on site by representatives of other consultants and the intern was required to effectively clarify and state the position of Dwellco Developments (Pvt) Ltd through a formal circular to the project consultants and team members. A key lesson learned by the intern on being effective in communication was to be concise and firm about any position that was needed

to be taken, also showing respect through the drafting of it and keeping in mind those who would review the positions were mentioned in it. Harsh or accusatory language usually resulted in a waste of time and less resolutions and clarifications.

Dealing with subcontractors involved in this project proved to be a challenging experience as they would provide dates and not show up on site, resulting in negative impacts on the schedules that were prepared for the progress of construction work. As a solution, in some instances Dwellco Developments would engage multiple crews in order to speed up the work and catch-up lost time on the schedule. Also due to the limited amount of skilled labor to perform certain tasks, managing these human resources effectively was of a critical nature in order to not be stranded without people to perform the work, which could have resulted in further delays on site progress. The intern who had no prior site related experience, was excited and inspired to see how the schedule-based decisions were made by allocating and reallocating crews to work in different areas and, as a result, have a lot more work finished in a shorter span of time. One striking example is when the number of days required to remove the shuttering of the double-height slab was underestimated, the intern's initial observations of concern was that the crew would have to remain idle with huge cost pressures on the project, which would have been disastrous due to the nature of the lump-sum contract for the project and also with slim margins that would leave little room for deviance from initial cost estimates. The intern was concerned that the dependent and sequenced task (as per the construction schedule) could not be conducted until the shuttering was complete. However, when the senior project manager evaluated the program of work and noticed that the removal of the shuttering would not be completed in time, the working crews were immediately reallocated on the upper floor so that the construction team was completing the upper floor walls while the shuttering was being removed at the bottom floor. This resulted in gaining time on the schedule and at a point, Dwellco Developments had started moving strongly ahead of the reworked schedule as more tasks were being completed with the increased efficiency of the staffing on site. While these concepts are discussed in the academic environment and are taught in terms of "crashing the schedule", these live lessons are best taught through experience and visual learning on-site. Therefore, the lessons learned by observing the decisions made by the project manager in relation to the effective use of human resources was of significant value to the intern and his own professional learning and growth.

On a more technical side while being on the job, the intern was able to contribute through the knowledge acquired in Structures courses taught at the University when having to perform crosscheck calculations on the type of shuttering required for the column formwork. It was observed by the intern that no formal calculations were done or recorded as the shuttering was usually done based on the experience of the project management teams and also other sub-contractors' experience. However, the intern expressed concerns about the importance of record keeping for legal purposes and also the ability to reference back on the decisions made during the progress of construction if the need arises. The project consultants required explicit method statements provided by the contractor and while these method statements were provided, site engineers and interns were later able to contribute towards the technical record keeping by looking into the formwork design calculations and verifying it with the project management team and relevant subcontractors.

Figure 1. On-going construction of the upper floor for BMW Service Center

The pictures of Figure 1 show the upper floor of the BMW service center and also put into perspective the close proximity of the upper floor roof to the high tension power lines which were running directly above the building. During the initial and preliminary approval stage, the local authorities had approved the relevant building designs and heights and had missed out the factoring of the distance between the top most point of the roof and the proximity with high-tension power lines. High-tension power lines also created an electromagnetic field around them and, as a result, make it very dangerous for workers to get anywhere close to not just the power lines but also the resultant electric field[6]. Since the contractor had no prior experience working in this close proximity to a power line, they had to delay work on the roof due to safety concerns of the workers and had to wait until the roof was re-designed by the project architect. The project management team was able to effectively use this time in completing other tasks on the project but still had to suffer a certain extent of delays due to this unforeseen challenge that came up due to the height of the building and its location. Another lesson was learned about industry relationships and networking when the Managing Director was informed about a delay in the re-evaluation and approval of the new roof design and building height and a phone call from the Managing Director to local government officials immediately highlighted the need for speeding up the approval process and therefore resulted in quicker and smoother resolution. While members of the project team had spent days on trying to speed up the approvals, the great relationship that the Managing Director had built with the local authorities allowed for saving valuable time and as a result saving money on the project which otherwise would have had to remain idle until the roof height and new design were approved.

