ORIGINAL ARTICLE

Collaborative Learning and Communication Technology in Graduate Students' Education

Background: Cooperative and Collaborative Learning approach with online programs is useful in response to rising demand for university educational system. This study evaluates the use of internet and computer in collaborative teaching and learning process for post graduate nursing students.

Method: This is a correlation descriptive study. The population in the study is based on census sampling of graduate nursing students of Kerman University of Medical Sciences (n =57). The data was collected through questionnaires once, and then it was analyzed by Pearson correlation, i.e. t-test.. The content validity of the questionnaire was determined. The reliability of these tests Cranach's alpha was calculated for active and Collaborative Learning (ACL) (r = 0.84), as well as electronic communication (r = 0.91).

findings: The results indicated a mean score of Collaborative Learning at (76.2±13.3). Between needed and used electronic resources, there was a statistically significant correlation (P <0.001).

Conclusion: Students in Collaborative Learning, experience a wide range of information and training skills in various aspects; therefore, it is recommended for dynamic and driven students to develop Electronic Communications and cooperation through regular planning, coordination and preparation.

Key words: Communication Technology, Collaborative Learning, Education, graduate students

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التعلم بشكل مباحثه و استخدام تقنيه المواصلات في مجال تعليم الطلاب

المقدمه: نظراً الى تزايد المتطلبات التعليميه في الدراسه الجامعيه قد يكون من اللازم الإلتفات الى المباحثه و المشاركات عبر النت . هدف هذه الدراسه هو تعيين مستوى اثر المواصلات الكترونيه في مجال التعلم و التعليم عند طلاب الطب.

الأسلوب: إن هذه الدراسه هي من النوع التوصيفيه المترابطه . تمت الدراسه على ٥٧ عدد من طلاب كليه التمريض و تم تجميع المعلومات عبر استمارات قد تم تأيدها عبرالقواعد الإحصائيه. تم استخدام ضريب الفا كرونباخ لاستمارة (التعلم الفعال و الذى فيه مشاركه) (r=84.0) و المواصلات الألكترونيكيه (r=91.0) . تم تجميع المعلومات و استخدم ضريب بيرسون في تحليل المعطيات .

النتائج: اشارت النتائج الى أن معدل علامه الطلاب في مجال التعليم الفعال كان ٢.٧٧٦±٣.١٣ و لوحظ ارتباط ذو قيمه بين علامه مستوى التعلم عبرالمواصلات الكترونيكيه و المجموعه المرتبطه (p<05.0)

الإستنتاج: إن الطلاب في مجال التعليم بشكل مشاركات عندما يستخدمون تقنيه المواصلات الإلكترونيكيه يحصل عندم مثابره قويه عند تحليل المعلومات و من اجل هذا الهدف نوصي بالإهتمام في تنظيم و برمجه برامج تساعد الطلاب في استخدام تقنيه المواصلات الإلكترونيكيه.

الكلمات الرئيسيه: تقنيه المواصلات، التعلم المبتنى على المشاركه، التعليم، طلاب المرحله التكميليه.

یادگیری مشارکتی وفن آوری ارتباطات درآموزش دانشجویان تحصیلات تکمیلی

زمینه و هدف: رویکرد یادگیری مشارکتی و همچنین برنامه مشارکتی آنلاین در پاسخگویی به تقاضای رو به افزایش آموزش دانشگاهی مفید است. هدف این مطالعه تعیین نقش ارتباطات الکترونیکی در فرایند آموزش و یادگیری مشارکتی دانشجویان تحصیلات تکمیلی بوده است.

روش: این مطالعه از نوع توصیفی همبستگی است . نمونه گیری به روش سرشماری و مبتنی بر جامعه پژوهش، n=۵۷ نفر از دانشجویان تحصیلات تکمیلی پرستاری دانشگاه علوم پزشکی کرمان بوده است. ابزارگرد آوری داده ها پرسشنامه خود گزارش دهی بودکه روایی آنها از نوع روایی محتوا تعیین گردید. برای تعیین پایایی ضریب آلفا کرونباخ به ترتیب پرسشنامه یادگیری فعال و مشارکتیactive and collaborative learning (ACL) (r=۰/۸۴) و ارتباطات الکترونیکی (r=۰/۹۱) محاسبه شد . داده ها در یک نوبت جمع آوری گردید و در تجزیه و تحلیل داده ها از ضریب همبستگی پیرسون، آزمون تی استفاده شد.

یافته‌ها: نتایج نشان داد که که میانگین نمره یادگیری مشارکتی دانشجویان پرستاری مقطع تحصیلات تکمیلی ۱۳/۳ ± ۷۶/۲ بود. بین نمره کل سطح یادگیری مشارکتی با ارتباطات الکترونیکی و زیر گروههای آن ارتباط معنی‌دار آماری وجود داشت (P<۰/۰۵) .

