

Collaboration between Primary Students and the Use of an Online Learning Environment: The Previous Collaborative Work Experiences Factor

Aikaterini Kokkinaki

University of Bristol

This paper reports findings from a research study which involved the use of an Online Learning Environment by Greek primary students in their school classroom and from home for a period of six weeks for the development of a wiki for a school project. This research study sought to answer whether and how collaboration can be supported between primary students with the use of an Online Learning Environment. Although collaboration is often reported as the outcome from the use of technology in an educational context, this paper presents research findings to show that collaboration between primary students with the use of an Online Learning Environment is associated with students' previous collaborative work experiences.

Keywords: Collaboration, Online Learning Environment, Primary Education, Previous Experiences

Introduction

In recent years, the rise of cloud computing and faster internet connections have not only been seen as opportunities for education to extend students' learning spaces beyond the walls of the classroom, but also as a means to bridge learning spaces across school, home, and the wide community (Jimoyiannis et al., 2013). Along with the rise of cloud computing and faster internet connections, the emergence of online tools which support synchronous and asynchronous communication, file sharing and creation of joint documents has generated interest regarding the opportunities for collaboration supported with these technologies in the context of education (Mader, 2007; Pilkington and Walker, 2003; Traxler, 2010). Thus, changing Information and Communications Technologies (ICT) contexts have increased opportunities for children to communicate and potentially collaborate from different locations online.

Online Learning Environments (OLE) have been seen as online spaces where collaboration between students can be supported. Although previously published studies use terms such as: Virtual Learning Environments, Managed Learning Environments, Personal Learning Environments, Learning Platforms and Course Management Systems to refer to online environments that are used for educational purposes (British Educational Communications & Technology Agency, 2005), in this paper an OLE is understood as an online space that:

Includes the components through which the learners and the tutors participate in online interactions including online learning (Joint Information Systems Committee, 2006, p. 6).

The majority of studies that have researched collaboration with the use of an OLE concern the context of higher education. As discussed by Kennedy (2009), OLEs have been used in the context of higher education to support: communication and collaboration between students, assessment, the publication of online content as well as management and tracking of students. With regard to communication and collaboration, it has been shown that using an OLE increases the level of communication and collaboration between higher education students (Selinger, 1997) by giving students more chance to articulate their thoughts and understanding (Chou and Liu, 2005).

In relation to collaboration and the use of an OLE in higher education, the study of Pilkington and Walker (2003) places particular interest on the exploration of student group collaboration with the use of an OLE. In this

study, the authors investigated the participation of students in online debates using synchronous communication tools and they also explored whether students could work collaboratively in order to

compose joint

reflections based on the material they discussed during the debate using an asynchronous discussion board. Pilkington and Walker (2003) found that the opportunities for online collaboration are not expanded by simply combining online tools, but by using the tools of an OLE respectively in order to support the purposes of the different tasks. Further to the work of Pilkington and Walker (2003), the results from the study of Timmis et al. (2010), showed that higher education students may not choose the online tool of an OLE that is best for the task but may instead migrate towards tools that full their social needs. The results from the studies of Pilkington and Walker (2003) and Timmis et al. (2010) provide confirmatory evidence that the integration of an OLE in education cannot alone support collaboration.

The incorporation of online tools in an OLE, as for instance a wiki, is often perceived as a way in which collaboration between students can be supported (Bold, 2006; Kovacic et al., 2007; Lund, 2008). On the other hand, it has also been found that when students use a wiki they distribute the effort and each student, or pairs of students, take ownership for the part of the wiki that is assigned to them (Grant, 2006). Therefore, although a wiki is commonly considered a tool that supports collaboration between students by enabling them to create jointly developed content online, in practise collaboration between students may not be supported. That is because a wiki is nothing more than a collective website where a large number of participants are allowed to modify any page or create a new page using their web browser (Desilets and Paquet, 2005). There are a number of factors associated with collaboration and the use of online tools in education.

Previously published research in the subject areas of collaboration and technology has suggested that higher education students' previous experiences with technology is associated with how students will use this technology to collaborate online (Kreijns et al., 2003; So, 2009). However, the term "previous experiences" has been mainly used to describe students' previous negative experiences with technology (Pauli et al., 2008; Vrasidas and Mclsaac, 1999). This paper aims to shine new light and answer whether and how primary students' previous experiences into collaborative work impact collaboration with the use of technology and particularly with the use of an OLE.

