REINFORCING IN-SERVICE TEACHERS EDUCATION VIA ICT

By

GISLI THORSTEINSSON

Associate Professor, Department of Design and Craft, School of Education, University of Iceland.

ABSTRACT

Earlier educational models have not managed to take into account novel contextual and mobile methods of learning with the advances in technology-mediated learning. The article firstly reports an educational approach, namely, future innovative in-service teacher education in Europe (ICE-ED). This project was supported by the European Union Comenius fund and coordinated by the University of Iceland.

The ICE-ED project is focused on educational use of information and communication technologies (ICTs), particularly with the improvement and dissemination of latest pedagogical strategies for open and distance learning through in-service teacher education (ICE-ED) in schools across Europe (The ICE-ED website 2012).

The project employs the on-line managed learning environment platform BSCW as a Computer Supportive Communication Learning instrument to make possible the participants collaboration. It is a nonstop meeting setting for them, a steady support to their work and at the same time an online library of the entire project educational material on which all the activities take place.

Keywords: The ICE-ED Project, Computer Supportive Cooperative Learning, Pedagogy, In-service Teacher Training, E-Learning, ICT, Manage Learning Environment, On-line Community.

INTRODUCTION

The ICE-ED project was focused on Computer Supportive Cooperative Learning (CSCL) via the BSCW; an on-line managed learning environment. In this context, courses and lessons were primarily set up for in-service training based on the BSCW platform for teachers and teacher trainers. The main aim was to build up understanding and knowledge for using technology supporting CSCL and to establish in what ways information and communication technologies (ICT) can be implemented to support practical use of knowledge and understanding through collaboration and communication in education (Carr, 1989).

The project was based on cross-cultural teamwork for developing these ideas further in dissimilar phases, from the preparation stages to the current use, e.g. focus group sessions, e-mail and Internet-based video and voice meetings; it has been used since the projects' inception in 2004. The work took the form of an interactive CSCL environment where students were given the tools and resources for transforming their independent thoughts into ideas that in the end became products in the form of the delivered project (The ICE-ED website 2012).

A successful side of the work included schools and teacher trainers, building culturally dissimilar work in in-service teacher education of the partaking countries. The European meetings with the teacher trainers formed sustainable results of the project and shapes plans for the CSCL environment content.

During the work a pedagogical approach for in-service teachers teaching based on CSCL courses was developed and used over the Internet. The students and teachers worked both online and locally offline with their projects in real-time and in face-to-face circumstances instead of using just general classroom activity as in a formal classroom-based model (Page and Thorsteinsson, 2003).

BSCW is a data-driven Internet-based portal used for instruction, studying and learning activities (Lehtonen et al., 2004) providing storage of research resources for students. The restrictions of information and communication technologies (ICTs) are extended to their limits in the area of CSCL supported technology education.

The article firstly describes the ICE-ED project. Then it illustrates the BSCW platform used for the ICE-ED project. Then it reflects on issues related to collaboration around and through computers in group settings in the context of CSCL. Finally conclusions are drawn regarding the values of CSCL for in-service teacher training in Europe.

The BSCW

The BSCW is a managed learning environment, or an online platform based on collaboration via shared workspaces over the Internet. Shared workspaces allow the storage of documents and sharing knowledge within a group. It is incorporated with an occasion mechanism to provide each user the awareness of other activities within the platform. It consists of numerous possibilities, e.g., discussion forum, management of documents, group management, search for different features and numerous others. The platform is first and foremost designed to sustain self-organising groups (Fernandez et al., 2005).

The development of the BSCW platform has mainly been funded by the European Union through the WWW project and the CESAR project of the EU's Telematics Applications Programme (Carmichael and Honour, 2000). Collaborators of these projects helped to develop the platform.