نتیجه‌گیری: دانشجویان ضمن یادگیری مشارکتی با استفاده از ارتباطات الکترونیکی برای تجربه طیف وسیعی از اطلاعات تلاش می کنند به منظور پویایی و هدایت دانشجویان، توسعه ارتباطات الکترونیکی از طریق برنامه ریزی منظم و آمادگی برای این مهم توصیه می شود.

تعلیم کو موثر بنانے میں گروپ اسٹڈی اور انفارمشین ٹکنالوجی کا کردار ۔

بیک گراونڈ: گروپ اسٹڈی اور آن لائین اسٹڈیز یونیورسٹی تعلیم کے تقاضوں کو پورا کرنے کےلئے کافی مفید ثابت ہوئي ہیں۔ اس تحقیق کا مقصد تعلیمی سرگرمیوں اور طلباء کی گروپ اسٹڈیز میں انٹرنیٹ کے کردار اور افادیت کا جائزہ لینا تھا۔

روش: یہ تحقیق کرمان کی میڈیکل یونیورسٹی میں انجام دی گئی اس میں نرسنگ کے ستاون طلباء نے شرکت کی ۔ طلباء کوسوالنامے دئے گئےتھے جن میں ان کی گروپ اسٹڈیز اور انٹرنیٹ سے استفادہ کے بارے میں پوچھا گیا تھا۔ اس سوالنامے کے جوابوں کاتجزیہ پئیرسن اور ٹی ٹسٹ سے کیا گیا۔

نتیجے: اس تحقیق کے نتائج سے معلوم ہوتا ہےکہ کرمان میڈیکل یونیورسٹی کے نرسنگ اسٹوڈنٹس کے اوسط نمبر 13/3 +_ 76/2 تھے۔ گروپ اسٹڈیز اور انٹرنیٹ کے استعمال سے پڑھائي میں کافی بہتری آئي تھی۔

سفارش: میڈیکل طلباء گروپ اسٹڈی اور انٹرنیٹ سے استفادہ کرتے ہوئے وسیع معلومات حاصل کرتے ہیں۔ اسے معلوم ہوتا ہےکہ طلباء کے لئے انٹرنیٹ سے استفادہ کرنے کی غرض سے جامع منصوبہ بندی کی ضرورت ہے تا کہ انہیں تعلیم حاصل کرنے میں آسانی ہو۔

کلیدی الفاظ: انٹرنیٹ، گروپ اسٹڈیز، کرمان یونیورسٹی ۔

INTRODUCTION

Active participation of students in education and training is necessary for the educational content of today's academic world (1). Collaborative Learning is a joint intellectual effort by students and teachers in the learning experience (2). For the last two decades, what has facilitated Collaborative Learning has been the development and application of computer and network communication technology. Cooperation and group activities, as well as, a rich source of information in the electronic environment through education, have provided high quality learning for all students (3-5). The use of electronic resources in the field of medical science has been very impressive, and the operation of digital libraries of Iran is one of the greatest scientific investments over the past few years (6). Fasce quoting Bonk (1995) writes, "No other technology as a network environment has played a leading role in training methods". He believes that by the advent of the Internet, e-learning has led to two major approaches; namely, the development of interactive and Collaborative Learning models, and "Broad dissemination of information through the network" (7). Active learning, and inquiry, via electronic communication between students and teachers together, occur in Collaborative Network Learning (CNL) (8). In a work group, each person's learning depends on interaction and response to other members including talks, face-to-face discussions, online chats, etc.(9); therefore, the learner seeks information on the net, and as a result, reconstructs and interprets data, and finally converting it into knowledge in a group setting (10). In another research by Manning and colleagues, six potential competencies were identified, known as Quality and Safety Education for Nurses as (QSEN) .One of these competencies, i.e. the interactivity of the Internet and information, is deemed necessary (11). However, NLN (2002) estimated that, to teach in nursing schools, and to meet the rising demand for professionals, and to prepare more than 40,000 such experts, the new nurse educators are required. Therefore, to maintain the quality of training, emphasized participatory and partnership approach to teaching in nursing education program is desirable (12). In addition, Chang and Liu (2008) reported, collaboration among students and teachers can act as a rich source of information during learning and will provide a higher quality of education (13). Among the benefits of effective teaching are, learning dynamic, cooperation, benefiting from the content and activities of several experienced teachers, as well as, group activities (14, 15). Plus, Mcdonald's The Brook Field signifies that "…students often perceive the energy generated by the training team, and the team working together with faculty, provides opportunities to experience a range of different phenomena, and provides them skills training…" (15); Although, in virtual world, using cooperative learning was limited to classroom and lecture meetings, and interactions with peers.