Methodology

The study reported in this paper follows the multiple case studies research design that is comprised of three case studies and follows the literal replication logic, which means that the cases were designed to predict similar results (Yin, 2009). The type of case study followed is the explanatory case study. The "case", are the students of a sixth grade primary classroom in Greece for the six week period of use of the designed OLE in the school classroom and from home for the development of a wiki for a school project.

The 24 students of Case Study 1, the 12 students of Case Study 2 and the 12 students of Case Study 3 worked in groups of three or four at school and used the tools the were integrated within the designed OLE i.e., discussion forum, instant messaging and wiki at school as instructed by their teacher and in order to address the tasks that were designed by the teacher aiming to develop a joint wiki project. The topics of the wiki projects were: "Our Solar System", "The Wonders of the Modern World" and "Species Near Extinction" for Case Studies 1, 2 and 3 respectively. A characteristic sample of the tasks, as given to students by the teacher in Case Study 1, is the following: "Work in groups and use the internet to find images for the planet which was allocated to your group and then upload the images found at the wiki". Those students who had access to the OLE from home continued to use the online tools of the designed OLE and contributed content at the wiki from home.

The following methods of data collection were utilised to support a holistic investigation of whether and how collaboration between primary students was supported with the use of an OLE: observation, focus group, questionnaire and data generated from the designed OLE. In this paper, results from the analysis of the observation and focus group data will be presented. The students were observed in a regular classroom session (before the data collection). Also, one group of students was observed in each case study every time the students used the designed OLE at school i.e. for one session every week and for a period of six weeks. The focus groups were conducted every two weeks. For the analysis of the collected data, different techniques were employed. For the analysis of the qualitative data, the thematic analysis framework was used. The quantitative data that were collected were analysed with the use of descriptive statistics.

Results

The analysis of the observation data that were collected before the students start using the designed OLE at school, show that the students of Case Study 1, always worked in groups of four in the classroom. For the formation of the groups, the teacher took into consideration students' preferences but also regrouped students based on their abilities. The 12 students of Case Study 2 also worked in groups of four. Extra chairs were available in each group which allowed students to move around within the groups. All tasks that were designed by the teacher involved group work between the students. The way students worked in Case Study 3 differed from the way the students in Case Studies 1 and 2 did. It was observed that the students were sitting in pairs and that there was no mobility between the students. Moreover, all tasks that were assigned to students by their teacher did not involve group work. It was also observed that the students worked individually to the extent that they placed their note books and books vertically as desk dividers. According to the teacher of Case Study 3, this practice commonly occurred because students wanted to avoid their peers to cheat or copy their work.

When the students used the designed OLE in their classroom, they shared information and gave help and feedback face-to-face (with the other students of their group) and online (via the designed OLE with the other groups). Sharing, help and feedback and joint work were the main themes that emerged from the thematic analysis conducted. In this paper, only qualitative data from the thematic analysis of the observation and focus group data will be presented and the results concern only face-to-face collaboration between primary students in their school classroom.

Case Study 1

In Case Study 1, face-to-face collaboration was supported when the students worked with their group members for the development of a discussion forum or a wiki publication. Face-to-face within group collaboration wasn't supported when the students worked for the development of an instant messaging contribution.

A characteristic extract from researcher's audio recorded reflection on classroom observations for Case Study 1 is given below:

Nikos argues that he has identified the planet Jupiter and shares with his group information to support his argument. The information shared concerns the colour of this planet. Marina asks Nikos if he is completely sure about the colour of Jupiter and Nikos replies positive. Marina asks him to give further information over how he has come to know that and also asks him to say where he has read that. Nikos justifies his argument by explaining where the information can be found in their geography course book.

