Impact Of ELMS-Based CL On The Quality Of Accounting Education

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Abstract:
The study aims to determine the impact of Cooperative Learning using Blackboard Learn (previously known as the Blackboard Learning Management System (LMS)) on the quality of accounting education following the International Education Standards (IESs) and the Saudi Arabian Education Evaluation Commission (EEC) standards. The study adopts an experimental method, applying Blackboard LMS Cooperative Learning on a division of Community College at King Khalid University and comparing two different divisions. The first uses the classroom-based Cooperative Learning technique (for one) and the traditional classroom lecture technique (for the other). The results demonstrate the impact of Blackboard-Based Cooperative Learning on the quality of accounting education. However, this impact is more due to the nature of Cooperative Learning than the type of Cooperative Learning.

Keywords: Cooperative Learning, Electronic Learning Management System, Accounting Education, Quality of Accounting Education, Blackboard, Accounting

Introduction:

Several studies have spotted many shortcomings of accounting programs to meet the requirements of the profession, particularly in our modern business environment, which is characterized by dynamism, competitiveness, and Information and Communication Technology control of financial transactions (Albrecht & Sack, 2000; Nelson et al., 2002; Burnett, 2003; Bui & Porter, 2010; Alwayiga et al., 2010; Coetsee, 2010; Lindsay, 2012; Tucker & Schategger, 2016). These studies have revealed a covert agreement between employers and practitioners that accounting education does not meet labor market requirements. There is a gap between accounting education and practice because accounting education programs focus more on knowledge quantity at the cost of neglecting many essential practical skills. Such skills have become a professional requirement and have been stressed by several studies. For example, Francis (2014) maintains that the radical changes in the business environment have reflected on the accounting profession and that an accountant is obliged to offer, communicate, analyze and act as a partner within a strategic management team. Al-Htaybat, Alberti-Alhtaybat, and Alhatabat (2018) emphasize the need for accounting programs to include many skills related to the accounting profession, such as problem-solving and dealing with IT. Reyneke & Shuttleworth (2018) confirm that numerous changes in the workplace that include the changing business environment, legislation, globalization, contemporary trends in information technology, and the economic crisis have affected the required skills and attributes which employers are now looking for in accounting graduates. Concerning employers' expectations about accounting profession requirements and their perceptions of the adequacy of accounting education, Paguio & Jackling (2016); Naidoo, Jackling, and Prokofieva (2011) reported that there are gaps between the importance that the employers attached to teamwork and communications skills and the extent to which graduates have taken these skills. Jackling & Long (2009) conclude that teamwork, leadership, communication, and interpersonal skills are essential for a practical accounting graduate.

Many accounting professional bodies criticized the focus of the accounting curriculum on knowledge and negligence of some skills which have become essential for the graduates. For example, the American Institute of CPA (AICPA)[1] suggests including skills in presentation, communication, interpersonal relationships, and technical skills integration in the accounting subjects. E-learning can support these skills through appropriated technology and trained instructors in E-learning practices (150-Hour Requirement, 2018). These criticisms have led professional organizations to pay attention to accounting education and develop a set of rules and regulations aimed at organizing and standardizing accounting learning and setting the general requirements for accounting education programs. The most notable of these attempts include the

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[1] https://www.aicpa.org/

International Accounting Education Standards Board (IAESB)[2] – of the International Federation of Accounting (IFAC). It has issued a set of International Education Standards (IESs) that laid global foundations for accountant education and skill development and formed the bases on which higher education institutions and universities can design, develop, and implement accounting education programs.[3] These standards help develop guidelines for modifying and managing the accounting education process in institutions in different countries. IFAC highlights the importance of these standards to reduce international disagreements over accountants' qualifications and work, particularly in this era of globalization, facilitate the movement of certified accountants, and provide standards to measure the commitment of educational institutions to IESs requirements (IFAC, 2015). IAESB issued eight criteria. IES1 tackles the initial requirements for accounting education programs; IES2-6 is concerned with the development of public accounting education, whereas IES7 has to do with ongoing vocational education; andIES8 relates to the professional requirements for auditors (IFAC, 2015). Thus, IESs deal mainly with a) accounting education programs, b) Initial Professional Development (IPD) for prospective accountants, and c) Ongoing Professional Development of existing accountants.