Today, the uses of cyberspace - such as the ability to record, plan and execute ideas as a great opportunity for Collaborative Learning is evolving in a virtual world (16). The Computer-Supported Collaborative Learning (CSCL) is, in fact, a training pattern of an electronic learning environment. Using technology for supporting group interaction in Collaborative Learning, assessment and feedback of CSCL systems, interaction monitoring, adjustment and programming tasks, and the role of law enforcement groups to gain useful knowledge, is relatively new (16,17) ; besides, leading academic theses (e.g. MS Project), is another example of learning in higher education. The management of the thesis, the number of students working with one or more teachers, the partnership approach and monitor advisors on individual work, getting feedback from other students, talking to a member, all, modify and create roles, and allow flexibility in group activities (19, 20).

There are two important reasons for this method of teaching and learning, social and educational. The development of mental skills such as reasoning and problem-solving, and on the other hand, interpersonal attitudes can be counted as the positive effects of this method on education (21). Besides, being a student, giving immediate feedback, learning self-directed, non-synchronous discussion, collective problem-solving, using evidence-day training course content, accuracy, improving science students and teachers, reducing the need for in-person visits, reducing the time to learn, not interfering in the work plan, plus other benefits, like increased motivation for learning, are among the educational and social advantages of this approach (22, 23).

Considering the rising number of graduate students and teaching staff, using cyberspace in Collaborative Learning programs can respond to the students' demand. However, few researches have been done on this particular area in Iran. The present study aims to determine the effect of electronic communication in Collaborative Learning processes on graduate students.

METHODS

This is a descriptive correlation study. The sampling was conducted in a population of 57 nursing graduate students (Masters and PhD) in School of Nursing and Midwifery of Kerman University of Medical Sciences with 87% response rates. The relevant research ethics, including informed consent, maintaining anonymity, confidentiality, and the right to withdraw at any time, has been met. This study was conducted without funding specific organizations. Data collection was performed only once through a self-reported questionnaire with 20 questions about Active and Collaborative Learning (ACL) and an electronic communication questionnaire, containing 20 Likert-Type questions (from "very = 5" to "never = 1"). The latter has three subtests inquiring about Electronic Communications in Collaborative Learning (7 questions), use of electronic facilities (6 questions), and a willingness to use e-resources (7 questions). Content validity of the questionnaire was determined by authentic sources and survey of experts. For the reliability, Cronbach's alpha coefficient were calculated ($r = 0.84$, and $r = 0.91$ for the Active and Collaborative Learning questionnaire and electronic communication questionnaire, respectively). The analysis of the data was carried out by Pearson correlation coefficient and t-test.

Table 1. shows the mean and standard deviation of variables based on a Collaborative Learning research units

variables	Collaborative Learning		
	n(percent)	Mean (SD)	P value
(Gender)			
Woman Man	45 (78.9) 12. (21.1)	76.48 (11.65) 75.2 (19.02)	0.49
(Marriage)			
Single Married	51 (89.5) 6. (10.5)	87.8 (11.41) 74.8 (12.9)	0.023*
(Occupation)			
No Yes	3. (5.3) 54 (94.7)	90.66 (17.09) 75.41 (12.8)	0.053 *
(Residence)			
Native Dorm	41 (71.9) 16(28.1)	76.97 (13.15) 74.25 (12.4)	0.49
(Grade)			
Masters PhD	55 (96.5) 2 (3.5)	75.3 (12.7) 97 (2.1)	0.08 *

* Significant P value

RESULTS

The results indicated that the mean score of Collaborative Learning in graduate nursing students was (76.2± 13.3); the readiness to use electronic capability signified (15.6± 4.7), and the necessity of electronic communication in Collaborative Learning indicated (25.7 ±7.75).The application of our e-learning training program has been significant (20.9 ±6.5) (Table 1). A significant relationship was found between the Collaborative Learning and electronic communication subgroups; namely, preparation, requirements and application possibilities of electronics (Table 2). Students moderately expressed their willingness to prepare themselves for the use of electronic facilities, as well. Between Collaborative Learning and application possibilities of electronics, a statistically significant correlation was observed ($P < 0.001$) (Table 3).

