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Does Managing Courses Using Course Learning Outcomes Improve Education Quality? A GCC Study

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Abstract
Quality education is the main goal for all universities that strive to succeed and compete in the market. To ensure quality, universities must be able to provide its students and staff with services and tools to help them excel in their (educational) career. Measuring quality of education is not an easy process. Different universities use different techniques to help them determine whether or not their students are getting the proper education. One of the most common ways used in the west is the use of Objectives. Departments place course and program objectives that it works on to ensure that the student is familiar with so that the student can compete in the market after graduating. Universities in the Gulf are no different. Their focus on program learning objectives stems from the ministry of education through all levels of management. This paper sheds light on the process used to ensure quality of education at Al Ain University in United Arab Emirates by providing course material focused purely on Course and Program Learning Outcomes. This paper tries to answer the following questions:

- Does focusing on Course Learning Outcomes help students better manage their course material?
- Does focusing on Course Learning Outcomes improve course quality?
- Does focusing on Course Learning Outcomes help boost student trust in course materials?
- Do using online tools create a better learning environment?

Keywords: Program Learning Outcome, Course learning outcome, Quality management

1. Introduction

TQM started with Shewhart in 1925. Since then, many researchers such as Juran (1974), Crosby (1979), and Deming (1982) contributed to it, making it a fundamental component in every organization. Frost (1969), for example, viewed TQM as a factor that, although not many organizations apply it, will "make all the difference" to an organization's success (p. 105). Meanwhile, services industries (Steingard & Fitzgibbons, 1993, p. 29) considered TQM necessary to improve the quality of goods. Some researchers viewed TQM as an analysis conducted on a rational and politically neutral entity, hoping to improve product quality and customer satisfaction (Crosby, 1979; Deming, 1986; Juran, 1988).

The focus on quality is evident in every company competing in the market in our current time. May it be Japanese managers focusing on incremental and continuous improvements in their factories (Grant, 1985), or US managers moving from focusing on short term goals to long term goals (Hendricks & Singhal, 2000). Companies have begun viewing total quality management (TQM) as a strategic advantage to help them stay as well as compete in the market (Knights & McCabe, 1998). The educational field is no different. Universities shifted their focus from providing education to a quality education by providing its students with the latest educational material as well as enforcing Quality Management measures on all its levels (administrative as well as educational) (Kliucininkas, 2001) (Alnaji, Askari & El Refae, 2016).

Universities in the Gulf are no different. Providing top-quality service to their students as well as being able to measure performance and improve on it (the main definition of TQM) is key for their survival in a world where the number of licensed institutions in the United Arab Emirates alone is 751[1]. One way to ensure that students graduate with the knowledge appropriate to enable them to compete in the market, as well as ensure license renewal from the department of accreditation, is to direct education toward a fixed set of program-learning outcomes (PLOs) that are reviewed by the ministry of education every 4 years. On the administrative level, the university needs to show that it implements "quality dimensions" to insure continuous improvement and monitoring. For the purpose of this research, our focus will be on the educational side and the relationship of Course/Program learning outcomes in ensuring a quality education.

2. Middle East Schools Pay Close Attention to Total Quality in Education

The Arab world tends to focus attention on improving education systems. Jordan (Al-Zboon & Hasan, 2012) explored the degree of implementation of one TQM principle—strategic planning—in government high schools in the Hashemite Kingdom. (Najim, Naimi &Alnaji, 2012) explored the impact of intellectual capital on realizing university goals through faculty and curricula while (Alnaji, 2013) explored the effect of changing from

[1] Number of licensed institutions retrieved the Commission for Academic Accreditation. Retrieved September 9th, 2014. URL: http://www.caa.ae/caa/DesktopModules/InstPrograms.aspx

book focused curriculum to Object Focused syllabi (2013). Al-Absi (2004) noted the importance and need for education managers, including school principals, in strategic planning. The Ministry of Education in the Hashemite Kingdom of Jordan, for example, adopted and enforced strategic planning between 2009 and 2013. In an effort to direct attention to proper strategic planning, the Hashimite Kingdom of Jordan created the "Queen Rania Distinguished Principal Award," which considers principals who practice strategic planning as a key attribute for winning the award (part of the Queen Rania Al AbduUa Award for Excellence in Education 2011; Al-Zboon & Hasan, 2012).

