

The Effects of Computer-supported Collaborative Learning on E-commerce Applications Professional Competence

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Abstract: Utilizing “Blog” on Global Logistics Management curriculum, this research aimed at exploring the influence of computer-supported collaborative learning (CSCL) on enhancing business-majored university students’ customer relationship management and e-commerce applications professional competencies. In addition, how student’s self-feeling about professional skills/knowledge (competence) through the use of Blogs was also investigated. The research adopted a quasi-experiment of unequal controlling group design. The researchers selected two classes of senior students in a technological university in Taiwan as subjects. One class was assigned as the control group, and the other was experimental group. Twenty two students were assigned to the experimental group with CSCL treatment that took two periods per week during nine weeks, while twenty eight students were in the control group with traditional teaching activities.

The researcher adapted the Scale of Professional Competence to collect experimental data on business and management majored university students. Data collected were subsequently analyzed by the independent t-test, and paired samples t-test. The results indicated that the experimental group scored significantly higher than the control group on the total score of items: customer relationship management, and E-commerce applications. The results can provide instrumental guidelines to improve the future technological education.

Keywords: Computer-supported collaborative learning, CSCL, blog, global logistics management

1. Introduction

A major consequence of the introduction of Information and Communication Technology in education consists in the opportunity to keep track of the events occurring during the learning process that is to record them and maintain their history (Persico, Pozzi and Sarti, 2009). For instance, the prior studies done by Yang and Huang (2008), Chen (2008), and Kidwell et al. (2004) provided the similar conclusion. Hence, computer-supported collaborative learning (CSCL) is becoming more and more popular at all educational levels. This research was proposed to examine the influence of collaborative learning combining with industry-oriented curriculum through the use of “Blog” on technological students’ the professional competency of industry (Yeh, 2010), and how students through Blogs was also investigated after the teaching activities. To effectively achieve the objectives of this study, the researchers proposed the main research questions regarding the CSCL into Global Logistics Management Curriculum strategy instruction on business and management majored students' e-commerce applications and customer relationship management professional competencies as follows:

1. Is there any significant difference between the control and the experimental groups on students' customer relationship management and e-commerce applications professional competency?
2. Is CSCL effective and successful for improving business and management majored students' customer relationship management and e-commerce applications professional competencies?

2. Literature Review

2.1 Computer-supported Collaborative Learning

The advance of computer science in the recent years paves a way toward a new style of collaborative learning (Yang et al., 2011) which refers to an instructional approach in which students work together in small groups toward a common goal (Dillenbourg, 1999). Hence, computer-supported collaborative learning (CSCL) is becoming more and more popular at all educational levels; and especially in higher education (Strijbos, Kirschner, & Martens, 2004). CSCL was developed by Koschmann (1996) to improve students' learning achievement in a computer and network-supported collaborative learning environment (CLE) that it is focusing on using computer techniques to enhance interaction, communication, coordination, and interactivity within a learning group (Zurita & Nussbaum, 2004).

After having some researchers track and analyze CSCL, the research aimed at exploring the influence of collaborative learning combined with global logistics management curriculum through "Blog" on enhancing business and management majored university students' professional competency. So and Brush (2008) also found that collaboration was a factor in the study of perceived learning through blogging in a blended health education course, which students had high levels reported.

2.2 Professional Competences of Business and Management Majored University Students

The concept of "competence" was first proposed by David McClelland (1973), the psychologist of Harvard University. European Training Foundation (ETF) suggests that competence criterion is the interface between technological and vocational education and job market. Chisholm and Ely (1976) found more detail about professional competence that includes professional knowledge, professional skill, and professional attitude. In order to explore the required professional competences for business and management majored university students, Yeh et al. (2010) defined professional competences by using modified Delphi technique. The professional competence were identified which include a total of seven core competences, it including (1)production and operation management; (2)marketing management; (3)customer relationship management; (4)human resources management; (5)financial management; (6)accounting and statistical analysis; (7)e-commerce applications. These core competences can help university to prepare the appropriate curriculum and guide business and management majored students to learn the industry required skills.