Educating students by using Collaborative Learning, motivational strategies, and effective management skills in order to improve the academic achievement of students is an important responsibility of teachers in nursing schools (15). The results marked that the mean score of Collaborative Learning for nursing graduates was (76.2± 13.3) with the minimal score of 20 and the maximum score of 100, which was at a moderately good level. Since the foundation of Graduate Nursing (Master and PhD) School of Nursing and Midwifery Razi of Kerman University (since 1369 for Master's degree, and 1386 for PhD), investigating

Table 2. Correlation between the mean score of students in Collaborative Learning groups under the Electronic Communications

Electronic Communications	Collaborative Learning		
	Mean (SD)	The correlation coefficient	P value
Importance of electronic communication in Collaborative Learning	25.7(7.75)	0.29	0.02*
Use of electronic facilities	20.9 (6.5)	0.51	0.001 *
Preparation for the use of electronic facilities	15.6 (4.7)	0.77	0.001*
Total score	62.3(3.6)	0.41	0.05 *

* Significant P value

Table 3. compares the mean and standard deviation of Collaborative Learning based on general education students and Electronic Communications

Electronic Communications	Collaborative Learning		
	Active Learning	Passive learning	t test
	Mean (SD)	Mean (SD)	P value
Need for Electronic Communications	26.15 (6.7)	25.65 (8.1)	0.84
Use of electronic resources	22.23 (8.05)	20.54 (6.02)	0.41
Training in the use of electronic facilities	18.61(4.09)	14.79 (4.63)	0.01 *
Total score	82.6(10.66)	74.3(13.16)	0.048 *

* Significant P value

the lesson subjects was a common approach. Educational activities in most courses required using evidence and investigative resources by individual and group learning. As a matter of fact, this approach was not unexpected. Results of Wilkinson et. Al. (2004) illustrated that the students enjoy internet, and computer application flexibility, high control over the quality of learning and teaching materials, as well as, the effect of on-line Collaborative Learning on learning outcomes (25). Electronic Communication in Collaborative Learning, help students promote each other by sharing information on their developments (27, 28, 29). According to this study, the readiness to use electronic capability (15.6± 4.7) with a minimum score of 7 and a maximum of 35, the average score, emphasizes the necessity of Collaborative Learning through Electronic Communications (25.7±7.75). It can be said that, with the above-mentioned scores from the application of E-Learning program, students were at a good level. The result for students' score with a minimum of 6 and maximum of 30 was reported as (20.9±6.5). Students, also, admitted the need for the use of internet communications in graduate school; they expressed some electronic Collaborative Learning barriers raised by the students themselves, lack of adequate preparation for sourcing, no on-time contact groups, and the stress caused by dealing with computer problems, lack of the required content, and, finally, prescription of the printed content which are all in agreement with the results of Wilkinson's study (25).

In a study by McDonald & Walters (2009), presented in the fall of 2006, Collaborative teaching in a virtual environment promoted collaborative activities among Master students of Nursing at Michigan. The nature of the interactions and instructional design in nursing education programs is emphasized through regular online formats and collaboration. The benefits of collaboration in education include sharing experience, in addition to taking advantage from the content, and some teachers' experience (15) .The study results indicated that Collaborative Learning and preparing for the application of electronics depend on the type of education. There was a statistically significant difference (P <0/05); mean of Collaborative Learning as a way of teaching (Active, Passive) was (82.6± 10.6) and (74.3± 13.6), respectively. Readiness to use electronics based on teaching method (Active, Passive) was reported (18.61± 4.09) and (14.79 ± 4.63) which means it was higher for the subjects of the Active teaching method than the Passive teacher-centered ones. Perhaps it can be explained by some past passive learning habits, during education, plus insufficient understanding of how to engage actively in the learning process and how to use new technology (Table 3). In this study, students were introduced to a computer learning environment, could receive massive information from each other and were in contact with the instructor via email. The Internet provides several facilities for teachers in order to overcome time and distance, in order to take steps to deliver information to students. Teachers can help students to use the Internet to communicate with other learners (3, 5, 30). Using new technology, training and information technology in education is so important that some experts believe a teacher who has mastered these methods, enjoys a highly scientific rank (31). In this regard, the results of a meta-analysis study by Sitzmann and colleagues in 2006 showed that learning by adding e-Learning to other teaching methods contribute more than 6% to personal training and the learning outcomes. Although the students were identically satisfied with both, it has been reported that training through web has had a continuous feedback of 19% which means it is more effective than verbal instruction alone (32). Collaborative e-learning as a mechanism of integrating the new learning and teaching diverse ways to bring together students and faculties will cause higher satisfaction. This method establishes the advantages of both physical and electronic learning more flexibly in teaching - learning process (5, 33). The proposal to seek Collaborative Learning with face-to-face interaction and electronic communication as a way to provide more effective education in medical universities should be seriously considered. On the other hand, teachers and planners are expected to increase engagement and ways of motivating students by using computers and the Internet to further efforts.

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