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What are the trends in collaborative learning studies in 21st century?

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Abstract

Collaborative learning, assists individuals to work as a team for a common purpose or mission. Today, individuals are working for a mission by using computer, internet and such technologies.   A lot of studies had been done with using collaborative learning. In order to learn the effectiveness of collaborative learning, a variety of studies and techniques should be prepared. Besides, there exist considerable numbers of studies that were done on the techniques of technology supported collaborative learning. In significant proportion of the presented studies, the online systems have been introduced that were developed for technology supported collaborative learning. In literature, meta-analysis studies were also found related to collaborative learning methods. There is not exist any recent made researches on the trends of this topic in literature. The aim of this study is to determine trends for those who aim to make research in Technology Supported Collaborative Learning (TSCL), published in popular magazines in the field of education technology between the years 2005 and 2010. 114 studies have been attained after the scan made on SSCI covered journals. The reporting of the study was grouped according to following criteria; publishing year of the finding, research field, method and study environment.

1.   Introduction

Educational institutions have undergone rapid changes especially for the last 10 years (Wurst *et al*. 2008; Boukas *et al*. 2009; Hursen *et al*. 2011; Uzunboylu & Ozdamli, 2011). Increasing demand for education and quick proliferation of the information amount has caused computer and internet to take place in education (Keser, 1988).

With the increase in use of educational computers, teachers have gradually given up traditional methods, many courses at the education instition have been delivered in internet based form and mobile technologies have been tried for educational purposes (Morris 2010; Uzunboylu & Ozdamli, 2011).

Internet based educational applications allows geographically distant individuals to share information and ideas and provide constructivist learning environment, collaborative learning and self-learning. Individuals are able to make projects in their respective fields and they can work together, even if they are away from each other.

Qualitative studies should be prepared in order to get successful results. Technology supported collaborative learning, assists individuals to work as teams for a common project or task with getting good use from the technologies such as; computer, mobile phones, internet etc.. For a common purpose, active learning is generated by working with collaborative learning approach (Dillenbourg, 1999; Van, Merriënboer & Paas, 2003; Persico & Pozzi, 2011). However, students might not provide equal participation in computer based collaborative learning environment. Computer based collaborative learning used to be applied in the class environment, however today;

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web-based is applied more. Many studies were done related to collaborative learning in a lot of fields (psychology, sociology and socio-cultural). In order to determine the effectiveness of the collaborative learning, researches in different fields and different research methods are required (Hmelo-Silver & Rainer Bromme, 2007). The study made by Lou, Abrami & d'Apollonia (2001) has compared computer based collaborative learning with individual workers and in consequence small groups demonstrated more positive results compared to individual workers. With the generated heterogenic groups by Huang, Chen & Chen (2009) and Hussein, (2010) a discussion environment is created over Moodle system and it was clarified that students got affected positively from this study. Huang, Huang & Hsieh (2008) made investigations about the integration of digital note taking systems into collaborative learning.

In most of demonstrated studies, online systems have been introduced for technology supported collaborative learning activities (Uzunboylu, Bicen & Cavus, 2010; Gogoulou & et al. 2007; Hernández-Leo & et.al. 2006). Moreover, in literature, meta-analysis studies were also found related to collaborative learning methods (Jigsaw etc.) (Cavanaugh, 2001; Keser et.al., 2010; Lavasani, Afzani &Afzali, 2011).

As it is mentioned above, a lot of researches were carried out for various reasons related to technology-supported collaborative learning activities. Many studies related to this subject were encountered when the literature is examined; however there are no recent made researches on the trends of this topic. Popular journals within the scope of SSCI, have been chosen and analysed with the aim of guiding those intending to make research related to technology supported collaborative learning. It is expected that this would help researchers, who aim to work in this area, to determine the progress direction, choice of research methods, disciplinary areas, environments and other elements.

2. The Aim of the Research

The general aim of this study is determining new trends in collaborative learning studies published in popular journals in educational technology area between the years 2005 and 2010. In order to achieve the above purpose, an answer is going to be sought for the question "What are the features of collaborative learning?" in scope of chosen EBSCO and Science Direct journals.

3. Method

This research, made in terms of assessing content analysis of technology based collaborative learning studies, is a documentary review work type.

The journals; British Journal of Educational Technology (BJET), Computers & Education (CE), Computers in Human Behaviour (CHB), Education Technology & Society (ETS), Learning & Instruction (LE) have been selected for this study from the data bases of EBSCO and Science Direct. During the scan of electronic databases, the names of the journals limited with the words; year 2005 to 2010 and working title, key words; collaborative learning. The criteria taken into account for the content analysis by researchers are shown below;

- Publication year
- Research topic
- Method
- Study environment

3.1 Analysis of data

Before examining the studies scanned from electronic database, researchers generated a database for saving determined criteria and for the use of analysis by using Microsoft Access program. The data obtained from detailed document analysis was saved for each of the articles. The data grouped and reports prepared according to established criteria by using query features.