The reasons that were given by students during the focus groups, in relation to the reasons for sharing information, giving help and feedback and participate in joint work with the other group members for the development of a discussion forum or a wiki publication, were:

- For students to become assured and convinced about the accuracy of the information to be shared
- For students to minimise potential negative comments to be received by other groups
- For students to accommodate the different ideas shared

Case Study 2

In Case Study 2, the students also collaborated face-to-face with the other members of their group. The situations that were interpreted as collaborative involved sharing of information, giving help and feedback and participate in joint work. The basic difference between Case Study 1 and Case Study 2 is that, in the latter, the students didn't only share information but rather created shared understanding over the information shared. A characteristic extract from researcher's audio recorded reflection on classroom observations for Case Study 2 is given below:

Dimitris asks what counts as a modern wonder and explains that they have to be careful not to publish something irrelevant to what was asked. Katerina suggests to first decide

what the term wonder means and shares with her peers what the term “wonder” means for her. Dimitris asks whether the term modern wonder stands for places, monuments or constructions. Katerina argues that it could be everything as long they attract the attention of people. She suggests saying the Acropolis. Andreas asks Katerina what does it make her to believe that Acropolis is a wonder of the modern world and Katerina argues that the design of the Acropolis could be considered even nowadays contemporary and modern. Dimitris agrees but instead proposes to focus on constructions that were built in the last century in order to make their search more specific. All agree.

This extract shows that students do not only construct a discussion forum post together, they are constructing a joint understanding over what the phrase “wonder of the modern world” stands for, for them.

Case Study 3

The students of Case Study 3 also shared ideas, previous knowledge and information each time they participated in discussions for the development of discussion forum and/or instant messaging posts. However, face-to-face collaboration was not supported between the group members because it was difficult for those students to bring together the different ideas shared into a joint discussion forum or instant messaging post. A characteristic extract from researcher's audio recorded reflection on classroom observations for Case Study 3 is given below:

Gianna expresses that nature disapproves humans because of the atmospheric pollution. Giorgos replies that their project is about the extinction of animals and suggests to focus on things that men do which have consequences to animals' extinction. Gianna disagrees and challenges him to read the teacher's question. She asks Soa and Vasia to take her side for being close friends. Giorgos asks them to develop a post for themselves informing them that he will publish alone whatever he believes is correct.

A summary of the actions reported by the students of Case Study 3 to happen after a disagreement over ideas shared in their face-to-face discussions is given below:

- Follow the group leader's argument
- Publish individual posts at the discussion forum
- Publish one discussion forum post with all the arguments/ideas expressed
- No participation in the process of developing the discussion forum post

Discussion

Previously published research on collaboration and technology demonstrated an association between collaboration and students' previous experiences with technology (Harasim, 1995; So, 2009). However, the term “previous experiences” has been mainly used to describe students' previous negative experiences with technology (Pauli et al., 2008); Vrasidas and Mclsaac, 1999). The findings of the study reported in this paper, reveal that not only previous negative experiences with technology but also the absence of previous collaborative work experiences affects how primary students will potentially collaborate by using an OLE in the school classroom. In Case Study 1 and Case Study 2, the students were working in groups before they start using the designed OLE at school and had no particular difficulties or concerns with regard to sharing ideas or information with the other students of their group or bringing together the different ideas expressed. In Case Study 2 especially, there was mobility between the groups of students which allowed them to make short visits to the other groups and ask questions relevant to the task given by the teacher.

On the contrary, the students in Case Study 3, had no previous collaborative work experiences before they start using the OLE at school. The predominant culture in their classroom was to work individually. Although the students in Case Study 3 were sitting in pairs, they were working individually and rather competitively (e.g. they placed their notebooks and books vertically as desk-dividers). Furthermore, the tasks that were developed by the teacher (before students start using the OLE) involved students working individually to finish the work given. When the students in Case Study 3 started to work with the designed OLE at school, it was difficult for them to work collaboratively. It was

even difficult for them to bring together and accommodate the different ideas shared by group members in order to develop joint discussion forum, instant messaging or wiki publications.

Conclusions

In this paper it is argued that the way in which the sixth grade primary students worked with their peers at school without using technology, is reflected in the way in which they performed group work when they used technology i.e. the designed OLE. Situations that were interpreted as collaborative were found to occur with the students of Case Studies 1 and 2, whereas in only a few instances face-to-face collaboration was supported between the students of Case Study 3. This reveals two main aspects: Firstly, the predominant culture in the classroom affects online collaboration via an OLE and secondly, the absence of previous collaborative work experiences affects how students will potentially use an OLE to collaborate.

Acknowledgements

The author would like to thank Dr Jocelyn Wishart and Dr Federica Olivero for their contribution to the work being reported in this paper, especially for their scientific guidance. This research was funded by the Greek State Scholarships Foundation (IKY).

