



LEADERSHIP AND COLLABORATION IN PROJECT MANAGEMENT EDUCATION: A CASE STUDY

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This paper discusses about the importance of practical experience and multidisciplinary collaboration in project management success and the apparent lack of emphasis placed on this within the context of university education. It introduces a multidisciplinary approach currently being implemented in the College of Engineering in Qatar University between the departments of Architecture and Urban Planning and Industrial and Systems Engineering. The research items cover specific areas of collaboration and leadership in project management and the collected data was then analyzed to compare Architecture and Engineering students in their approach to the multidisciplinary project and in the proper application of managerial tools for planning scope, time, cost and risk managements through integration, technology and communication. The paper provides strategies of effective practices applied for embedding enterprise and employability in higher education, in respect to the specific project experiences that are mandatory for each project manager. The students' outcomes demonstrate their ability to recognize the dialectic relationship between project management and the multidisciplinary approach to recognize the diversity of roles, needs, values, tools, as they relate their experience to the current environment for project management in Qatar. In other words, the question is: can the multidisciplinary collaboration, applied in higher education, enhance the interaction between theory and practical experience in a field mainly dominated by the theoretical approaches of different disciplines?

Keywords: Multidisciplinary collaboration, Practical experience, Entrepreneurship, Employability, Managerial tools.

1 LITERATURE REVIEW

It is contended that in construction and project management, most of the projects consist of people and institutions from different nationalities, pertaining to various disciplines such as clients, contractors, consultants, and suppliers working in close cooperation for the whole duration of the project. The complexity of interactions between different multidisciplinary disciplines and multicultural teams, which generates conflicts and competition into the managerial procedures, can affect the integration between foreign managers, local clients and international partners. A number of authors have called for more attention to be paid in the impact of multidisciplinary collaboration on project management processes. The literature indicates that different disciplines can influence a variety of project management issues such as: teams (Binder 2010), leadership (De Bony 2010), communication, risk assessment (Zwikael and Ahn 2011), business negotiations (Hurn 2007), international project management (Lane *et al.* 2005) and planning (Zwikael 2009). In Qatar, there are many projects which are performed in

multidisciplinary collaboration with international construction companies and consultants where a correct managerial approach is fundamental for the successful completion. Qatar is open to foreign companies but large and complex projects are often performed in collaboration with local partners. Obviously, there are likely to be many different multidisciplinary approaches and cultural differences between them. For the success of these initiatives the project managers face numerous challenges (Thoms and Pinto 1999), which include multidisciplinary factors such as managing mixed teams pertaining to different disciplines. Specifically, how does the multidisciplinary approach influence project managers' perceptions and utilization of managerial tools? Professionalism starts at the first steps of students' education in the university where the disciplines and their implication starts to model and to affect the student's attitude and behavior, while they are working in collaboration in multidisciplinary team. Can the multidisciplinary collaboration, applied in higher education, enhance the interaction between theory and practical experience in a field mainly dominated by the theoretical approaches of different disciplines?

2 METHODS AND OBJECTIVES

2.1 The Multidisciplinary Research Project

The multidisciplinary research, developed in the College of Engineering in Qatar University, presents a pragmatic synthesis of field experiences which establishes the relationship, similarities and differences between theory and practice in project management (Gray and Larson 2002) and subsequently draws comparisons of the practices relevant to reduce the lack existing between theoretical approach and practical experience in the field. The research further highlights the implications of unawareness and lack of understanding that can affect the effective implementation of project management practice in the Qatar construction environment.

The case study approach, used in the present research, provides students with "real-project" experiences in which students can apply their knowledge and expertise in order to enhance their employability. The approach performs an intensive analysis of an individual work unit, stressing developmental factors in relation to context. Two other approaches were initially considered for use in the present study, although neither was ultimately selected. The first of these, the Action Research approach (Lewin 1946) is a participatory process concerned with developing practical knowledge. The second, known as Work-Based Learning methodology (WBL) (Garavan and O'Connell 1994), is used to reinforce elements in Vocational Educational and Training (VET) (EU's Charter of Fundamental Rights 2013). The reason that the case study approach was selected here was that it seemed best suited to the context and circumstances prevailing in the College of Engineering at Qatar University, where there is a great deal of multidisciplinary collaboration, that strongly contributes to ensure that the hard and soft skills young students acquire are those needed on the labor market. The multidisciplinary research project has been proposed and developed to involve students and instructors specializing in diverse disciplines and aspects of Architecture and Urban Planning (AUP) and Industrial and Systems Engineering (ISE). The intention was to get them to focus on a common assignment as part of their courses, using the tools of project management (Project Management Institute (PMI) 2008) to investigate and develop the students' capabilities and attitudes when working in a multidisciplinary team to successfully complete the assigned project.