The BSCW is constructed on the thought of a "shared workspace," which the members of a group set up for organising and managing their undertakings (Figure 1). The cooperative workspace in the BSCW is a database for joint information and reachable by the members of the group. They have to use a user name and password to go into the workspace. A BSCW server manages numerous such workspaces for dissimilar groups, and users may be members of many workspaces (e.g., one workspace corresponding to each task the user is involved in). A workspace can hold information such as photos, videos, documents, links to Web pages or FTP sites, threaded conversations, member contact information, and more (the ICE-ED website 2012). The content of a workspace is illustrated as information matters arranged in a folder hierarchy (Figures 1& 2).

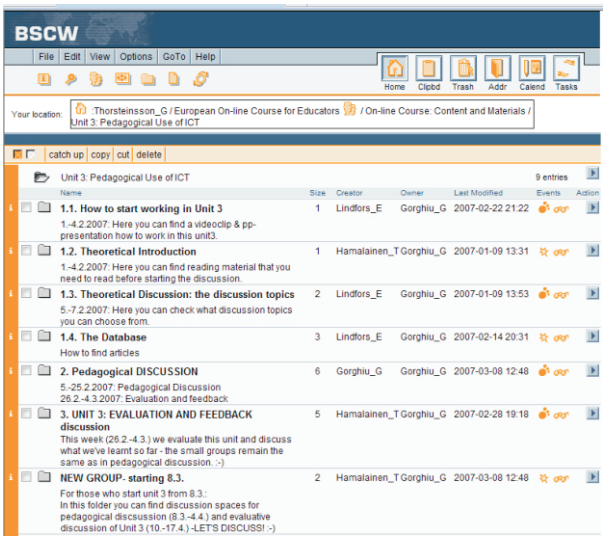

Figure 1. A BSCW Workspace including On-line Course Content

Teachers and Students can upload information from their computers to the workspace and set admission privileges to administer the visibility of the information and the manoeuvres that can be completed by others. Participants can download, modify, and request for more details on the information issues by clicking on HTML links to ask for workspace operations from the BSCW server (Fernandez et al., 2005). Following each action the server returns to a fresh HTML page representing the new standing of the workspace (Figure 2).

Computer Supported Collaborative Learning

Computer-Supported Collaborative Learning (CSCL) is defined as a computer-based network system that supports group work for a general use and provides a joint interface for groups to work with (Ellis, Gibbs and Rein, 1991). CSCL is associated to Computer Supported Cooperative Work (CSCW). The purpose of CSCW is to facilitate group communication and productivity, and the purpose of CSCL is to support students in learning jointly

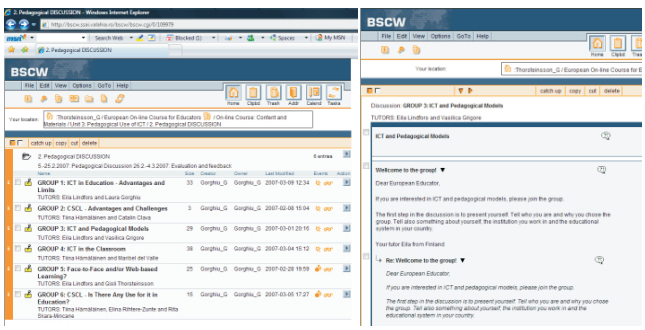

Figure 2. The ICE-ED Pedagogical Discussion Forum on the BSCW Platform

effectively (Ellis, Gibbs and Rein, 1991). In a classroom, collaborative work is a matter of the group building new knowledge interactively to assist each other. In the ICE-ED project, it served as a support to the development of in-service teacher education. By using the BSCW, the collaborative work became supported by network-connected computers.

In CSCL computers are used in educational settings to make easy and hold up collaborative group learning processes. It is not reachable by face-to-face but are not necessarily designed to replace face-to-face communication. Therefore CSCL can be utilised in a conventional school classroom to facilitate the group dynamics (Figure 3).