There is no doubt that IESs, particularly those related to IPD for prospective accountants, have provided clear guidance on the professional requirements that an accounting student must obtain during his/her academic period, clarifying the learning outcomes of accounting education programs and dividing them into three main areas: Technical Competence, Professional Skills, and Professional Values, Ethics and Attitudes. However, IESs contributions remain linked to the teaching methods used by universities in accounting education. Traditional methods alone cannot be relied on to produce graduates capable of practicing accounting as stipulated by the above requirements. Therefore, universities must rely on teaching methods and practices that consider IESs requirements. In this regard, Lubbe (2014) points out that the development of accounting education must include modern teaching techniques that can enable accounting students to absorb multiple types of knowledge and professional skills. Also, Pitulice & Manea(2015) confirm that educational technology has always been one of the most important topics discussed in accounting education research in Romania in the past couple of years. Araugo & Júnior (2012) opine that it is essential to develop teaching techniques used in accounting education to meet the professional accounting needs to deal with both multiple and unique accounting events. Ezeagba (2014) and Mohammed (2011)[4] conclude that the teaching methods used were one of the leading causes of repeated failures of students in the "Financial Accounting" course in secondary schools in Nigeria.

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[2] https://www.iaesb.org/
[3] www.ifac.org
[4] Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1854322

Concerning education techniques, Cooperative Learning (CL) is one of the most common educational techniques dealt with by educational research, particularly about learning outcomes in several areas. Studies of Gambari, Shittu, and Taiwo, (2013); Adebayo & Judith (2014); Gambari& Yusuf (2014); Alabekee & Samuel (2015) indicate a positive impact of CL on learning outcomes. CL, according to Slavin (2011), is a student-centered educational method in which students are included in the teaching process in order for them to understand and learn the content of a course. The main point of excellence of CLis its ability to support learning outcomes in various dimensions by exploring the internal links between teaching, education, content, and context (Dyson & Casey, 2012). It has been pointed out that CL can improve students' cognitive aspects, social relations, and creativity (Call &Shehzad, 2015) and foster a positive attitude towards learning (Johnson & Johnson, 2008), social relations (Johnson & Johnson, 2005), and self-esteem and solidarity (Slavin,2010). Asakawa et al. (2016) believe that CL increases creativity and self-confidence, making learning exceed the knowledge dimension that many teaching techniques focus on**.** As regards accounting, the Accounting Education Change Commission (AECC)– which is affiliated with the American Accounting Association (AAA)– contends that CL is not only a way to motivate students towards active learning but is also a way to encourage them to work in teamwork (AECC, 1990).

The colossal technological developments in communications and information technology sectors and the disposition of educational institutions to employ technology to support the educational process led to the emergence of ElectronicLearning Management Systems (ELMSs), which came as platforms for high-level e-learning applications designed to manage education and training processes and programs (Tassi, 2016). Many ELMSs came to exist, such as Blackboard, Connect ED4, Emdodo, Desire2Learn Moodle, Sakai, Ilios, and Edx. These systems apply many remote classroom practices with the potential to expand the number of participants in practical and theoretical lessons, reduce the required resources, and develop the practical experience of the parties in the educational process using virtual space compared to real classrooms (Schuster & Glavas, 2017). Although ELMSs was first used in 1998 voluntarily to improve teaching activities and learning processes (Lwoga & Kombe, 2015), many universities now treat these systems as requirements. In the USA, for example, the ELMSs application rate is 90%, and 95% in the UK (Muries & Masele, 2017). In Saudi Arabia, universities must apply one ELMSs to all courses in all fields. Considering their wide variety of properties and features, ELMSs create expansive areas to use and apply many modern classroom practices and techniques (ibid). Thus, it can be said that the use of ELMSs may enhance CL effectiveness, particularly concerning the various aspects of accounting education quality in addition, of course, to knowledge. From this perspective, this study seeks to investigate and identify the impact of applying ELMSs CL on accounting education quality in light of IESs requirements on the one hand. On the other

hand, it also considers the requirements of Standard (4) of the Saudi Arabian Education Evaluation Commission (EEC), which focuses on education and learning. It categorizes them in five areas: knowledge, cognitive skills, accountability, interpersonal and information technology and communication skills, and psychomotor.[5]

Therefore, the study question can be formulated as follows "Q: Do blackboard-based ELMS impact the quality of accounting education?"

