Chapter XIII

Cooperative Learning and ICT

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Abstract

ICT can promote the cooperative learning that is a teaching strategy where small teams, each composed by students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Recent studies emphasized that the computer can play a central role in a teaching environment based on cooperative learning. This chapter focuses on an educational experience that analyses 45 high school students’ cognitive abilities while they are developing a database that contains their school evaluations and which will be available online. This educational approach used cooperative learning and the “Learning by Doing” environment. The database has been protected with passwords to different levels of priority (e.g., principal, school manager, parents, and students). The project involved three classrooms of the fifth year (students aged 18 to 20) in the Laboratory of System and Techniques of Transmission in a High School in Italy.
Introduction

Information and communication technologies (ICTs) can help the learning environment fortifying the active role of the students in their learning process. In this environment it is possible to combine the constructivist approach and the cooperative learning. Students work together to reach an educational goal and the computers and the information technologies can play a central role in the learning environment. The traditional learning theories are based on a dualism between knowledge and learner. The knowledge exists independently of the learner, and it can be seen as contextualized so that the knowledge can be learned, tested, and applied more or less independently of particular contexts. Teaching is a matter of transmitting this knowledge, learning of receiving it accurately, storing it, and using it appropriately. The use of the ICT to support the learning goes hand in hand with the philosophy of constructivism. The five guiding principles of constructivism are the following (Brooks & Brooks, 1993):

1. Problems must be relevant to the students.
2. Curriculum have to be structured around primary concepts.
3. Students’ point of view should be sought and valued.
4. Teachers have to adapt the curriculum to address students’ suppositions.
5. Teachers should assess student learning in the context of teaching.

The use of ICT can help the constructivist theory because it is possible to create a “Learning by Doing” environment that also combines the constructivist approach. The computer plays a central role in this environment. An instructional strategy that supports the constructivist approach is cooperative learning (CL) that is a teaching strategy in which small groups, each with students of different levels of ability and use a variety of learning activities to improve their understanding of a subject. CL is not simply a synonym for students working in teams where each member is responsible not only for learning what is taught, but also for helping learn, thus creating an atmosphere of achievement. Cooperative learning techniques:

1. Increase student retention
2. Promote student learning and academic achievement
3. Enhance student satisfaction with their learning experience
4. Help the students develop skills in oral communication
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