Cypriot Journal of Educational Sciences

Volume 11, Issue 3, (2016) 119-125

http://sproc.org/ojs/index.php/cjes/

Examination of studies on technology-assisted collaborative learning published between 2010-2014

Ahmet Arnavut *, Department of Computer Education and Instructional Technology, Ataturk Faculty of Education, Nicosia, Mersin 10 Turkey, Cyprus

Fezile Özdamlı, Department of Computer Education and Instructional Technology, Ataturk Faculty of Education, Nicosia, Mersin 10 Turkey, Cyprus

Suggested Citation:

Arnavut, A. & Özdamlı, F. (2016). Examination of studies on technology-assisted collaborative learning published between 2010-2014. *Cypriot Journal of Educational Science*. *11*(3), 119-125.

Received July 17, 2016; revised August 23, 2016; accepted September 18, 2016

Selection and peer review under responsibility of Prof Dr. Huseyin Uzunboylu & Assoc. Prof. Dr. Cigdem Hursen, Near East University.

Abstract

This study is a content analysis of the articles about technology-assisted collaborative learning published in Science Direct database between the years of 2010 and 2014. Developing technology has become a topic that we encounter in every aspect of our lives. Educators deal with the contribution and integration of technology into education. Therefore, in this study it was aimed to examine how integration of collaborative learning into technology would contribute to education or it would contribute to education or not. According to the results of the studies obtained from Science Direct database, there are many research related with technology-assisted collaborative learning. However, since all of the studies did not fulfill our search criteria for content analysis, a total number of 58 articles published between the years of 2010 and 2014 were used in this study.

Keywords: technology, education, technology and education, collaborative learning, technology-assisted collaborative learning, computer

* ADDRESS FOR CORRESPONDENCE: **Ahmet Arnavut,** Department of Computer Education and Instructional Technology, Ataturk Faculty of Education, Nicosia, Mersin 10 Turkey, Cyprus. *E-mail address*: ahmet.arnavut@neu.edu.tr

1. Introduction

Rapidly developing technology still continues to affect our lives in a significant way. One of the changing systems based on the development of technology is education. Following the integration of technology into education system, "technology-centered" and "student-centered" education system have taken the place of "teacher-centered" education (Ozdamli, Karabey & Nizamoglu, 2012).

There have been many considerable developments in Technology-Education relationship (Kose, 2010). Distance education system which is developing rapidly today, has an important role in especially some universities in the world. Distance education can be achieved as both synchronous and asynchronously and it provides convenience for students as well (Inayat, Amin, Inayat and Salim, 2013). According to another definition, distance education is an education system in which students and teachers communicate both synchronous and asynchronously although they are far apart from each other. Besides, distance education systems is a great opportunity for instructors since it increases the flexibility in communication between student and teacher and student-student, it eliminates geographical obstacles and it is convenient for collaborative education (Wu, Tennyson & Hsia, 2010). This interactive systems and collaborative learning tools facilitate collaborative studies between student-student and teacher-student (Dewan, Chowdhury & Hossain 2011).

Another sub-layer of technology as a general concept which has an important contribution to education is web 2.0 technology. Web 2.0 technology which significantly affects and supports collaborative learning bring new learning experiences as well (Su, Yang, Hwang and Zhang, 2010). Development of Web 2.0 technologies has also led to new ideas for collaborative learning (Cheung & Vogel, 2013). According to Kam and Katerattanakul (2014), technology can not be successfull alone unless the advantages of web 2.0 are used. Technology only becomes valuble in education when teachers produce convenient things. Martin and Sanchez (2013) investigated the effects of Web 2.0 use and it was figured out that use of Web 2.0 technology in collaborative learning has an important effect on student achievement. Some university students used web 2.0 and witnessed how it contributes to both education and educator (Bennet, Bishop, Dalgarno, Waycott & Kennedy, 2012). On the other hand, preservice educators also believe that web 2.0 technologies are so valuable for education (Sadaf, Newby & Ertmer, 2012).

There are various psychological approaches used in education. Project-based learning, problem-based learning or case study are some of these approaches. These approaches might facilitate a common achievement for more than one student if they are combined with collaborative learning (Camara, Velasco, Alcover & Iturbide, 2013).

When learning conditions of today are considered, collaborative learning has become a requirement (Wang, 2010). Use of this educational style as computer or technology-assisted collaborative education through integration into computer, namely technology, has led to significant advancements in recent years. Increasing the contribution of technology to education and benefitting much more from the opportunities of technology are some of the reasons of the development of this technic (Kwon, Hong & Laffey, 2013). Nevertheless, increase in the number of studies and applications has shown the difficult aspects of communication and collaborative study through computer as well. Besides, development of this technic has led to great positive expectations from teachers (Chavez & Romero, 2012).