CSCL is utilised by numerous learners, which work across networked computers. The central purpose of CSCL is to scaffold students in learning jointly in an effective manner. CSCL can, for instance, support communicating ideas and information, accessing information as documents, and provide feedback on problem-solving activities.

Collaboration Around and Through Computers in Group Settings

Computer Supported Collaborative Learning is not necessarily designed to replace face-to-face communication (Lehtonen, 2005). It can sustain and make easy group processes in conventional face-to-face classroom based communication or be entirely online for distance relations and learning. CSCL is designed for multiple learners working at the same workstation or across networked computers. CSCL can support communicating ideas and information, sharing information and documents, and providing feedback on problem-solving activities (Crook, 1994).

To utilize the BSCW managed learning environment participants just need general computer equipments such as monitors, mice, and headsets. In a classroom the teachers try to engage the learners in a collaborative work experience as near to each other as possible inside the limits of the on-line communications. The objective for the learner is to interact with the BSCW and the real environment at the same time in order to make easy and improve the collaboration inside the classroom (Lehtonen, 2005).

Figure 3. The ICE-ED Group Setting up their On-Line CSCL Activities

Educators using BSCW frequently aim for higher-order thinking skills, problem solving abilities, epistemic fluency, and collaborative growth of knowledge inside a field of practice. Often they put the weight on collaborative aspects of learning and also individual ones; the recognition of communal interactions as an important factor of knowledge construction, a focal point on the learner(s) and their activities (Bricken 1991 and Bricken & Byrne, 1993).

Using the BSCWs managed learning environment can be more complicated than the earlier approaches of computer support in education. As an often-social learning context, there are endless numbers of variables. It is consequently harder to assess the usefulness of BSCW activities (Bricken, 1990). Nevertheless, all participants involved in BSCW based CSCL processes must have proof of whether, how, and when expected improvements in learning take place.

Conclusion

The project was based on cross-cultural collaboration in developing the ideas of Computer-Supported Collaborative Learning approach in the direction of in-service teacher education via the BSCW on-line managed learning environment. This took the shape of an interactive CSCL environment where students were provided with the tools, materials and necessary communications for their independent thoughts to become ideas and ultimately become products in the shape of delivered project (The ICE-ED website 2012).

Computer supported collaborative learning has the possibilities for driving educational reform efforts, but there are many challenges to face before achieving that vision. We have developed a new CSCL pedagogical tool the flexibility of which is inspiring good in-service teachers to

create exciting new collaborative learning activities, and whose persistence is an enticement to students.

A successful aspect of this work has involved schools and teacher training providers, building culturally different work in in-service teacher education in the participating countries. The European meetings with the teacher trainers in the project have formed a sustainable outcome of the project and forms plans for the CSCL environment content.

In the project, a pedagogical strategy for the in-service teacher training based on CSCL courses has been developed and implemented over the Internet. The students and teachers have both worked online and locally offline with their projects in real-time and in face-to-face situations instead of using only general classroom activity, as in the formal classroom-based model (Page and Thorsteinsson, 2003). The boundaries of information and communication technologies have been extended to their limits in the area of CSCL supported technology education.

This paper has raised many important issues in the field of CSCL and the concept of cooperative work and its computer support though the platform BSCW. The emphasis has been placed on the distributed nature of cooperative work arrangements and the supplementary needs this places on the design of technological support.

The ICE-ED project has thus broadened the scope of CSCL within the support of little groups or teams, as this has been shown to be but one form of work arrangement, and certainly one that has particular sort which does not simplify the majority of the work settings. The value of using CSCL supported technology for in-service teacher education in Europe lies in the concept of hinterland. Cross-national courses like the ICE-ED has have been difficult to run without this technological approach. Hopefully the project's experience will inspire other groups of educators to explore these possibilities further.

References

[1]. Bricken, M. & Byrne, C.M. (1993). Summer students in virtual reality: A pilot study on educational applications of virtual reality technology. In A. Wexelblat (Ed.), *Virtual Reality Applications and Explorations.* Cambridge, MA: Academic Press Professional.

