

New Perspectives for Learning - Briefing Paper 31

Computer-supported collaborative learning in primary, secondary and vocational education

Context of the Research

Developments in information and communication technologies are starting to make it possible to use the tools for assisting the process of learning beyond the boundaries of the classroom. In addition, their use will start to prepare learners for participation in a networked, information society where knowledge is the most critical resource for personal, social and economical development.

School children and students increasingly need to acquire the individual and the group learning skills for use in learning societies and learning organisations. They need to acquire the skills that enable them to cope with an abundance of information in order to build knowledge and thus learn from the knowledge acquired.

This project has explored the effectiveness of Computer-supported Collaborative Learning Networks in creating a community of learners who use educational technology to build knowledge together through learning environments. Experimenting with different kinds of educational software, the project studied 25 teachers from 20 schools and almost 600 students from primary (10-12 yrs), secondary (13-16 yrs) and vocational (18-24 yrs) education in five countries (Belgium, Finland, Greece, Italy, and The Netherlands).

Key Conclusions

The following key conclusions were reached: -

1. Computer-supported collaborative learning requires teachers and students to adopt an educational philosophy that focuses on “knowledge building” rather than “knowledge reproduction” as the main learning activity.
2. This requires both teachers and students to believe in and trust a learning style that involves active, self-regulated, constructive and contextualised learning by groups of students more or less independently.
3. However, not every student or teacher is used to this way of learning and for many it was not easy to learn together with other students. In addition, it is not easy to integrate this new educational philosophy with existing philosophies in schools.

4. Although other research has shown that co-operative learning is effective, if students have common goals and interests combined with individual accountability, in reality, it hardly occurs within existing school practice.
5. However, it was considered that computer support does add value by: -
 - a) The easier organisation in the classroom of collaborative learning.
 - b) Better visibility of collaboration processes involving of all students.
 - c) Making communication patterns visible and structuring types of communication.
 - d) Making types of thinking visible and organising enquiry-based learning.
 - e) Learning to build knowledge and meaning collectively.
 - f) Building connections with practice; and opening new forms of collaboration with other classrooms, schools, nations, and other partners like museums and universities.
6. Teachers and students do like to work through computer supported collaborative learning, however it is not easy to integrate new didactical practices into existing curricula. Also, international exchanges seem to have a positive effect on the motivation of both students and teachers.
7. But, teachers do not have the time for support or preparation of assignments and questions for use within a computer supported collaborative learning. Nor, are there enough didactical materials, or examples of good practice to help them fulfil their new roles.
8. Although it was not possible to identify a strong correlation across the various computer supported collaborative learning environments studied, various positive effects were found: -
 - a) There was relatively consistent evidence of students showing more interest in collaborative learning.
 - b) The practises of learning and instruction changed considerably.
 - c) Students worked in a more self-regulating way, directing their own projects.
 - d) The amount and quality of social interaction between teachers and students increased.

- e) Students developed skills for using information technology and basic knowledge acquisition. They learned to access extended sources of information and motivation increased.
9. It was found that there were significant advantages in using computer-supported collaborative learning in mathematics and languages, and in process-oriented measures like the quality of question raised and depth of explanation.
 10. The suitability of the software is also critical to computer-supported collaborative learning. However, the project found that although multimedia elements make network applications attractive, there is no evidence that they have pedagogical value without carefully planned instructional strategies and adequately educated teachers.
 11. Unlike the scientific communities, practising teachers do not consider highly the role of computer-supported collaborative learning within future learning environments. This is partly due to its novelty, but also highlights that the theoretical and practical principles of computer-supported collaborative learning are too immature to be adopted as practical educational reforms.
 12. Nevertheless, a form of computer-supported collaborative learning would be the most desired way to implement desired changes in educational practises like changing the educational philosophy of teachers and students.

Key Recommendations

The following recommendations were made: -

1. There is a need for theoretically well-grounded development of computer-supported collaborative learning practises and tools that are embedded in a practical educational context.
2. Effective infrastructures need to be established to ensure computer and computer networks are optimally utilised. Specialist IT technicians should be responsible for maintenance to enable teachers to concentrate on teaching.
3. Additionally, any technology needs to be adaptable to the instructional needs of teachers and to the daily realities of classroom life.
4. To effectively implement computer-supported collaborative learning in schools, financial support is needed for: -
 - a) Adequate teacher training.
 - b) Extra hours for teachers to design assignments and questions.

- c) Computers and software.
 - d) Pedagogical support.
5. Support is also needed for the creation of electronic communities for teachers, which can aid the development of new learning methods and help establish learning communities.
 6. School libraries needs to become multimedia centres, central to schools in order to promote individual learning and small group work with librarians trained to be guides and tutors in the search for information.
 7. Teachers also need training to develop technical expertise and know-how and to learn to be more effective guides and tutors.
 8. Opening schools to activities beyond school time could facilitate the participation of Institutions (within schools' territories) in the educational community.
 9. Educational research and the policy of national school institutions must be integrated as current research is artificially constructed and results in outcomes that scarcely affect changes. School administration, scientific institutions and school authorities must be fully involved in defining the needs of an ecologically valid experimental setting.

Further Information

Full title of project - "Computer-supported Collaborative Learning Networks in Primary and Secondary Education" with the final report completed in November 2000.

[Full report](#), [Abstract](#), [Summary](#), [Partner details](#)

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