The research describes the primary components of the theoretical approach including course program in Construction and Project Management, the integration with other courses, the cooperation required to support the multidisciplinary emphasis, and the establishment of an innovative academic collaboration to provide a technological infrastructure for supporting the program goals. The research project was linked to the Qatar Road Safety Studies Center

(QRSSC), which is a prominent research center in Qatar. The multidisciplinary project title was “Project Management tools and techniques for the development of a multidisciplinary project on Road Safety in Qatar”. The project involved a total number of 76 Engineering students both from the Department of Architecture and Urban Planning (AUP) attending the course ACRT 530 Construction and Project Management and from the Department of Industrial and Systems Engineering (ISE) attending the course IENG 481 Project Engineering) for the Fall 2015. During the semester, the students were requested to apply the project management tools and techniques, working in groups of students, demonstrating their leadership among the group members and using multidisciplinary approaches in order to submit their project deliverables. The multidisciplinary project outcomes were linked to the message of increasing road safety awareness in Qatar. Across the world almost 1.3 million people die as a result of a road traffic crash each year, it means 3,500 deaths every day. The Qatar National Road Safety Strategy 2013-2022 (NRSS 2013) has been developed to reduce the human suffering inflicted by road traffic crashes and sets the path towards an ambitious long-term vision to promote a safe road transport system.

2.2 Road Safety Management

During the course, the students applied the tools of Project Management, within their multidisciplinary groups and they selected some research topics which pertained to the effective road safety management. The aim was to providing results focus, project coordination, research analysis, monitoring and evaluation of the safety status in Qatar, advocacy in rising the safety awareness, knowledge transfer among new generation and improvement in crash understanding in order to avoid accidents. The most selected topics for the students’ researches were linked to the followings:

- **SAFE ROADS:** Roads that are self-explaining and forgiving of mistakes to reduce the risk of crashes occurring and to protect road users from fatal or serious injury. This requires roads and roadsides to be designed, built and maintained to reduce the risk and severity of crashes.
- **SAFE VEHICLES:** Safe vehicles that prevent crashes and protect road users supported by minimum safety standards, inspections and public desire for safer vehicles, through latest safety features and technologies (e.g. seatbelts in all seating locations, multiple airbags, stability control programs, advanced braking systems).
- **SAFE SPEEDS:** Vehicles travel at speeds that suit the function and the level of safety of the road to ensure that crash forces are kept below the limits that cause death or serious injury. This requires the setting of appropriate speed limits supplemented by enforcement and education.
- **SAFE ROAD USERS:** Road users which are competent and compliant with traffic laws. This includes road user education, managing the licensing of drivers and taking action against those who break the rules.

2.3 Raising Awareness and Improving Knowledge

The main goal of the multidisciplinary research project was to increase the public awareness in Qatar towards how road safety is a truly significant matter, in terms of roads safety, vehicle safety, speed safety and people safety which are related with the road regulations. Road safety is a relatively new topic for Qatar and so there were limited information on what measures the

actual condition of safety. The diverse nationalities using roads in Qatar and the road designs in use in the country could mean that research from elsewhere in the world is not directly applicable.

Building an evidence base that provides a detailed understanding of road user behavior can take decades of research and development; however, it is important that campaigns appeal to road users and messages are translated into behavioral change. For example, understanding why people use mobile phones while driving and their attitude towards safety will help to shape the campaigns to combat this dangerous behavior. Crash data in Qatar were collected from the students by the Traffic Police Department and entered into a database for the project analysis. Although the data collected by the police suit the students' analysis and groups researches, the collection of more additional information related to the scene of a crash, would probably help other stakeholders to plan their work more effectively. At present, there are no formal protocols for the sharing of data with the wider stakeholder community who would benefit from using such data to identify priorities and inform the development of road safety interventions. In addition, the research project aimed to investigate any matter related to the road layout and proposed a re-design of the main dangerous selected areas in Doha and in Qatar in order to meet the required road safety measures. The students highlight the value and importance of designing in accordance with the international and local codes and regulations, however, when it comes to road safety, several additions need to be considered to ensure the minimum safety requirements and the expected variations of users' behaviors.

2.4 The Methodology for a Multidisciplinary Collaboration: Data Collection

The students started their project with collaborative and coordinated activities to monitor the current status of road safety awareness in Qatar. Instructors provided course delivery to both groups of students through readings, educational audio and video course assignments and integrated multidisciplinary coordinated lectures delivered during the course. From the initial phase of the selected sites and data analyses, students developed the project reports starting from the description of each character, pertaining to the selected area of analysis. The students agreed their project title and the group name. They coordinated their activities planning the phases of project development which have been discussed and implemented during the multidisciplinary meetings. The discussed decisions have been officially approved by the filled minutes of meeting format, reporting the multidisciplinary collaboration between students, the project's objectives, the methodology and scope of the students' work while they were managing their projects.