3. Methods

3.1 Design and Sample

The method of design experiments was used (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003) which meant that these designs were collaboratively developed with quasi-experimental pretest/posttest design with comparison groups aimed at exploring whether CSCL would help Taiwanese university students learn Global Logistics Management Curriculum more effectively. The whole research has been conducted for nine weeks from September to November in 2010. Two classes of 50 senior class Business and Management majored students of Meiho University in Taiwan. They were divided randomly into two groups, a control group ($n=28$) who were taught their global logistics management curriculum by traditional learning method and an experimental group ($n=22$), who were taught the same materials with the use of CSCL method. According to students' gender, the students in the each group were matched and then were randomly assigned to the two groups. For this purpose, each student in the population is assigned a number. A set of numbers is then randomly selected with units assigned those numbers being included in the sample.

3.2 Instrument

The questionnaire survey of this study adapted the scale of graduate's professional competence of business department in technological and vocational institutes from Yeh et al. (2010). This study selected e-commerce applications and customer relationship management competencies as targets to examine CSCL's effects on core skills/knowledge (competencies). This questionnaire was assessed on a 5-point Likert-type scale: completely possess, possess, neutral, non-possess incomplete possess. The remainder of the items recorded demographic data (i.e., gender). The reliability of the questionnaire was acceptable (Cronbach's alpha 0.91). Data were analyzed using SPSS at an alpha level of 0.05. Descriptive analysis of the independent t-test, and paired samples t-test were also conducted.

4. Results and Discussion

In order to measure the participants' professional competency proficiency in the pre-instructional phase, a pre-test was taken by the participants and post-test was compared and analyzed via an independent t-test to see if there was a significant difference between the two groups, as shown in Table 1.

Table 1. Independent Samples t-test on the Customer Relationship Management and E-commerce Applications Professional Competencies Proficiencies Post-test Result

Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Sig.</i> (two-tailed)	<i>t-value</i>
<i>Pre-test</i>					
Experimental	22	7.05	1.59	.440	.780
Control	28	6.71	1.36		
<i>Post-test</i>					
Experimental	22	8.50	1.43	.006	2.854**
Control	28	7.29	1.56		

Note. ** $p < .01$

According to Table 1, in the pre-test, results of the independent t-test indicated that there were no significant differences between the two groups ($t=.780$, $p=.440$, $p>.05$). On the other hand, in the post-test, the result indicated that the students in the experimental group performed significantly better than those in the control group on the professional

competencies proficiency post-test. In other words, CSCL may yield positive results in facilitating the participants' professional competencies proficiency. In order to respond to the first research question, the participant's performances on the professional competencies post-tests were examined and then analyzed via the independent t-test to see if there was any significant difference found between the control and the experimental group. The results can be seen in Table 2.

Table 2. Comparison of the Professional Competencies' Variables between the Control and the Experimental Groups

Variable	Experimental (n=22)		Control (n=28)		Sig.	t-value
	M	SD	M	SD		
1. Customer relationship management	4.27	.631	3.75	.799	0.013	2.58*
2. E-commerce applications	4.23	.922	3.54	.881	0.010	2.68*

Note. * $p < .05$

According to Table 2, the data was collected and analyzed from the seven variables post-tests. The results, from variable 1 to variable 7, showed significant differences between the two groups' professional competencies post-tests. The results revealed that the experimental group outperformed significantly the control group on the professional competencies post-tests. Therefore, the results indicated that the students in the experimental group learned the core competence efficiently after the Global Logistics Management Curriculum instruction combined with CSCL.

5. Conclusions

This study investigated the effects of CSCL combining with Global Logistics Management Curriculum through "Blog" on Business and Management Majored students' professional competencies. After the teaching activities, how students' self-feeling about professional competencies through using Blogs was also investigated. Following are the major findings and results summarized according to the research questions of present study.

1. Researchers, in this study, attempt to examine the effectiveness of CSCL into Global Logistics Management Curriculum strategy instruction to improve university students' professional competencies. The questionnaire test was conducted before and after the experiment. The data gathered from each test instrument was statistically analyzed via independent t-test, and paired samples t-test to see if any significant difference occurred between the experimental and the control group. Concerning the core competencies, the research findings showed that the experimental group scored significantly higher than the control group on the total score of the customer relationship management, and e-commerce applications.
2. In addition to comparing the difference between the two groups, the data were also analyzed through paired samples t-test in order to see if any significant progress had been made within the experimental group. Students in the experimental group performed significantly better than the students in the control group. This has indicated that the learners benefited from the CSCL strategy and activities on their professional competencies. It demonstrates that research finding of Yang and Huang (2008), Chen (2008), and Kidwell et al. (2004) that integrating information technology into instruction had significantly improved learners' performance. Based on these results, CSCL strategy and activities are recommended to administrative organizations, universities and follow-up teachers as a technological education teaching model.

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