Experiences gained through the exposure of working on the BMW project activities was a very rich addition to the intern's academic training and background in construction. Many of the practical problems learned and discussed in the class environment were seen in practice and the internship proved to be a great opportunity to engage and interact with the challenges which

previously would only relate to a case study in a book and eventually be a valuable aspect of education because of situational discussions. However, the active participation on site with the need to document, clarify and make decisions significantly challenged the intern to grow as a construction management professional and really get a better understanding of the challenges that could be potentially faced when working in industry. The intern also recorded in his personal log book that, "while there are many things that I can control as a construction management professional, I also have to be able to adapt and provide solutions as necessary for challenges that we may not foresee and still ensure that the project remains on track in terms of schedule and budget".

One of the intern's biggest contributions to the decision-making aspects of the project was the suggestion and development of a decision matrix which he attributes to the training received through the CM program and its emphasis on gathering and compiling data together for better decision making. At that time, the decision to be made was - "should the construction management team opt for the self-performing and erection of the building's roof or if it should be sub-contracted out". Based on the initial costs and time schedules, Dwellco Developments was going to self-perform the roofing work. However, with growing pressures as a result of delays generated from the erection of the roof due to local authority approval and design changes, the project manager suggested that alternative approaches should be considered. During the initial evaluation, it was identified that it would cost more to sub-contract the work out and therefore, when in discussion with the project team, the intern proposed that an thorough study on all the factors including cost, labor requirement, time and risk were evaluated and visually presented before offering any recommendation to the company's project manager and senior management personnel. Then the team gathered all the relevant information changing variables to see what the outcomes would be and finally decided that sub-contracting the roof work was worth the increment in cost as the subcontractors would be able to finish the roofing work in about 75% of the time that would have been required to self-perform this work. The team also realized that the increase in cost could also be justified in terms of having the sub-contractor take sole responsibility for the fabrication and installation of the roof as the project team could then simply coordinate and supervise the roofing work and also invest their time and energy into other critical aspects of the project.

Skyline Kotte – Condominium project – Case Study 2

"Skyline" is classified as a medium-scale luxury condominium project in the city of Kotte, Sri Lanka. The project scope is construction of a space of approximately 50,000 Square Feet divided into 30 apartments of an approximate size of 1,500 Square Feet with the additional space for parking and other amenities offered by the project. The project site is perched at an elevation which gives great views of the surrounding city and is currently in the construction process at the time of authoring this paper in January of 2016 (Figure 2).