4. Findings

In this part, the results obtained are discussed in the view of the fundamental aims of the research. 114 studies have been reached, as a result of the scans within the scope of SSCI journals, published within six years, and the results were reported according to chosen criteria. The results obtained from the analysis for each criterion are demonstrated with following tables and graphs.

4.1. Article numbers according to years

The number of the studies made related to technology supported collaborative learning is grouped for each year and illustrated in following graph.
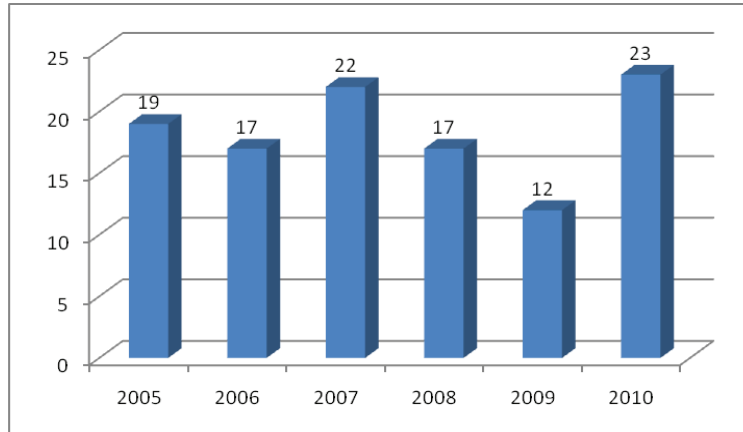

Figure 1 the articles within the scope of SSCI according to years

As it is seen in the graph, most of the studies on technology supported collaborative learning in the journals within the scope of SSCI were made in 2010, and an extensive place has been given to TSCL studies for each year.

4.2. Research topics

The researchers' studies were grouped by topic. The studies entered into pre-defined topics are given in table 1. The study topics which numbers are more than one are grouped in the following table The studies which their study topics are made only one time are gathered in the group under the name of 'other'. The studies under the name of 'other' were; data equivalence, the cooperation between European Union researchers, system evaluation, education technologies in primary schools, communication, circulation models, collaborative studies' searching system, problems with online learning, system based evaluation, collaborative model development, lifetime learning, wiki, games, personal answer systems, online discussion tools, music education, motivation, science teaching, friend evaluation, data management and active learning.

Table 1 the Studies according to research topics

Study subject	Numbers
Web based	35
Computer supported	23
Social relations	10
Asynchronies tools	8
Synchronies tools	7
Software development	6
Mobile learning	4
Video conferencing	3
Group features	3
Other	15

Total	114

As shown in Table 1, most of the studies in the last six years were done on the subjects' Web-based collaborative learning and computer-aided collaborative learning. Another remarkable point was the intensity of the studies done with social relations and asynchronous communication tools compared to other studies.

4.3. Research methods according to years

As a result of the made groupings, the preferred methods in the reviewed studies are shown in table 2. As it is shown in the table, there has been an increase in the number of experimental studies after the year 2005. The experimental and literature reviews take place the most among all the methods.

Table 2 The preferred research methods by years

Research Method	2005	2006	2007	2008	2009	2010	Total
Experimental	17	15	16	14	11	18	**87**
Review	1	0	2	2	0	2	**7**
Discussion	1	0	0	0	0	3	**4**
Descriptive	0	0	1	1	0	1	**3**
Other (scale develops...)	0	2	3	0	0	1	**6**
Total	19	17	22	17	11	25	**114**

Alper & Gülbahar (2009)'s study indicated that most of the studies are in the type of literature review (74) and descriptive. In contrast to studies conducted in Turkey and Cyprus, the number of studies done with scanning method (descriptive) within 4 years was just two.

4.4. Study environments according to years

It was seen that, the Web-based environments and technology supported collaborative learning class environments are used the most according to the results of reviewed studies that are carried out to determine the preferred environments for technology supported collaborative learning.

Table 3 The annual distribution of preferred study environments

Working environment	2005	2006	2007	2008	2009	2010	Total
Blend (Web-class)	1	1	0	2	1	4	**9**
Class environment TSCL	4	3	4	4	4	5	**24**
Web based	10	10	11	9	4	10	**54**
Mobile environment	0	0	2	0	2	0	**4**
Other	0	1	0	2	0	0	**5**
Total	15	15	17	17	11	19	**94**

As seen in Table 3, there are 2 studies made in 2007 and 2 other made in 2009 related to mobile learning environments. Because of the reason that, mobile learning environment is a new environment, there are not many studies on this topic. As a result of demonstrated increase in applications of mobile learning recently, it is thought that the topic Mobile supported collaborative learning will be explored more into the later times

5. Discussion & Conclusion

Many important points achieved at the end of this study that was made with the aim of meeting the mentioned needs. 114 technology supported collaborative learning studies have been attained after examining the journals published in the last six years. In the journals reviewed, a place is given to technology supported collaborative

learning studies for each year. Accordingly this is confirming that the technology supported collaborative learning environments are being used and continuous innovations gave rise to new researches.

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