The contributions of the present study are not limited to being considered one of the first studies that attempt to determine ELMSs impact on the quality of accounting education according to international and national requirements. The results of this study may serve as a guide to the activation of different Blackboard-based ELMS techniques at Saudi universities. It also allows studying various ELMS techniques and their impact on multiple variables that improve accounting knowledge and skills.

The study is divided into six sections. The first is the introduction following by the literature review and the development of hypotheses. In the third, we allocate the study's methodology, and then, in the fourth, expose the results. Finally, in the fifth and sixth sections, we present the discussion of results showing the conclusions, study limitations, and future research, respectively.

Literature Review and Development of Hypotheses

The literature review will be directed towards two crucial dimensions - the first deals with CL issues and their impact on the quality of accounting education. The second address CL issues through ELMSs (ELMSs CL) to develop hypotheses that form the basis for answering the study problem and research question.

Cooperative Learning and its Impact on the quality of accounting education
Studies on CL in accounting education started more than two decades ago. Many of them (Cottel & Millis, 1992; McCombs & Van Syckle, 1994; Elliott & Jacobson, 2002; Paisey & Paisey, 2010; Woodley et al., 2011) have presented different perceptions about CL in accounting. Tackett et al. (2001) assert that the various approaches to CL played an essential role in accounting education in American universities during the 1990s. A study by Woodley & Tam (2011)[6] describes and analyzes the positive effects of this educational technique on business students in Hong Kong. Another study (Liu, 2012) shows that accounting-related CL can contribute to students' satisfaction with the practice of what they have learned in the work environment in an attempt to build a mathematical model that explains the degree of satisfaction with CL programs. The study involved 192 students in 14 CPA training organizations in southern China and found overall satisfaction with CL programs, especially with CPA certification, compared to

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[5] http://www.eec.org.sa

[6] Available at:
www.waceinc.org/philly2011/conference_proceedings/Refereed%20Papers/Australia/Woodley%20Tam%20Engaging%20IndustryHK_paper_2010.pdf (accessed January 08. 2022)

university education. A study (Opdecam & Everaert, 2012) shows an impact of the Learning Team approach on student achievement compared to traditional teaching (which is based on classroom lecture): this study, which was applied to financial accounting students (Level I), reveals that students' satisfaction with this method. Hwang et al. (2005;2008) also conclude that CL is more influential on student performance than traditional education, comparing the results of two student groups who have studied using these two techniques. The Learning-Team comparison approach has been used to explore the impact on student achievement by many studies (Gabbin & Wood, 2008; Hosal-Akman & Simga-Mugan, 2010; Lancaster & Strand, 2001), yielding mixed results. While Hosal-Akman & Simga-Mugan (2010) emphasize CL impact on student achievement, Gabbin & Wood (2008) and Lancaster & Strand (2001) conclude that there is no difference between accounting Learning Teams taught through CL technique with those taught adopting the traditional education technique. Comparing Learning Teams in an "Accounting Information Systems" course, a study(Riley& Ward, 2017) confirms that CL has no significant impact on students' results, despite their satisfaction with CL. Baird & Munir (2015) identified CL efficiency according to a seminar-based approach to accounting education. Data obtained from 3rd-level accounting students compared with students taught using other teaching methods. The results confirm that CL has a positive role in activating professional accounting skills among students. Several studies (Sargent & Borthick, 2013; Irving, 2011; Carter& Jones, 2011) attempted to address the impact of different teaching techniques, including CL, on the outputs of accounting education rather than accounting knowledge. Alhebri (2017) stresses that senior-level students in accounting departments in Saudi Arabia believe CLto be one of the most effective educational techniques in promoting knowledge and cognitive skills. Conducted on a sample of high school students in Nigeria, Irnuwa, Abdullah & Hassan (2017) emphasize the positive impact of CL on the quality of accounting education from the perspective of student scientific performance in Financial Accounting courses.

Reviewing CL-related accounting efforts, one can note that there are only a few studies on its impact on the quality of accounting education. Alhebri (2017) has relied on preliminary data prone to student bias. Other studies (Sargent & Borthick, 2013; Irving, 2011; Carter & Jones, 2011) dealt with CL within various teaching and learning techniques. Most other studies focused on CL's impact on accounting knowledge, and despite its importance, this aspect remains only one dimension of accounting education quality. Previous studies presented here did not address the Saudi accounting education environment – except for Alhebri (2017), reflecting the beginning of the increased attention paid to the quality of education. Consequently, and based on previous studies, the following study hypothesis can be constructed and includes CL impact on all dimensions of accounting education.