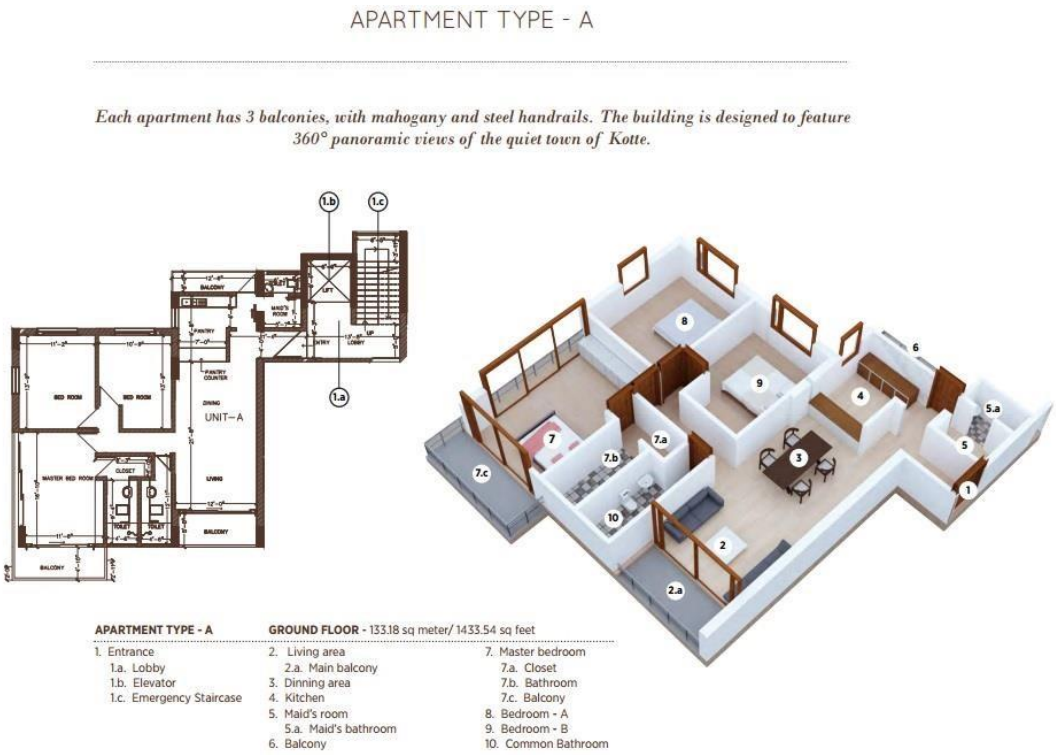

Figure 2. Skyline Condominium project plan and general specifications

The Skyline condominium project was a unique undertaking by Dwellco Developments (Pvt) Ltd as the scope of work extended beyond just the function of a general contractor and also required a feasibility study of the projects, initial legal documentation reviews and other tasks that related to project formulation (see Figure 2 above). The setup of the project was a partnership between an investor Skyline Property Developers[7] and the Design-Build team included Dwellco Developments (Pvt) Ltd as the builder and a reputed architectural firm known as Team Architrave[8] headed by lead architect Madhura Prematilleke. The intern was involved with this project from the initial stages of bank negotiations for project financing to drafting of legal agreements, design concept reviews and also initial site mobilization meetings.

As a contrast from the BMW Service Center project, the intern felt more prepared for the workload that Skyline Kotte came with as it was a more office-based job and as a student pursuing a degree which requires spending a lot of time in the classroom, it was easier to adapt to an environment where the intern had to review multiple documents, make comments and follow up on administrative tasks. The intern also recognized the fact that the emphasis to do multiple presentations for different class related projects, resulted in a greater degree of confidence to speak up at face-to-face meetings and engage in negotiations and discussions with other industry professionals.

The legal documentation that had to be reviewed allowed the intern to grasp a better understanding of complex legal agreements between contractors, investors and clients. This also allowed for in depth review and a better understanding of the legal concerns that may arise due to drafting the language in contracts for a different country. It has also allowed for positive thoughts and

suggestions to be shared in terms of enhancing the language on the legal agreements in Sri Lanka. The legal teams engaged by Dwellco Developments and Skyline had a collection of prior legal documents from other condominium projects which were reviewed for a base understanding and thereby giving the team a wholesome picture of the existing contracts in use. However, the importance to be mindful that legal agreements don't necessarily have a blanket cover and should be structured and tailored to the specific requirements of the project were held paramount by the intern and other project managers who were reviewing these legal documents. The legal documents review was also intertwined with bank financing negotiations and, as a result, exposed the intern to opportunities to meet with senior bankers in the country as negotiations were made for the best possible financing options available for this project. There were measures suggested by the banks that may have caused concern for potential customers and investors and therefore working on the Skyline Kotte project gave the intern a unique opportunity to be exposed from client perspective and offer suggestions and communicate concerns during the meeting.

As future construction management professionals, there is an expectation and responsibility to manage multiple facets of the project including budget, construction and even the design of the building. The Dwellco / Dwellco Developments internship was structured in a manner to provide the intern with an opportunity to engage the project from the start of the design process with a hands-on approach and thereby get a good understanding of the design plans and concepts and accordingly provide feedback to the architect team (if necessary). As a result, the intern was able to attend preliminary site meetings and see the complex flow of ideas and expression of thoughts and concerns, many of which the intern observed - could have been resolved and better administered if technology platforms such as Building Information Modeling (BIM) were employed for the project. When the architectural and engineering drawings were pinned in the site office and discussed, the intern had noticed the engineer making observations by foreseeing potential clashes between architectural and structural elements which was amazing because of the engineering consultant's visualization capability but even then, some of the professionals in the room were not able to fully visualize the concerns expressed and also the solution provided. If the project had commissioned the use of Building Information Modeling (BIM), the project team members could have easily run clash detections through Autodesk Navisworks Manage, 2016[9] and used the time at the site meeting more effective by working out solutions to resolve design conflicts. This was another area in which the academic and CM program background could have been used effectively in providing potential solutions for use by Dwellco Developments on the project that would have resulted in saving both time and money. Further investigations into it resulted in software and process investment proving to be too costly for the project but, the understanding of the concept associated with BIM in streamlining communication, visualization and coordination was of useful insight to the entire project team.