In the United Arab Emirates, providing students with quality education has become the main concern for almost all universities. Some universities are implementing the exit-examination concept as a tool to evaluate student knowledge as well as student readiness to engage in the job market (Al Ahmad & Al Marzouqi, 2013).

In their paper, Rifaat, Ali, Al Sabhan, and Nour (2012) presented an empirical study that examined the effectiveness of Course learning Outcomes (CLOs) in the Management Information System department at the University of Sharjah. Their findings suggested several areas to improve learning outcomes: adding more practice-based learning components, enhancing course material to improve teaching strategies, and using technology and infusin it into the learning process. In their paper, Al Ahmad and Al Marzouqi (2013) addressed the exit examination and the effect of curriculum development on its results. Al-Attar and Abu-Jdayil (2010) presented a systematic process to improve course outcomes in the petroleum engineering program. Besterfield-Sacre et al. (2000) developed a framework for properly writing program outcomes, attaching each outcome to a set of attributes.

3. Program-Learning Outcomes

In the United Arab Emirates, every program in the university has a set of program learning outcomes (PLOs) determined by the university in cooperation with the Ministry of Education. (PLOs are specific statements of program graduates' knowledge, skills, and attitudes that serve as evidence of achievement of the program's educational objectives).

4. Course Learning Outcomes

Course learning outcomes, or CLOs, are skills and objectives a student needs to achieve by the end of the course. Diamond (1989), Lowman (1995), Huba and Freed (2000), and McKeachie (2002) defined CLOs as learning instructors expect students to achieve by the end of the course. Similarly (Alonso, Lopez, Manrique & Viñes, 2008) defined CLOs as knowledge or skills learners need to acquire by the end of a period (usually the end of the class). Many researchers explored the use and benefits of having CLO-focused courses. Discussions can help students better understand and learn topics if they are linked to course objectives (Ellis & Calvo, 2004, 2006; Ellis, Calvo, Levy, & Tan, 2004; Ellis, Goodyear, Calvo, & Prosser, 2008). Bliuc, Ellis, Goodyear, and Piggott (2010) explored the importance of learning outcomes, learning approaches, and styles, describing students' experiences as they take courses in face-to-face and in online environments. Other studies focused on the link between learning approaches and academic performance (Biggs, 1979; Marton & Säjlö, 1976; Trigwell & Prosser, 1991; Watkins, 1983). Hargraves (2000) stated that learning outcomes possess great potential to disestablish the academic, elitist, subject-based curriculum of secondary schooling, which has been and continues to be one of the greatest sources of educational and social inequality in the developed world (p. 30).

5. The Program Learning Outcomes/ Course Learning Outcomes Matrix

A quality-management matrix is used to map the tools to be used in valuating students based on their knowledge and understanding of their CLOs. The matrix also includes the program learning outcomes for that specific program. Table 1 demonstrates Business Administration Program Learning Outcomes and Table 2 demonstrates the PLO/CLO Matrix for one of the management courses taught in the Business Program at Al Ain University for Science and Technology.

Table 1. *Program Learning Outcomes*

Program learning outcomes		Assessment tools (direct)	
1	Demonstrate knowledge and skills of leadership required to effectively and efficiently plan, organize, and control an organization for a competitive advantage	1 2	Quizzes Assignments
2	Demonstrate analytical and critical-thinking skills with direct application to business environments	3 4	Midterm Exam Computer assignments
3	Demonstrate capability to apply global multidisciplinary concepts in business and industry	5 6	Projects Interview
4	Demonstrate skills in the use of technology and computer software applications in business and industry	7 8 9	Case studies Presentation Term Papers
5	Demonstrate capabilities to apply ethical and environmental values to general business principles and practices	10 11	Team Work (Group Discussion) Final Exam

