Abstract:
Computer Mediated Communication (CMC) on-line environments have given rise to innovative new ways to teach and learn. However, so far teaching and learning processes have been technologically driven as opposed to pedagogically led. This article identifies the development of pedagogy of CMC for in-service teacher training and its relation to constructivism learning. This is in the context of teacher education, where it has been devised for the support of in-service teacher education. This work promotes the understanding of using CMC in education for teachers, learners and educational decision-makers. Furthermore, it can be shown that when pedagogical considerations are given weight in the development of such technology-based learning services, improvements arise for all stakeholders.

This work forms part of the FISTE project (2004-2007), which is based on the need for innovative and effective ideas for increasing the efficiency of teachers' daily work. In essence, the project is aimed at finding new ways of how to teach in-service teachers in in-service teacher training and how the teachers themselves can learn and upgrade their knowledge and teaching methods by using ICT. The project concerns the development of an in-service teacher course on national and on European level (see further on http://bscw.ssai.valahia.ro/).

Keywords: The FISTE project, In-service teacher training, pedagogy, Computer Mediated Communication, ICT, on-line community, BSCW.

1. Introduction

Novel and exciting ways of stimulating and simulating in-service teacher education through the use of ICT are not currently being fully explored. However, it is clear that the use of CMC Environments have given rise to new and innovative ways of teaching and learning. Nevertheless, it is acknowledged that teaching and learning processes have been
technologically driven as opposed to pedagogically led. Previous research in the field of human computer interaction has studied the effect of presence, within these CSCL environments [3]. Thus, this research has identified the need to map the pedagogical and theoretical implications of using VLE technologies on the teaching learning processes. This has led to the creation of a pedagogical model as a foundation for using advanced technology. This paper seeks to outline the particular model and its implementation.

The FISTE project is based on the use of the BSCW platform, a virtual learning environment, with supporting Internet and database technologies, to facilitate constructivism learning in the context of in-service teacher education (The FISTE website 2006). The on-line Virtual Learning Environment platform BSCW is used as a tool to facilitate the way the participants work together, as evident in figure 1. It is a continuous meeting place for them, a stable base to work from and at the same time an easily accessible archive of the entire FISTE project teaching material on which all the undertaken activities are based.

The paper firstly describes Computer Mediated Communication (CMC). Secondly, it reports recent research on CMC and its value for in-service teacher training. Thirdly, it reflects on the value of face to face communications for establishing personal on-line communities. Finally, it discusses the values of developing the sense of such communities.

**Fig. 1 The participants in the FISTE project in a face to face meeting.**

### 2. Using CMC for in-service teacher training

Recent research projects indicate that teachers using CMC acknowledge the existence of a community [14]. While some see themselves as part of the family, others feel that they are outside the family. Nevertheless, not all participants have the same sense of belonging to the community. Some feel that there are groups within the family and they either have to join the existing groups or start their own group.
In-service teacher trainers design, develop, research, and teach their courses. The use of computer-mediated communication learning environments opens a lot of new opportunities to change the conventional way of teaching and learning. The role of the instructor usually changes from providing information to facilitate resource for learning activities. The CMC environment is of a constructivist nature in which collaborative learning actions take place. Constructivism is the paradigm or world view that recognizes learning as the process of constructing meaning about or making sense of our experiences. In order to establish constructivism learning recent research projects indicate that while teaching in a computer conferencing course "the teacher must adopt the role of facilitator not content provider" [9].

3. Computer-Mediated Communication

Computer-Mediated Communication (CMC) focuses on social effects applying various computer-supported communication technologies. CMC is every form of communication via Computer-supported media among two or more persons, who interact with each other [16]. CMC is a low-cost alternative for facilitating the teacher dialogue with students and provides the teacher and the students with an electronic form of both individual and group learning support. An important element of CMC is the mediatory idea that the use of computers for communication can alter both the types of messages and the thinking of the individuals involved [9].

Many recent CMC studies involve Internet-based social networking supported by social software as BSCWs’ [10]. CMC includes various unlike forms of synchronous, asynchronous, or real-time interaction that humans have with each other using computers as equipment to exchange text, images, audio, and video (see figure 2). CMC includes, for example, e-mail, network communication, instant messaging, text messaging, hypertext, Internet forums. CMC is very often used in a classroom setting to facilitate students’ access to information in the conventional classroom and to enable multi mode communication between students and teachers. This also enables communication to the society inside of the classroom through the Internet.