2. Purpose of the study

The purpose of this study is to determine trends in the studies related with technology-assisted collaborative learning published in Science Direct database for the researchers who would like to conduct studies in the fields of technology-assisted collaborative learning, technology-assisted education and collaborative learning. In this study, studies published between the years of 2010 and

2014 were examined. In order to achieve the aim of the study, answer to the this question was sought: "What are the characteristics of the studies published in determined databases related with technology-assisted collaborative learning?"

3. Methods

This study used documentary survey method based on content analysis of the studies related with technology-assisted education, collaborative learning, technology-assisted collaborative learning and computer-based learning.

Science Direct database was selected for this study. As mentioned above, studies published between the years of 2010 and 2014 were examined in the present study. "Collaborative learning, Technology, Computer" were used as keywords. The criteria considered by the researchers for content analysis are as follows:

- Year of Publication
- Research Field
- Country of the Research
- Education Level of the Sample
- Method of the Study

3.1. Data Analysis

Before examining the studies in the electronic database, researchers constituted a database to record the determined criteria and analyze the data with SPSS package program. All data obtained from detailed document analysis were recorded for each article.

4. Results and interpretations

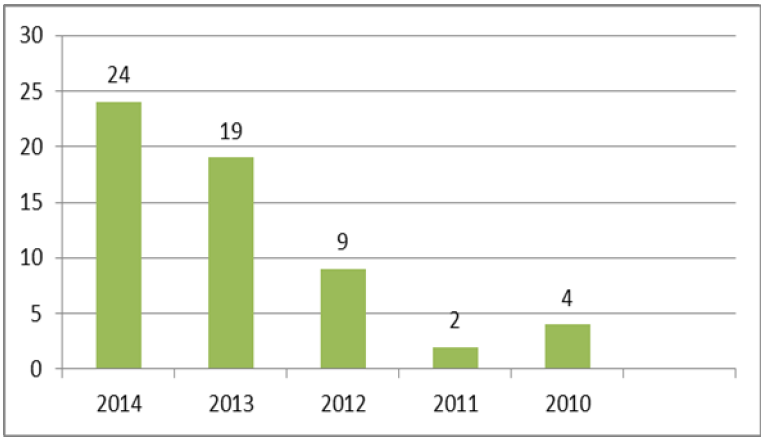
A total number of 58 studies published between 2010 and 2014 were reached in Science Direct database and results were reported based on determined content analysis criteria. Results obtained from the analysis of every criteria are provided in the next section with tables and graphs.

4.1. Tables

4.1. Table 1: Year of Publication

The number of studies related with Technology-assisted Collaborative Learning for every year are grouped and provided in the following table.

Table 1. Articles based on Years



As it can be seen from Table 1, the highest number of publication related with technology-assisted collaborative learning is in 2014 based on the analysis in the Science Direct. Articles published between the years of 2010 and 2014 were included in this study related with the topic of the study from Science Direct database and a total number of 58 articles published between the years of 2010 and 2014 were used. In line with the development rate of technology, an increase in the number of research every year is expected at the same rate of technology development.

4.2. Table 2: Countries of the Studies

When answer to the question "In which country Technology Assisted Collaborative Learning studies are the most conducted?" is examined, it is seen that most studies have been conducted in Taiwan as it can be seen from Table 2.

Table 2. Number of articles based on countries

Countries	Published Articles	%
Taiwan	10	17.2
Spain	6	10.3
U.S.A	5	8.6
Malesia	3	5.2
Australia	3	5.2
Netherlands	3	5.2
Germany	3	5.2
Other	25	43.1

There is a total number of 10 studies on technology-assisted collaborative learning conducted in Taiwan. Taiwan is followed by Spain with 6 articles. The number of research from other countries is under 3.

4.3. Table 3: Research Method of the Studies

Table 3. Research Models

Methodology	Published Articles	%
Experimental	21	36.2
Interview	12	20.7
Literature Research	8	13.8
More Than One Method	17	29.3

Research methods used in the studies based on groupings are provided in Table 3. As it can be seen from Table 3, experimental methods are the most frequently used research method in the studies.

The studies examined in this study are related with technology-assisted collaborative learning. It is seen that researchers tend to use experimental methods in the studies. “Experimental” method was used in 21 articles and more than 1 scale was used in 17 studies. “Interview” method was used in 12 studies and “Literature Review” was used in 8 studies.

4.4. Table 4: Education Level of the Sample in the Studies

Table 4. Educational level of the sample

Education Level	Published Articles	%
Undergraduate	33	57.0
Lecturer	2	3.4
Primary	5	8.6
Secondary	2	3.4
Post Graduate	3	5.2
More Than One Education	8	13.8
N/A	5	8.6
Total	51	100.0

As it can be seen in Table 4, the number of studies conducted in universities are too much. It is important to consider how the target group will adjust to the prepared environment based on experimental study. As in many fields in the literature, researchers prefer to include university students in their studies since they have easy access to university students. For this reason, many studies might have been conducted with undergraduate students. In addition, since collaborative education is technology-assisted, it can be said that technology is mostly used by university students between the years of 2010 and 2014. Therefore, university students are the most targetted gorup. Besides this, the number of studies which used more than one educational level in the sample was 8; however sample characteristics were not indicated in 5 studies.