Table 2. *PLO/CLO Matrix*

No.	Course Learning Outcomes	Program outcomes					assessment tools										
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11
1	Understand the concept of total quality management.			✓			✓		✓								✓
2	Differentiate between traditional management style and total quality management style from a: (Behavioral, leadership, tools use, results anticipated and produced)		✓			✓		✓				✓	✓		✓		✓
3	Define key quality processes and establish their performance objectives by applying various quality improvement techniques and suggesting solutions based on TQM models			✓			✓	✓					✓				✓
4	Understand the concept of total quality management models and their role on business performance (total quality maturity model & business excellence model)				✓			✓							✓		✓
5	Enhance the student's understanding of the complexities of statistical analysis and control-chart interpretation and their work-place application	✓							✓						✓		✓
6	Provide skills in diagnosing and analyzing business problems causing variation in manufacturing and service industry processes.		✓	✓				✓									✓

Note: Relevant evidence must be documented in the course portfolio.

6. Study Purpose

This research aimed to shed light on the effort at Al Ain University for Science and Technology, located in Al Ain in United Arab Emirates, to understand what the university is doing to improve its educational quality as well as better manage the education quality it provides for students. The research was conducted on two types of students: management students who were taught based on this CLO/PLO system, given different tools to measure their skills and knowledge, and students who were given courses in the traditional fashion, where faculty focused on completing book chapters, held a first examination, midterm examination, and final examination without focusing on course learning objectives or even program learning objectives. This research answers the following questions:

- Did focusing on CLOs help students better manage their course material?

- Did focusing on CLOs improve course quality?
- Did focusing on CLOs help boost student trust in course materials?
- Did using online tools create a better learning environment?

6.1 Study Environment

The study categorized students in two groups:

Group A: Students who went through the course with extensive focus on the PLO/CLO matrix and were exposed to an online environment to boost their learning experience as well as to help manage and enhance their learning style and expose them to different quality-measurement tools.

Group B: Students who were given the courses in the traditional way. They were not exposed to any innovative ideas or new concepts in teaching. This group experienced the class like any other class they took during the semester.

6.2 The Questionnaire

The questionnaire consisted of four main sections:

1. Part 1: focused on collecting personal information such as gender, age bracket, status, nationality, major, and GPA bracket.
2. Part 2: Student–course interaction. This part focused on different tools students used to interact with course regulations and policies.
3. Part 3: Student–student interaction. This part focused on how students interacted with each other to succeed in the class as well as to explore the different information-technology tools provided them throughout the course
4. Part 4: Student–instructor interaction. This part focused on the different methodologies, tools, and ways students interacted with faculty in class.
5. Part 5: Student–content interaction. This part focused on the different methodologies students used to interact with course content.

Table 3 contains the questions asked in the survey grouped by their objectives.

Table 3. Student–Course Learning Outcomes

Part 2: Student–CLO	
A1	Learning activities were clearly linked to Course Learning Outcomes
A2	Different tools were used to explain different course learning outcomes
A3	The course was tied to concepts I will use in my career
A4	I believe I will do better in courses if they focus on the Course Learning Outcomes rather than the course book only.
A5	I feel that focusing on Course Learning Outcomes will help me compete more in the job market
Part 3: Student–Student Interaction	
B1	Learning activities encouraged me to interact with my classmates
B2	I shared my ideas and findings with my classmates during this course
B3	I helped guide/couch other classmates in improving their work
B4	I was exposed to new tools to learn from due to interacting with my classmates
B5	Focusing on Course Learning Outcomes enabled me to discuss wider range of topics with my classmates
Part 4: Student–Instructor Interaction	
C1	Online tool facilitated my interaction with the instructor
C2	Learning activities encouraged me to interact with my instructor
C3	Instructor clearly stated policies and requirements for course and learning activities
C4	Instructor actively participated in the course.
C5	Instructor clearly stated Course Learning Outcomes every week and with every Learning Activity
C6	Instructor used email extensively to communicate with me about course material
Part 5: Student–Course Content Interaction	
D1	I found course content unique
D2	Course contains different types of measurement tools to evaluate my work
D3	Course material was presented in different formats (powerpoint, use cases, website links, videos…etc.)
D4	I found online course content easy to work with
D5	I find interacting with course content online much easier than face to face
D6	Linking course content to course learning outcomes makes it easier for me to learn the course content