Figure 3. Coordination and collaboration for Skyline Condominium project

The images above (Figure 3), show renderings of "Skyline-Kotte" and the site progress pictures that were taken after the completion of the foundation and concrete columns. Progress on site was slow due to heavy rains and the construction program is being reworked to catchup the lost time. As a solution for the significant challenges on site due to the heavy rains during the excavation phase of the project, dewatering techniques were employed by the contractor to allow for certain amounts of work to be done. However, the construction program has been reworked to speed up progress and catchup any lost time due to the importance of having the building ready for occupation by the stated completion date. The contractor and the developer are in perpetual discussions of program management and on-time completion due to the complexities of this condominium project which have already presented unique delivery challenges as 30 clients are expecting to move in and occupy the building at the completion time.

Conclusions on value of the International Construction Internship

The Construction Management degree program has proved to be a very effective resource in preparing a young construction management professional for the tasks related to the job environment external to United States. The broad list of topics that are covered within the program have proven to equip the student with knowledge required in dealing with technical, legal, programmatic and management challenges during construction projects influenced by the various market factors in Sri Lanka. The internships and work experience proved to be in this case of a great learning curve for construction management student as he was able to better understand some of the concepts that were taught in the classroom and lookout how experienced industry

professionals would employ the resources they had at hand to challenges that they face during two complex construction scenarios.

Experiences and exposure from both the academic and internship/work experience is critical in developing and preparing work-ready graduates who can make an effective and tangible contribution to the companies they work for and the industry as a whole. In this case, the internship experience was practiced in a different environment located in Sri Lanka. A well corroborated education experience that teaches the core topics in the classroom and ensures the experience of these learnings in an actual work environment is of significant value and importance for graduates. Through the observation and study of this intern's academic and work experience case studies in Sri Lanka, the authors would like to suggest that construction management schools/departments and faculty should seriously consider incorporating more case study based learning or simulated environments opening considerations for global construction industry. An emphasis was placed on this paper relative to discussing methods on bringing up the interns experience to benefit students who have not yet had an internship experience and thus increasing the effectiveness of construction education on both the fronts of global exposure and the professional preparedness of first time interns.

The authors would also like to highlight the importance of bringing about a global emphasis into the CM program to make construction management students better understand the project manager varying complexities in different countries that may not be as well equipped with data and resources for decision-making as the ones in United States. A global emphasis would make the construction management graduates more effective in understanding the industry better and also seeing some of the techniques and processes employed by other countries, thereby improving the construction management professional's decision making abilities even when resources may not be amply available. Construction Management is a growing profession in a competitive work environment where all professionals are expanding their work knowledge. They are also enhancing their skill-set globally, therefore it is important for CM professionals to continually enhance the value they bring to an international or foreign company and its construction projects with relevant experiences from international internships and extended foreign industry practices. These represent similar finding with the ones of Engstrom & Jones, 2007[10] who revealed the value of international social work internships for social work education.

Finally, the authors have showcased in this paper that the most effective learning process as a construction management professional may not be achieved by focusing only on any individual component of the learning process, but in fact requires an effective balance between both academic and industrial experience components. The balance can be achieved through valuable internship experiences assimilated from international or foreign construction industry practices.

References

1. Yin, R. K. (1994). Case study research: Design and methods (2nd edition). Newbury Park, CA: Sage Publications.

2. University, G. S. (2016, 1 10). *CEIT*. Retrieved from Georgia Southern University: http://ceit.georgiasouthern.edu/

3. ACCE. (2016). *American Council for Construction Education*. Accredited Baccalaureate Programs. Retrieved from http://www.acce-hq.org/accredited_programs/category/baccalaureate-programs/

4. University, G. S. (2016, January 11). *Civil Engineering & Construction Management*. Retrieved from Georgia Southern University: http://ceit.georgiasouthern.edu/cecm/

5. John, D. (2015, December 12). Managing Director - Dwellco / Dwellco Developments (Pvt) Ltd. (D. John, Interviewer)

6. Mango, B. (2016, January). *YouTube.* Retrieved from Powerline near houses and effect of Electric fields: https://www.youtube.com/watch?v=_bgWFtF5o-E

7. Developers, S. P. (2016). *Skyline Kotte*. Retrieved from Skyline Properties: http://skylineproperties.lk/

8. Architrave, T. (2016). *Team Architrave*. Retrieved from http://www.teamarchitrave.com/team.php

9. Autodesk, Inc. (2016). *Navisworks Manage.* Retrieved from http://www.autodesk.com/products/navisworks/features/all/gallery-view

10. Engstrom, D. & Jones, L. (2007). *A Broadened Horizon: The Value of International Social Work Internships.* Social Work Education, Vol. 26, No. 2, pp. 136–150.