H1: Cooperative Learning has a significant impact on the quality of accounting education

1) **Cooperative Learning through ELMSs (ELMSs CL)**

Based on a survey distributed to a group of students and teachers at a Russian university, Dvoryanchiko et al. (2016) stress that ELMSs techniques and activities have a great potential to be used as an alternative to classroom technologies. Katz & Earl (2010) describe education in the community across electronic networks as a learning space through which all educational means and techniques can improve education for students, teachers, administration staff, and educational institutions. Depending on the systematic review approach, Al-Samarraie & Saeed (2018) study results revealed shreds of evidence supporting the use of specific cloud computing tools for certain collaborative learning activities, and this study has considered Learning Management System (LMS) tools as one of the e-learning tools during the conduct of the study. Johnson & Johnson (2014) contend that CL is one of the most critical technologies to meet the challenges of education in the new century in which technology controls many aspects of life; however, the study does not show how to benefit from this technology electronically. Miquel& Duran (2017) use a 'peer learning network' to implement and sustain CL through a three-tier system of students, teachers, and schools. Duran & Utset (2014) try to provide an entire course of Distance CL. Mahoney et al. (2016) maintain that ELMSs have increased colleges' teaching aids and techniques based on descriptive analysis. In their study on 'work-integrated learning,' Schuster & Glavas (2017) believe that the use of technology in education provides an opportunity to expand the number of participants in scientific experiments and reduce the resources required, and increase the chances of developing students' practical experience through the use of electronic/virtual space compared to real places. Muries & Masele (2017) conceive three critical variables affecting the efficiency of ELMSs use: i.e., perceived relevance, ease of use, and organizational management support. In a study conducted on student performance at the University of Lagos, Obadara (2014) reveals that ELMSs in Teaching positively impact students' educational performance. Munira, Baroutiana, Younga, and Carterba (2018) confirm that the flipped classroom - which deems as a form of embedded e-learning - with cooperative learning supported the students to extend their communication skills, especially communication skills, enabling build team works, critical analysis skills and problem-solving skills.

The above review reveals a deficiency of educational literature in general and accounting literature in particular for studies related to the investigation and analysis of the impact of ELMSs-based CL on the quality of learning. Most studies have been limited to the description of ELMSs and the potential contributions to learning in general. This scientific scarcity of ELMSs-based CL literature motivates this study to

tread the path of research of the impact of this learning technology on the quality of accounting education, leading to the following hypothesis.

H2: ELMSs-based CL has a significant impact on the quality of accounting education

Method

- **Participants**

The participants in this study are the students of a course, "Principles of Financial Accounting I," taught in Semester II of the academic year 2017/2018 at Community College (Muhayil Asir, King Khalid University, Saudi Arabia). The study included 97 students, distributed by the College Registration Section into three divisions: Division A (34 students), Division B (32 students), and Division C (31 students). Distribution is based on study hours and class timetables for each student. There is no difference between students in terms of gender, as all students are males, and the average age is between 20-21 years. All divisions are also subject to Blackboard-based ELMS required in all university courses in Saudi Arabia, with its minimum level being "learning support," which ranges between 15-25% of the course.

- **Procedure**:

There was a need to deal first with possible differences between the sample respondents concerning learning outcomes – i.e., the outputs on which the study depends for judging the quality of accounting education, knowledge, cognitive skills, interpersonal and accountability skills, and information technology and communication skills. For this purpose, a) there was a review of students' accumulative averages for previous courses and b) students' cognitive skills outputs in business mathematics and Statistics. The review determined the number of student posts in learning teams and the scores of e-activities. There were no significant differences between the students in all of the above. To avoid teacher's impact – as indicated by Riley & Ward (2017) – the three divisions were taught by the same teacher, and the students had the same course units, lessons, questions, tests, assignments, e-activities, and the exact division measurements. Intervention strategies were made through two CL sessions: compulsory CL sessions (both classroom and ELMS types) and optional CL sessions.