Study Results and Discussion

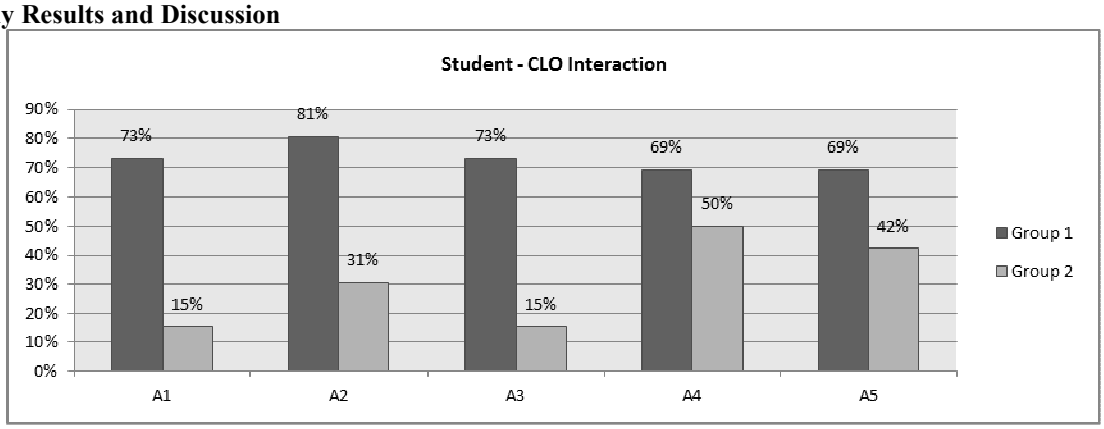

Figure 1. Student–CLO interaction.

When asked if students believed CLOs were tied to concepts that would benefit them in their careers, 73% of Group A members agreed compared to only 15% from Group B. This disparity was due to the fact that CLOs are structured to serve the course as well as the community, by focusing on CLOs students were able to gain more trust in the course and link what they learn in class to the work environment (or their career if they are employed). Similarly, 69% of students in Group A believed CLOs would help them better compete in the job market compared to only 42% from Group 2. Focusing on CLOs helped introduce concepts and topics that are closer to the real world, enabling students to better engage the concepts and understand them. Students in Group 2 did not get this advantage because their courses focused on book chapters, centered more on theory than application. Of Group A, 81% of students agreed that different tools were used to help them understand course objectives compared to only 15% of Group 2 students. This is due to the fact that Group A was exposed to more advanced technology and was asked to search for "out of course material" content to support what they learned whereas Group B focused only on course material (books and slides).

From these results, it's clear that focusing on CLOs when teaching a course enables students to better interact with course objectives. Exposure to an external environment can boost their self-efficacy when competing in the job market.