References

- Bold, M. (2006). Use of wikis in graduate course work. *Journal of Interactive Learning Research*, 17(1), 5-14.
- Braun, V. and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- British Educational Communications & Technology Agency (2005). *An introduction to learning platforms for school leaders* <http://www.lancsng.ac.uk/ictservices/ictcentre/download/> [viewed 19 October 2013].
- Chou, S.-W. and Liu, C.-H. (2005). Learning effectiveness in a web-based virtual learning environment: a learner control perspective. *Journal of Computer Assisted Learning*, 21(1), 65-76.
- Desilets, A. and Paquet, S. (2005). *Wiki as a tool for web-based collaborative story telling in primary school: A case study*. NRC Publications Archive, Canada.
- Grant, L. (2006). *Using wikis in schools: A case study*. Futurelab Archive. http://www.futurelab.org.uk/resources/publications/reports/articles/discussion_papers/Discussion_Paper258 [viewed 21 December 2014].
- Harasim, L. M. (1995). *Learning networks: A field guide to teaching and learning online*. Cambridge, MA: MIT press.
- Jimoyiannis, A. and Angelaina, S. (2012). Towards an analysis framework for investigating students' engagement and learning in educational blogs. *Journal of Computer Assisted Learning*, 28(3), 222-234. <https://doi.org/10.1111/j.1365-2729.2011.00467.x>
- Joint Information Systems Committee (2006). *Effective Use of VLEs: Introduction to VLEs*. <http://tools.jiscinfonet.ac.uk/downloads/vle/what-is-vle.pdf> [viewed 19 October 2013].
- Kennedy, D. J. (2009). Virtual Learning Environments (VLEs): here to stay, or on the brink of demise? *The Plymouth Student Educator*, 1(1), 58-66.
- Kovacic, A., Bubas, G. and Zlatovic, M. (2007). Evaluation of activities with a wiki system in teaching English as a second language. *International Conference ICT for Language*.
- Kreijns, K., Kirschner, P. A. and Jochems, W. (2003). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: a review of the research. *Computers in Human Behavior*, 19(3), 335-353. [https://doi.org/10.1016/S0747-5632\(02\)00057-2](https://doi.org/10.1016/S0747-5632(02)00057-2)
- Lund, A. (2008). Wikis: A collective approach to language production. *ReCALL*, 20(1), 35.
- Mader, S. (2007). *Using wiki in education*. Stewart Mader.
- Pauli, R., Mohiyeddini, C., Bray, D., Michie, F. and Street, B. (2008). Individual differences in negative group work experiences in collaborative student learning. *Educational Psychology*, 28(1), 47-58.
- Pilkington, R. M. and Walker, S. A. (2003). Facilitating debate in networked learning: Reflecting on online synchronous discussion in higher education. *Instructional Science*, 31(1-2), 41-63.
- Selinger, M. (1997). Open learning, electronic communications and beginning teachers. *European Journal of Teacher Education*, 20(1), 71-84.
- So, H.-J. (2009). When groups decide to use asynchronous online discussions: Collaborative learning and social presence under a voluntary participation structure. *Journal of Computer Assisted*

Learning, 25(2), 143-160.

Timmis, S., Joubert, M., Manuel, A. and Barnes, S. (2010). Transmission, transformation and ritual: An investigation of students' and researchers' digitally mediated communications and collaborative work. *Learning. Media and Technology*, 35(3), 307-322.

Traxler, J. (2010), Students and mobile devices, *Research in Learning Technology*, 18(2), 3-15.

Vrasidas, C. and Mclsaac, M. S. (1999). Factors influencing interaction in an online course. *American Journal of Distance Education*, 13(3), 22-36.

Yin, R. K. (2009). *Case study research: Design and methods*. Sage Publications.

Kokkinaki, A. (2015). Collaboration between Primary Students and the Use of an Online Learning Environment: The Previous Collaborative Work Experiences Factor. In T. Reiners, B.R. von Konsky, D. Gibson, V. Chang, L. Irving, & K. Clarke (Eds.), *Globally connected, digitally enabled*. Proceedings ascilite 2015 in Perth (pp. 491-4). <https://doi.org/10.14742/apubs.2015.931>

Note: All published papers are refereed, having undergone a double-blind peer-review process.



The author(s) assign a Creative Commons by attribution licence enabling others to distribute, remix, tweak, and build upon their work, even commercially, as long as credit is given to the author(s) for the original creation.