Regarding compulsory CL sessions, Division C took ELMS CL sessions through student learning teams and forums dedicated to addressing accounting problems involved in Blackboard ELMS. The Wiki was set on each group, activating monitors' numbers of posts per student (Wiki had been activated for all divisions). Division B was subjected to compulsory classroom CL sessions. Division A was taught through traditional classroom lecture only, without any compulsory sessions. Optional sessions were open to the three divisions at the end of each lecture, and we reused to raise an accounting problem, and

students were given the freedom to choose between self-education or CL through student-based groups. This measure aimed to assess students' interaction with teamwork. Whether through Blackboard ELMS or in-class, Compulsory CL sessions addressed problems designed through Team Game Tournament and Student Team Achievement Division (Gull and Shehzad, 2015). All the divisions have also been taught through traditional lectures, including Blackboard-ELMS CL sessions for Division C and classroom-based CL for Division B. The measurement of learning outcomes was done by dividing the outputs into four groups according to IESsand Saudi Arabian EEC.[7] Knowledge is the first dimension and was measured by the direct results of students in the course where IES2 (Accounting Knowledge) was integrated directly into the courses as Papageorgiou & Halabi (2014), Halabi et al. (2010), and Liu (2012) have focused on defining knowledge dimension through student achievement in accounting courses. Therefore, the measurement of this output depends on students' results in the written tests (i.e., three tests: first mid-term test, second mid-term test, and the final test). Tests are unified for all divisions and inclusive of all accounting subjects learned and explained inside the classroom.

Regarding cognitive skills, IES3 focuses on the mastery of computational skills, mathematical and professional judgment skills, and problem-solving. In addition, Lusher (2006) and Opdema & Everaet (2012) stress five working skills, 'Generic Skills,' most importantly, problem-solving and professional judgment skills. This dimension was measured through scores identified for computational skills within the written tests (i.e., ten marks) and marks for problem-solving through Blackboard ELMS in the exam hall (i.e., twenty marks). Accountability and interpersonal skills are represented, according to IES3, by teamwork and in terms of differences in verbal and written communication skills, which are the same skills emphasized by Lusher (2006). Therefore, this dimension was measured by the number of optional teamwork participation/comments in which a student partook and the number of times problem-solving initiatives were launched. Casey & Kerk (2014) add that the number of comments on classmates' posts, whether in class or through Blackboard ELMS, is a significant indicator for assessing this dimension. The information technology and communication skills dimension was measured through the degree of e-activity (i.e., twenty marks), as well as through the ability to deal with ELMS, measured by the number of errors in the process of sending assignments, duties, and activities, and the time required to perform an e-activity or e-duty.

- **Statistical tests**:

The study was based on a t-test of two independent samples to determine the differences between divisions, where the differences between CL classroom technique and traditional

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[7]Neglecting the fifth standard, psychomotor skills, which are outside the framework of accounting learning.

lecture technique were measured to show the impact of CL and to measure the differences between Blackboard ELMS CL and traditional lecture technique to determine the impact of Blackboard ELMS CL. In addition, the differences between the CL classroom technique and the Blackboard ELMS CL technique were measured to determine whether the impact of the Blackboard ELMS CL technique is due to CL nature or CL type.

Results

Table 1 shows the results of the t-test of two separate samples. The table reveals descriptive data and difference analysis between every two divisions separately. The results for the knowledge dimension show that the averages for the three divisions concerning the first mid-term test ranged from (6.38) for Division A and (5.43) for Division C, with standard deviation values of (1.79), (2.11), (2.23) for the three Divisions A, B, and C, respectively. The analysis of differences reveals no differences between any two divisions. As for the second mid-term test, the averages came to be (6.41), (7.28), and (6.61) for the three divisions, respectively, and the standard deviations were also (1.92), (1.78), and (2.14), respectively. The differences between any two divisions are also not statistically significant. Differences emerge in the final test between the two Divisions A and B, where t–value came to be (-2.05) at a signification level (0.05), as well as between the two Divisions A and C, with a t-value of (-2.78) at a signification level of (0.01) as well.