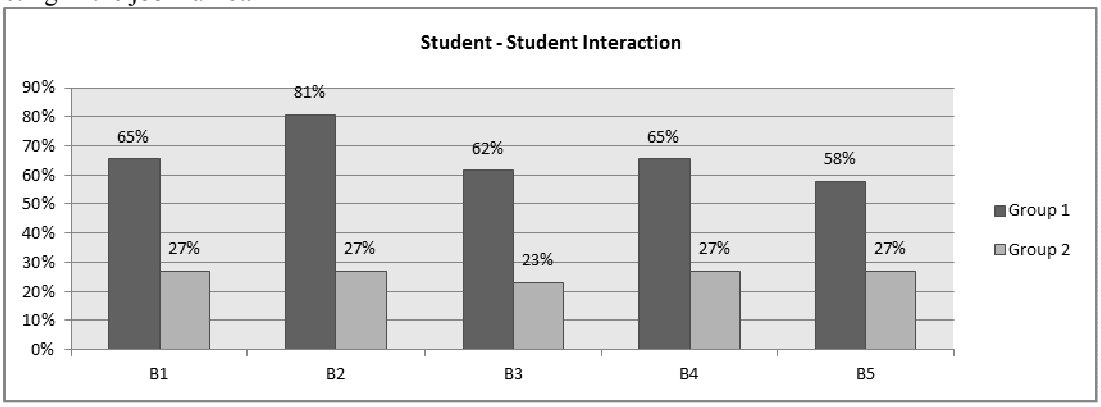

Figure 2. Student–student interaction.

Because CLOs are formatted to serve course content, university mission/vision, and community activities, they help support and improve student interactions with each other. As shown in Figure 2, 65% of Group A students agreed that CLOs encouraged students to communicate with each other; only 27% of students in Group B agreed. This is due to having students more interested in sharing work experience in class and work notes than just course notes. Using CLOs to build an environment enabling students to share their work experience and not just the course material helped increase student-student interaction. When asked if students shared their work experience in class, 81% of Group A agreed compared to only 27% of Group B. Finally, 58% of students in Group A were able to discuss a wider range of topics compared to only 27% of Group B students. This is due to the fact that focusing on CLOs opens the door for faculty to introduce new and different topics for students to communicate with each other about.

Focusing on CLOs enabled students to gain knowledge from each other, creating an environment more student centered than teacher centered. That focus also gave students the ability to widen the range of topics learned from the course.

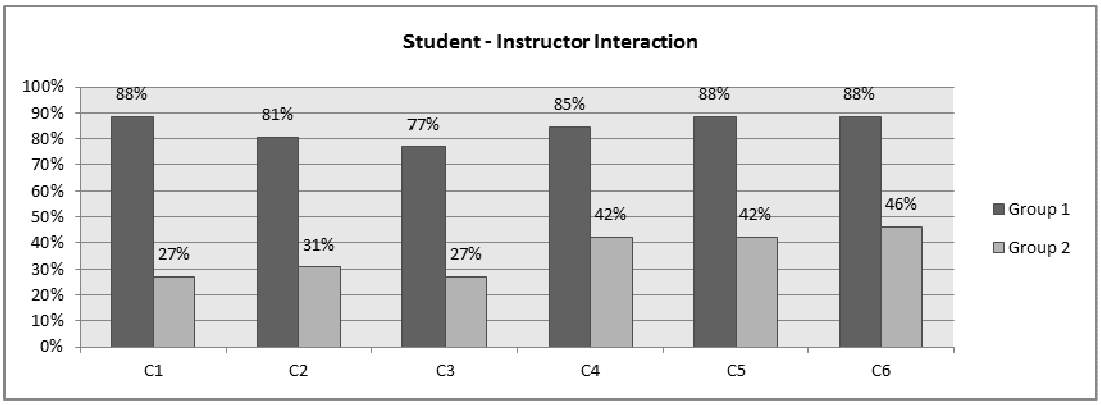

Figure 3. Student-instructor interaction.

To ensure the integrity of the research, both Groups A and B were introduced to an online system where course material was posted. In the case of Group A, course material was continuously update, discussion threads were available for students to post their experience and retrieve course material while in Group B, faculty simply posted course material and syllabus but did not provide their students with any external activities (since their course focused on one main source, which is the assigned book for that course). As can be seen from Figure 3, student–instructor interaction in Group A was much higher than in Group B. 88% of students in Group A found course instructions clear compared to 42% in Group B. Even though the instructions were the same in both cases, the online tool showed the instructions at every level of the course whereas Group B was only exposed to instructions in the syllabus distributed at the beginning of the course. When asked whether their instructor was active in the class, 85% of Group A students agreed compared to only 42% from Group B. This may due to the continuously updated content in the course shell due to focusing on Course Outcomes and External activities (for Group A) while Group B simply focused on the Syllabus and office hours as the only means for student to interact with faculty.