5. Conclusion and Discussion

Since technology is a rapidly developing and changing topic, following the developments in the technology has become more difficult. As it can be seen from the methods followed by the firms producing technology, technological devices are renovated every day and old devices become worthless. Considering the changing structure of technology, studies conducted between the years of 2010 and 2014 were used in this study. We eliminated the studies conducted before 2010 and we used 58 articles obtained for content analysis.

According to the results, there is an increase in the number of studies every year on a regular base. It is seen that there is an increase in the number of studies in line with the years beginning from 2010 to the end of 2014. This shows us that technology develops day by day, it is integrated into our lives and collaborative learning and team work are encouraged.

It was figured out that experimental method was the most frequently used method in the studies related with technology-assisted collaborative learning based on the results. The fact that the most healthy and accurate results can be obtained from experimental methods might be the reason for this.

The results showed that research sample of the studies mostly consisted of university (undergraduate) students. It is also seen that many research cited in the literature are conducted with undergraduate students as well. If we think that researchers are mostly consisted of academicians, it can be said that this results might be because their easily accessible targetted group are students.

6. Recommendations

The following recommendations might be considered for future studies to be more effective and efficient: There is an excessive number of studies conducted with experimental method. Existing situation might be revealed based on general survey method. Furthermore, the number of studies at elementary school level might be increased. Awareness among teachers should be facilitated based on seminars related with technology-assisted collaborative learning for teachers. Researchers in Cyprus should be encouraged to conduct studies about technology-assisted collaborative learning. Researchers from different countries might conduct studies together to acquire knowledge about the situations in different countries and to reveal the kind of innovations in the world. Opportunities by institutions in both Turkey and Cyprus should be provided in order to conduct experimental studies. Content analysis studies should be conducted for scientific studies for other fields and presenting scientific results would be a guide for other experts from the field.

References

Bennett, S., Bishop, A., Dalgarno, B., Waycott, J., & Kennedy, G. (2012). Implementing Web 2.0 technologies in higher education: A collective case study. *Computers & Education, 59(2),* 524-534.

Chavez, J., & Romero, M. (2012). Group awareness, learning, and participation in Computer Supported Collaborative Learning (CSCL). *Procedia-Social and Behavioral Sciences, 46,* 3068-3073.

Cheung, R., & Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & Education, 63,* 160-175.

Dewan, J., Chowdhury, M., Hossain, S., & Dewan, J. (2011, July). A Framework for eLearning with Social Media using DRM. In Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD), *2011 12th ACIS International Conference on (pp. 229-234).* IEEE.

Inayat, I., ul Amin, R., Inayat, Z., & Salim, S. S. (2013). Effects of collaborative web based vocational education and training (VET) on learning outcomes. *Computers & Education, 68*, 153-166.

Kam, H. J., & Katerattanakul, P. (2014). Structural model of team-based learning using Web 2.0 collaborative software. *Computers & Education, 76*, 1-12.

Köse, U. (2010). A blended learning model supported with Web 2.0 technologies. *Procedia-Social and Behavioral Sciences, 2(2),* 2794-2802.

Kwon, K., Hong, R. Y., & Laffey, J. M. (2013). The educational impact of metacognitive group coordination in computer-supported collaborative learning. *Computers in Human Behavior, 29(4),* 1271-1281.

GarcíA-MartíN, J., & GarcíA-SáNchez, J. N. (2013). Patterns of Web 2.0 tool use among young Spanish people. *Computers & Education, 67,* 105-120.

Ozdamli, F., Karabey, D., & Nizamoglu, B. (2013). The effect of technology supported collaborativelearning settings on behaviour of students towards Mathematics learning. *Procedia-Social and Behavioral Sciences, 83*, 1063-1067.

Sadaf, A., Newby, T. J., & Ertmer, P. A. (2012). Exploring pre-service teachers' beliefs about using Web 2.0 technologies in K-12 classroom. *Computers & Education, 59(3),* 937-945.

Serrano-Cámara, L. M., Paredes-Velasco, M., Alcover, C. M., & Velazquez-Iturbide, J. Á. (2014). An evaluation of students' motivation in computer-supported collaborative learning of programming concepts. Computers in Human Behavior, 31, 499-508.

Su, A. Y., Yang, S. J., Hwang, W. Y., & Zhang, J. (2010). A Web 2.0-based collaborative annotation system for enhancing knowledge sharing in collaborative learning environments. *Computers & Education, 55(2),* 752-766.

Wang, Q. (2010). Using online shared workspaces to support group collaborative learning. *Computers & Education, 55(3),* 1270-1276.

Wu, J. H., Tennyson, R. D., & Hsia, T. L. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers & Education, 55(1),* 155-164.