Table 1: Results of independent t-test of analysis of differences between divisions

Measurements of Study	Metadata of Study Measurements						Analysis of Differences					
	Division A		Division B		Division C		Divisions A & B		Divisions A & C		Divisions B & C	
	Mean	S.D	Mean	S.D	Mean	S.D	t-value	Sig.	t-value	Sig.	t-value	Sig.
1st mid-term exam	6.38	1.79	5.81	2.11	5.43	2.23	1.18	0.23	1.79	0.07	0.60	0.55
2nd mid-term exam	6.41	1.92	7.28	1.78	6.61	2.14	1.90-	0.07	0.39-	0.61	1.34	0.18
Final exam	30.78	6.07	34.16	6.74	36.27	8.89	2.05-	*0.05	2.78-	**0.00	1.52-	0.25
Degree of computational skills in exams	4.5	2.31	5.66	2.51	5.87	2.18	2.02-	*0.05	2.56-	**0.00	0.471-	0.46
Degree of accounting problem solving	10.53	4.32	13.25	5.27	15.91	4.09	2.23-	*0.02	6.79-	**0.00	2.23-	*0.03
# optional work teams which student joined	3.32	1.72	5.53	2.87	6.32	2.29	6.47-	**0.00	8.92-	**0.00	1.21-	0.23
# problem solving initiativesmade by student	0.53	0.46	1.47	1.32	2.10	1.79	3.68-	**0.00	4.75-	**0.00	1.58-	0.11
# comments on classmates' posts	0.85	0.79	2.51	1.68	3.43	2.26	5.04-	**0.00	6.30-	**0.00	1.96	*0.05
Degree of e-duties & e-activities	12.47	3.31	13.43	4.57	15.19	2.82	0.98-	0.32	3.54-	**0.00	2.02-	*0.05
#errors in sending e-duties & e-activities	3.44	2.61	3.53	2.45	1.16	1.21	0.144-	0.88	4.45	**0.00	4.84	**0.00
average time required to complete an e-activity or e-duty	29.73	6.07	27.59	6.54	18.81	4.98	1.379	0.17	7.87	**0.00	5.98	**0.00

*Significant at 0.05

** Significant at 0.01

The two Divisions B and C have no significant differences. The averages for those tests ranged between (30.78) for Division A and (36.29) for Division C, with standard deviation values of (6.07), (6.74), and (8.89) for the three Divisions, respectively.

As for the dimension of cognitive skills, there are differences between Division A and Division B in terms of computational skills degree in the exams and accounting problem-solving degree, with t-values of (-2.02) and (-2.32) for both measurements, respectively, at a significant level of (0.05) for both measurements. There are also significant differences between Division A and Division C for both measurements, with t-values (-2.56) and (-5.96), at a signification level (0.01). The differences between Division B and Division C are confined to the degree of accounting problem solving, with a t-value of (-2.23) and a signification level (0.05). The averages for the three Division are (4.5), (5.66), and (5.78), respectively, for the degree of the computational skills in the exams, as are (3.32), (5.53), and (6.32) for the degree of the accounting problem solving for the three Divisions, respectively.

The accountability and interpersonal skills dimension include three measures: the number of optional work teams students joined, the number of problem-solving initiatives made by the student, and the number of comments on the classmates' posts. The three measures showed significant differences between Division A and Division B, with t-values (-6.47), (-3.68), and (-5.04), respectively, at a significant level (0.01). Differences also existed between Division A and Division C, as t-values for the three measures came to be (-8.92), (-4.72), and (-6.30), at a significant level (0.01). The differences between Division A and Division C were limited to the number of comments on peer-reviewed posts, with a t-value (-2.23) at a signification level (0.05). The averages of optional work teams which students joined were (3.32), (5.53), and (6.32) for the three Divisions, respectively, and the standard deviation values were (1.72), (2.87), and (2.29), respectively. The averages of problem-solving initiatives were (0.53), (1.47), and (2.10) for the three Divisions, respectively, with standard deviation values of (0.46), (1.32), and (1.79) for the three Divisions, respectively. The average scores for several comments on classmates' posts were (0.85), (2.51), and (3.43), respectively, with standard deviation values of (0.79), (1.68), and (2.26).

Information technology and communication skills dimension include three measures. The first is concerned with e-duties and e-activities degree, realizing an average of (12.47) for Division A, (13.43) for Division B, and (15.19) for Division C, with standard deviation values of (3.31), (4.57), and (2.82) for the three Divisions, respectively. The second measure focuses on the number of errors in sending e-duties and e-activities, with averages ranging between (2.45) for Division C and (3.53) for Division B and standard deviations of (1.21) for Division C and (2.61) for Division A. The third measure is the average time required to complete e-activity or e-duty, with averages ranging between (29.73) for Division A and (18.81) for Division C, with standard deviations of (6.07) (6.54) and (4.98) for the three Divisions,

respectively. Differences about this dimension were evident among Division A and Division C, with t-values of (3.45), (4.45), and (7.78) for the three measures, respectively, at a signification level (0.01). Differences also emerged between Division B and Division C, with t-values (-2.02), (4.84) and (5.98) for the three measures, respectively, at a signification level of (0.05), regarding the degree of e-activities and e-duties, and at a signification level of (0.01) for the number of errors in sending e-duties and e-activities and the average time required to complete ane-activity or e-duty.