Presenting Course Learning Outcomes in an online environment enabled faculty to help boost student interaction and creativity in the class. Students jumped on the opportunity of sharing their work experience and course material in an online environment giving them access to the instructor 24 hours a day (via email and by posting questions in the threads).

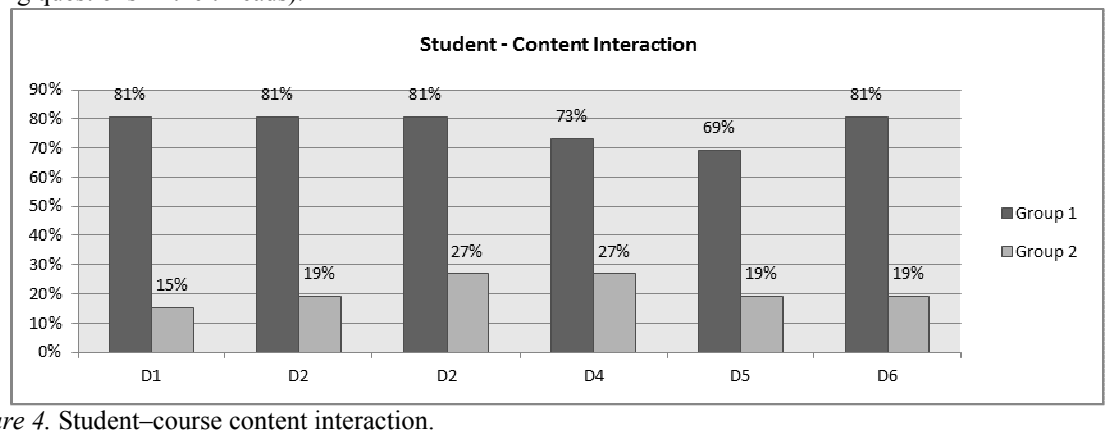

Figure 4. Student–course content interaction.

Student–content interaction showed the greatest differences between the two groups. Because content was tied to CLOs, in turn, are linked to different real-life problems, 81% of students in Group A agreed that the course contained different measurement tools whereas only 15% agreed from Group B. Focusing on CLOs when presenting course content enables faculty to use unique tools to measure student performance, including quizzes, practice interviews, and presentations in which students relate their experiences to their classmates. Students in Group A who had extensive exposure to the online environment found interacting with course material online far easier than in a face-to-face manner. Furthermore, 81% of students in Group A agreed that online tools helped link CLOs to course material, whereas only 15% from Group 2 agreed. Having an online environment enables faculty to share multimedia content to support CLOs and tie them to course content.

7. Recommendations

Course Learning Outcomes are considered the pillars of any course. The focus on a Book alone is not enough to provide students with up to date material, as well as material related to the job market. CLOs are reviewed every semester to ensure they are up to date and to help the student focus on the department strategic plan and its

Program Learning Outcomes. Using an online tool helps boost the concept of focusing on CLOs as well as ensure course quality monitoring to make sure all students are evenly receiving the same information and knowledge. Focusing on CLOs also helps boost student confidence in what he is learning and to understand what the job market expects from him when he graduates. Based on the results shown in this study, the following recommendations are made to help better improve our educational system:

1. The assigned book for the course should not be the only source of information for the class. Introducing students to research papers, case studies, and external activities, can help boost student confidence and help students apply what they learn to real life situations.
2. Faculty should focus on Course Learning Outcome in every activity they ask students to complete. Linking CLOs to activities help ensure that the student graduates with the needed knowledge to compete in the job market
3. Instructor-student communication is very important, opening the door for students to interact with instructors, not just during office hours or in class, is very important to help boost student understanding of course material being taught
4. Using different evaluation techniques is very important to help cover student knowledge in the different CLOs. Quizzes and assignments alone are not enough to ensure that the student communicates well, or is able to exchange knowledge with his/her peers. Other tools, such as presentations, simulated interviews, can help boost student confidence.

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