



Chapter XII

Project-Based Online Group Collaborative Learning Characteristics

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Abstract

This chapter illustrates a framework for online group collaborative learning based on Piaget's concepts of assimilation and accommodation and Vygotsky's theory of social interaction. This chapter examined how an online project-based learning approach affected students' cognitive skills development and their motivation, and explored factors leading to successful collaborative projects. The findings indicated that in a project-based online group environment unique characteristics exist for leadership style and individual role, goal setting and project management, accountability and commitment, peer supportive relationships, individual accomplishment and group accomplishments, and mixed gender and race group preference.

Introduction

The value of collaborative learning is widely recognized because of its positive effects on social, cognitive and metacognitive development. One advantage of collaborative learning is that it provides students opportunities for self-reflection and joint construction of knowledge, and this environment frequently leads to higher levels of task-related interaction and behavior (e.g., Johnson, Johnson, & Stanne, 1986). When students are able to participate in active learning activities, they find learning more pleasurable and satisfying than non-participative events.

Small-group dynamics have been studied in educational contexts since the 1970s. Research indicates that small groups facilitate learning as compared to individual learning (e.g., Johnson, Johnson, & Stanne, 1986; Hamm & Adams, 1992; Bruffee, 1999), and that peer group work has significant impacts on varied learning outcomes in both face-to-face and online learning environments (e.g., Harasim, 1990; Scardamalia & Bereiter, 1996; Bruffee, 1999; Uribe, Klein, & Sullivan, 2003). Although much of cooperative learning research initially focused on face-to-face cooperation at the elementary school level, it is now gradually extending into higher education, which is the focus of this study.

Positive interdependence promotes 'group cohesion' and a heightened sense of 'belonging' to a group; and can be achieved through the task, resources, goals, rewards, roles or the environment (Brush, 1998). Individual accountability refers to the extent to which students are individually accountable for jobs, tasks or duties, and was introduced to counter the 'free-rider effect': some students would deliberately not invest any (or little) effort. Both principles, however, relate to group dynamics phenomena 'group cohesion' and 'social loafing' (Du & Havard, 2003), and thus apply to any form of small-group learning. Bosworth and Hamilton (1994) proposed a process-oriented design method for online group-based learning that focused on fostering the envisioned group interaction thought to enhance learning instead of focusing on the formal product of such interaction. This method tends to be the dominant view in most institutions providing higher education and centers on five elements that directly shape group interaction: learning objectives, task type, level of pre-structuring, group size and technological tool used.

The need for systematic design of online learning is amplified by some observations that exhibit conflict regarding coordination during group interaction. These observations suggest conflicts are more likely to occur in asynchronous online settings compared to face-to-face settings (Du & Havard, 2005), since group members are not present at the same time and/or place. Also, the lack of presence concerning immediate feedback and face-to-face setting make asynchronous communication 'unnatural.' Clearly, some support should be designed to help students overcome difficulties in group coordination during asynchronous collaboration.

Group performance effectiveness depends on the groups' use of their alternate opinions and on the handling of increased coordination (Shaw, 1981). Roles, stated

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