2.5 Managerial Tools and Progress of the Work: Data Analysis

A research method and templates were used to enhance the students' multidisciplinary projects and data collections, such as a report template, a minute of meeting and a poster template which were disseminate among the students. All the deliverables were expected to show the students' ability to understand the basic principles of project and practice management, project costs and budget estimations, project activity scheduling, capability to allocate resources, to demonstrate understanding and the appropriate use of correct methods for evaluating and controlling their projects. Starting from the financial considerations regarding the fundamentals of building costs, such as financial feasibility, costs estimation with an emphasis on life-cycle cost accounting, students demonstrated their ability to use the basic principles of architectural practice management such as project planning, time management, risk management, mediation and arbitration and recognized trends that affect practice, including selection of consultants and assembling teams and recommended project delivery methods. Finally, the students were requested to provide recommendations after the project completion demonstrating their ability to

recognize the dialectic relationship between people and the built environment in the GCC/Arab region and to recognize diversity of needs, values, behavioral norms, and social patterns as they related to the creation of the road safe built environment. The students demonstrated their knowledge regarding the professional and legal responsibilities in front to the public and the clients as determined by the registration law, which is an important professional achievement, demonstrating their understanding of the building codes and regulations, the professional service contracts, zoning and subdivision ordinances, environmental regulations, and accessibility laws.

3 DISCUSSION AND RESULTS

Linking the multidisciplinary research with the students' projects outcomes was problematic due to the requested changes in the assessment processes and numerous factors concerned with the differences among the collaborative courses pertaining to two different departments in the College of Engineering. In term of complexity the multidisciplinary project was complicated since a lot of efforts were needed between the groups of students in planning, coordinating and controlling their projects. There were two types of success criteria considered in the assessment process: first one was the project management success criterion that was related to the students' ability to apply professional practice methods and running their project using the appropriate managerial tools and techniques. In particular dedicated rubrics were developed to assess the students' capability to complete the project on time, to overcome any delays that may occur during the progress of the project, and get approvals for the submitted drawings and documents. The second type was the projects' deliverable success criteria that were related to the projects outcomes as a result of the students' project research. The first part was successfully completed by all the groups of students but the second one was partially incomplete and still enhancements and implementations were requested order to achieve acceptable and comparable level of results that can be further investigated. Many groups of students collaboratively have interacted for the whole duration of the project, demonstrating their ability to work in multidisciplinary teams to successfully complete the projects related to Qatar road safety. Particularly the videos submitted to the Qatar Road Safety Studies Center (QRSSC) addressed a number of interesting topics such as raising awareness about the danger of speeding on the road, the importance of wearing safety belt, the importance of using baby car seat (booster) and any other case, as long as it is relevant and useful to road safety in Qatar. All the submitted videos were original, not including pictures or videos from any other sources and they were completely shot in Qatar. The group of students proposed the following actions for raising the road safety awareness and improving knowledge among road users and practitioners as for the following:

- Share available information on accident to identify priorities
- Collect and manage additional data for analysis using special software's
- Develop road safety education in schools with specific campaigns to educate youth generation
- Work with community, to promote road safety messages based in the video developed by the students
- Propose a homogenous road section in the redesign of the road
- Create a sustainable safe road network: separate vehicle types, reduce speed at potential conflict points

- Develop additional researches to understand road safety problems and attitudes in more detail.

4 CONCLUSION

Figures are to be inserted into the text nearest its first reference, and must be referred to within the body of the text preferably before the figure appears. In this paper, we have set out to show how the multidisciplinary collaboration between different department and innovative research approaches can enhance the road safety awareness in Qatar. We have described one method currently being in Qatar University for enhancing the practical experience in project management education. We also have described some of the issues which have arisen in developing this innovative research approach with the aim to enhance the students' leadership within the collaborative groups. In giving this partial view of a complex, long-term project it is not possible to describe the processes of evaluation and the outcomes of the project in more detail, some aspects of evaluation have been referred to briefly and the principle outcomes, in scientific terms, have to be implemented with additional researches. In this project the managerial tools used by students to develop their project activities and the final outcomes are similar to those which might be encountered in normal professional practice. As already pointed out, the students working as a researcher rather than professional practitioner, had the opportunity to use their skills to represent and develop some hypothetical proposition in a form which are widely accessible and suitable for many forms of evaluation. Drawing upon collaboration and leadership, the research concludes that the efficiency of interaction between theory and practice in education and in construction industry needs to be further examined, and the project management and control practices used in theory are worth being explored in practice.

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