The above results illustrate CL impact on some accounting education outcomes: cognitive skills, accountability, and interpersonal skills. It also impacts the knowledge dimension regarding the final exam, as there were apparent differences between the CL technique and the traditional classroom lecture technique. The previous result supports the validity of the first hypothesis, i.e., CL has a significant impact on the quality of accounting education. The results also reveal an impact of Blackboard ELMS CL on the quality of accounting education, as demonstrated by the differences between this technique and the traditional lecture technique. The differences are evident in most of the measures of the study and the dimensions of the quality of accounting education. However, there are no differences between Blackboard ELMS CL and CL technique, making it difficult to attribute the resulting impact to CL type as much as to the nature of CL per se. Exceptions include Information technology and communication skills measures, accounting problem-solving measures, and comments on classmates' posts. Here, the impact of Blackboard ELMS CL is clear, given the differences between the CL technique and Blackboard ELMS CL. It is possible to accept the second hypothesis, which provides that Blackboard ELMS CL impacts the quality of accounting education, emphasizing that this impact is primarily due to CL nature and not to CL type, whether classroom-based or through Blackboard ELMS.

Discussion

The above findings reveal some impacts of Blackboard ELMS CL on the quality of accounting education. The impacts are manifest in the knowledge dimension based on the final test measure. This measure shows two critical points:

a) The first is that CL impacts – whether in class or through Blackboard ELMS – take time to surface. That can perhaps explain the disappearance of such impacts in the first midterm test held six weeks after the semester or in the second midterm test held in the twelfth week. This point may also explain why CL impact does not appear on accounting knowledge in some studies, such as Riley & Ward (2017), Lancaster & Strand (2001), and Gabbin & Wood (2008). The current study reveals that CL impact appears more evidently through time: its impact becomes more and more evident as long as this technique is used. In other words, time is a crucial factor in the relationship between CL and accounting knowledge.

b) The second point is that CL impact may be due mainly to CL nature rather than CL type. Therefore, the use of technology in the application of CL may not have a

significant impact on accounting knowledge due to the absence of any differences between classroom-based CL and Blackboard ELMS CL. Generally speaking, CL– classroom-based or ELMS-based – can impact accounting knowledge. This result is consistent with studies Gokkurt et al. (2012), Zakaria et al. (2010), Inuwa et al. (2017), Alhebry (2017), which conclude that CL has an impact on accounting knowledge, as manifest in student achievement.

Cognitive skills also reflect the impact of CL, i.e., in, Degree of computational skills in exams and degree of accounting problem-solving. That is consistent with the conclusions of studies like Gull & Shehzad (2015), which confirm that CL improves the cognitive aspects of education through its two-group experiment. This result is also consistent with Asakawa et al.'s (2016) emphasis on CL's role in supporting creativity and self-confidence and Alhebri's (2017) conclusions that CL is one of the most effective strategies to promote creativity from the perspective of accounting students in Saudi universities. Although CL impact on creative skills is evident in the current study, the impact of Blackboard ELMS CL is evident only in the students' scores in accounting problem solving, and this may be due to the high interaction demonstrated by students with Blackboard ELMS CL, compared to traditional classroom-based CL. Such interaction is reflected in students' comments on peer posts, a measure of accountability and interpersonal skills. The evident CL impact on accountability and interpersonal and communication skills is powerfully demonstrated by the differences between CL and traditional lecture techniques. That can be attributed to CL being a social technique because it brings students closer to each other to present their views without reservations. That is consistent with the Accounting Education Change Commission (AECC) view that CL is a way to encourage students to work in groups and interact with each other (AECC, 1992). It also agrees with what the conclusions reached by Gull & Shehzad (2015) that CL outperforms other modern teaching techniques in terms of improving social relations, which are in turn the focus of attention of accountability and interpersonal skills dimension. It also agrees with Alhebri's (2017) results, which maintain that CL impacts accountability and interpersonal skills compared to other teaching techniques. Blackboard ELMS CL has evident impacts on the number of comments on peer posts. That is due to the virtual space students can have for making comments: i.e., a student can comment on any the answer of any other student, whether or not they are both from the same group, and can also comment generally through Wiki or forum-based quick responses. Such a situation prompts us to accept that the impact of Blackboard ELMS CL as a form of CL is partially evident in the dimension of accountability and interpersonal skills and that the impact is mainly due to CL nature.