![Diagram of CMC communication methods](image)

**Fig. 2** CMC offers various ways for communication in order to affect the group dynamic social interaction in the conventional classroom.
4. Face to face communication (FFC) and CMC

The lack of social and visual prompts in CMC and its effect on participant association is an issue which has been recognised in the context of open and distance education [13]. Some research projects prove that the removal of the appropriate indications in CMC removes the demands to act in accordance with plain group norms and encourages more expression of feeling and more attention to interpersonal associations [11]. They also indicate that CMC provides opportunities for self-conscious participants for communications [8].

However, alternative research studies show that in CMC partakers tend to be less inhibited and less responsive to other partakers’ feelings, more direct and offensive, as evidenced by furious (reacting by e-mail in a hostile and/or insulting manner to a newsgroup posting or website) on the network [13].

Nevertheless, more and more researchers believe that CMC should be complemented or supplemented by face to face communications [6]. Mason & Kaye [6] state that it is better to use CMC as an addition with a variety of opportunities for interactivity so that people’s varying communication needs, moods, and situations can be catered for. CMC should not be seen as an alternative for face-to-face events but rather continuing to serve a number of face to face functions (i.e. tutorial discussion, seminars, counselling, socialising, etc.) opportunely in between face to face meetings [6]. A group of learners who have already met each other face to face, in the company of a tutor are more likely to be able to communicate effectively on-line as the personal meeting has provided a number of contextualising points that would otherwise be missing from discussions held totally within the agenda of a computer conference [13].

5. Developing the sense of online community

Recent research projects indicated in the literature show that face to face communication (FFC) is important to develop a sense of community in which members feel secure to engage in collaborative learning and critical discussions. Some research studies have identified that many CMC participants provide powerful emotional feelings in the online groups (see figure 3). They also frequently build up a strong sense of belonging to these groups as well as a web of personal relationships if they participate in on-line discussions over a long period. However, a few studies have discovered that this is not relevant to all participants [5]. Selinger [12] did his study on the use of CMC by student-teachers enrolled in distance learning programs. He found that students felt big sense of on-line community even though some of them had only met a sub-set of it. However, once they had enough confidence to start posting messages and felt they could offer something, they were less nervous about who was reading their email.
In the TELEC [14] project it was found that after meeting the staff and participants from other schools in training workshops and seminars, teachers felt less social distance and they were no longer anonymous. Following meeting the TELEC staff in person, the participants felt that they could address each other by their first names. This research project also indicates the decrease in social distance between University teachers running the course and the in-service teachers taking part in it after having a face to face meeting. Besides a change in personal relationships, there was also a change in their sense of responsibility to the community. Participants felt that they had the responsibility to respond to the messages that TELEC staff sent them at the on-line conference. They also felt that they had the responsibility to answer mail messages even when they were not addressed to them.

6. Conclusions

Many recent research projects indicate the importance of seeing the CMC as a tool that can support face to face educational processes. To see the pedagogical value of collaborative work for in-service teacher education, and how it affects the pedagogy of teaching and learning, it is important to look at the activity inside the conventional classroom, when the students are using the CMC face to face.

In the FISTE project, the participants worked very closely with one of the key principles of the action research methodology, i.e., participatory: research through which practitioners work towards the understanding and improvement of their own practices [2] Therefore logical continuity of such a project would be an action research approach to develop further pedagogical understanding of using CMC both in the context of face to face and online education.

There are implications for cooperative-learning situations in the in-service teacher education class in relation to the theories of social constructivism. According to Vygotsky [17], the zone of proximal development is the difference between what a student can do
alone and what he/she can do through supportive collaboration. According to Bricken [1] the use of CMC in a conventional classroom may support such constructivism learning situations. In the school classroom, they communicate with co-students and the teacher and expose each other to thinking processes throughout their communication during their work. At the same time they use CMC based on their relations from the face to face associations. This part of the in-service teachers’ activity brings the students closer into their zone of proximal development and is one of the characteristics of the FISTE in-service teachers’ course. According to this, the use of CMC technologies could be seen as a constructivist-learning tool [6].

However, there are many critical issues and considerations concerning the use of CMC technology in education. CMC technology means extra cost for the school, in terms of the software and equipment needed. However, most schools have modern computers that can run such technology.

To explore the educational efficacy of using the CMC in the in-service teacher education, however, requires the development of appropriate and meaningful forms of illuminating this new mode of learning support. This could be done by looking at the differences between a conventional classroom based teaching and learning and on-line education. Hopefully such future work undertaken as part of the European Union attempt to improve the educational system and adapt it to the future needs will bring us better understanding of the values of implementing CMC in education.

References