[2]. Bricken, M. (1991). Virtual Reality Learning Environments: Potentials and Challenges. Human Interface Technology Laboratory, University of Washington, Seattle, WA. http://www.hitl.washington.edu/publications/.

[3]. Bricken, W. (1990). Learning in Virtual Reality. Human Interface Technology Laboratory, University of Washington.

[4]. Carmichael, P. and Honour L. (2000). Open Source as appropriate technology for global education. *International Journal of Educational Development* 22, pp. 47–53.

[5]. Carr, W. Kemmis, S. (1989). *Becoming Critical. Education, Knowledge and Action Research*. Philadelphia: Falmer Press.

[6]. Crook, C. (1994). *Computers and the Collaborative Experience of Learning*. London: Routledge.

[7]. Ellis, C.A., S.J., Gibbs, and G.L., Rein (1991). Groupware: Some issues and experiences. *Communications of the ACM*, Vol. 34, No. 1, January 1991, pp. 38-58.

[8]. V.G., Fernández, Garcia, A. Gorghiu, G., Gorghiu, L. (2005). BSCW As a Support System for Distance Teacher Training, in: Recent Research Developments in Learning Technologies, *Proceedings of the Third International Conference on Multimedia & ICT's in Education*, Vol. 2, pp. 696–701.

[9]. Lehtonen, M. (2005). Simulations as mental tools for network-based group learning. In P. Nicholson, B. J. Thompson, M. Ruohonen & J. Multisilta (Eds.), *E-Training Practices* for Professional Organisations. IFIP TC3 / WG3.3 Fifth working conference on eTrain practices for professional organizations (eTrain 2003) Open Working Conference, 7-11 July, 2003 in Pori, Finland. Boston / Dordrecht / London: Kluwer Academic Publishers, pp. 11–18.

[10]. Lehtonen, M., Thorsteinsson, G., Page, T. and Ruokamo, H. (2004). A Virtual Learning Environment for the Support of Teaching, Studying and Learning in Technology Education (Winner of best paper prize), *Proceedings of Fourth IASTED International Conference on Web-based Education.* Dr Vladimir Uskov (Ed), ACTA Press, WBE 2005 ,Grindelwald, Switzerland, February 2004, pp 109-118,

ISBN: 0-88968-480-2.

[11]. Page, T., and Thorsteinsson, G. (2003). The Application of Internet-based Tutorials and a Managed Learing Environment in Support of the Teaching and Learning of CAD/CAM", *Technology Education and Educational Technology E-Training Practices Proceedings of TEKA/FATE Symposium.*

[12]. Lehtonen, M., Kannanoja, T., and Thorsteinsson, G. (eds), (2003). Finnish Association for Research in Technology Education, University of Lapland, Centre for Media Pedagogy, TEKA/FATE Symposium 2003, Helsinki & Lahti, Finland, p 28, ISSN 1459 6873 .

[13]. The ICE-ED website 2012. Accessed via WWW (3. May, 2012): via http://ICE-ED.info.

ABOUT THE AUTHOR

Dr. Gísli Thorsteinsson is working as an Associate Professor at Iceland university of Education, in the Department of Design and Craftin. He holds a doctoral degree in Philosophy from Loughborough University in England, which focused on using a Virtual Reality Learning Environment for idea generation training in Innovation Education inIceland. Gisli was the chairman of the Icelandic Craft Teachers Society in 1995–2005, the chairman for the Nordic Slöjd Teachers Society in 2001– 2005 andon the board of NordFo, an Academic Research Society for PedagogicCraft Education in the Nordic countries, in 2000–2005. Gisli was involved in building up a new national curriculum for ICT and Technology Education in 1999. He has published numerous articles and several textbooks on Innovations in Education and Design and Craft Education.