The nature of cyberspace and the students' interaction with Blackboard ELMS have influenced the information technology and communication dimension, and this impact is due to the type of CL through the electronic media – i.e., Blackboard ELMS – rather than of the nature of CL per se. This result is evident by the absence of differences

between traditional education and CL in the classroom. The lack of relationship between CL in the classroom and information technology and communication dimension is consistent with the conclusions reached by Alhebri (2017), which points out that modern education techniques – including CL –do not significantly influence information technology and communication dimension about the quality of accounting education. The findings of the study about CL impact on the quality of accounting education are consistent with many studies in education in many disciplines – e.g., Alabekee & Samuel (2015), Adebayo & Judith (2014), Gambari & Yusuf (2014), Hassain & Tirimizi (2013), Gambari, Shittu &Taiwo (2013). Despite the specificity of accounting education, the impact of Cl is clear and is mainly attributable to the nature of CL, and not to its type, whether based on classroom or through Blackboard ELMS, except for information technology and communication dimension. Apart from the fact that the impact of CL is due to nature or type, the study results confirmed the findings of Mahoneyet al. (2016), implying that the use of ELMSs increases the efficiency of teaching techniques in general. In addition to the special effects of CL nature – which are manifest in the use of CL through Blackboard ELMS – the type of Blackboard ELMS CL has influenced all the measures of information technology and communication dimension.

Conclusions

The study has aimed to determine the impact of CL through ELMSs on the quality of accounting education. We use an experimental approach on the students of the "Principles of Financial Accounting I" course at Community College (Muhayil Asir, King Khalid University, Saudi Arabia) to achieve this goal. Students classified into three divisions were exposed to three teaching techniques: traditional classroom lecture, classroom-based CL, and Blackboard ELMS CL. This classification aimed to see the impact of the nature and type of CL on learning outcomes, as the impact of CL nature is realized as soon as there are differences between any of the two CL techniques and the traditional classroom lecture technique. By contrast, the impact of the type of Blackboard ELMS CL requires the existence of differences between this technique and the classroom-based CL technique. The study included eleven measures categorized into four dimensions covering educational outcomes defined under "Education Quality Dimensions." Firstly, the results confirm that Blackboard ELMS CL has an impact on the quality of accounting education in all dimensions, except for the knowledge dimension, which requires time to achieve impact as the results of the impact appeared in the end-of-term exam only and did not appear in the two mid-term exams. That implies that time is a fundamental factor in the relationship between CL and the quality of accounting education. Secondly, the results reveal that the impact is mainly due to CL nature being a cooperative learning process, rather than to CL type, be it traditional or through ELMSs, except information technology and communication dimension, the impact of which is evident in favor of CL type.

Recommendations

The study results confirm a clear impact of CL, both classroom-based and through ELMSs, on the quality of accounting education. That, in turn, confirms the effectiveness of CL as a teaching technique that should be considered during drafting descriptions of accounting courses in the colleges of business and administrative sciences and community colleges in Saudi universities. Another point that should pay attention to is the activation of ELMSs CL. It is more influential on the quality of accounting education, making it mandatory in accounting departments to adopt integrated e-learning so that at least 50% of the course activities are given electronically. A final point that needs to focus on is the increase of e-activities that involve accounting problems as they prompt students to participate and present their views in CL groups. Such participation may be more effective when using ELMSs.

Study Limitations and Future Research:

The primary study limitations include the inability to expand the study to cover more than one semester, as the students-sample may not continue to join the next accounting course in the same divisions. An important point is students' low motivation to pursue education, compared to increased dropout rates. Besides, there is no database in the Quality Assurance Unit at the CommunityCollege to provide clear and accurate learning outcomes for each accounting course. It is recommended to conduct studies to determine the impact of ELMSs CL under integrated / comprehensive e-learning conditions compared to supportive e-learning.

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