Exploring the Relationship between Learning Styles and Technological Collaborations

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Abstract

This paper describes the first phase of an on-going research project about learning styles and collaboration. The objective of this research is to explore the relationship between learning styles and collaboration among students taking a course about technology for learning, 100 graduate teacher education students participated in this study and were surveyed before and after the activities about their ability to use the technology tools, their attitudes about collaborating, and their confidence in working as a team. These data were compared to assessed learning styles of the participants. This study reveals the advantages of collaboration in the technical classroom with an emphasis on understanding the impacts of learning style on classroom relationships. This study provides a unique opportunity to compare millennium generation students with students who were born prior to 1980. Because half of the participants in this study are undergraduate teacher education majors and the other half are master's level post-bach students, the study compares these two groups in terms of how they interact in collaborative groups while using technology.

Background

Conversations about technology enhanced education have not been about technology but about learners (Filipczak, 1995, Solloway & Harris, 1999; Falvo, 2003; Falvo & Solloway, 2004). Conversations transition from discussions of instructor as

technologist to discussions of on-line learners and their needs for reciprocal relationships (Wagner & McCombs, 1995; Wolcott, 1996). How the technology is used is more important than what is used (Jones, 1996; Hipp, 1997: Morgan, 1995; Falvo 2003). Establishing classroom and online relationships involves both moving from instructor control to empowerment of learners, exploring learner characteristics including learning styles, and recognizing that knowledge is a socially constructed project (Cowan, 1996; Dempsey, 1994; Falvo, 1999; McCaffery, 1997;McHenry, 1995; Yucha, 1996). Knowledge is enhanced through collaborative learning (Burnham & Walden, 1997). Kolb (1981) defines learning styles as preferred methods for perceiving and processing information. Differences in styles result from heredity, past life experiences, and environmental demands. Situated learning uses inter connections of technology to serve the inner connections of learners to open deeper understanding of a content area (Johnassen, 2001; Herrington & Oliver, 1997; Thorpe, 1995; Gardner, 1991). Additionally, instructional technology spans both processes for teaching and the development of resources and tools for learning (Reiser, 2001). The evidence available suggests that further research is needed to identify which tools help on-line instructors support learners in collaborative, learner-centered communities.

Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning. Although sometimes described synonymously with cooperative learning, collaborative learning has historically been much less structured and more student-directed than more than cooperative learning (Johnson & Johnson, 2004). Technology-rich learning environments that promote collaboration effect learning styles and motivation (Cohen, 2001). Moving beyond

cooperation, participants of collaborative groups most always express interdependence, synthesis, and independence (Hathorn & Ingram, 2002). When group members reflect on their learning styles, they have a heightened awareness of how their styles affect group dynamics (Kolb, 1999). Instructors use and promote scaffolds, tracking, motivation, relevance, and shared goals to enhance collaborative learning (Gilbert & Driscoll, 2002; Wang et al, 2001). Other studies have explored levels of interaction in relation to how learners engage in classroom and online collaborations (Falvo & Solloway, 2004; Rovai, & Barnum, 2003; Wang, Hinn, & Kanfer, 2001

Although team or group work is increasingly popular in both on-line and face-to-face classrooms, those teams are not always effective. While a number of factors contribute to team effectiveness, learning styles, specifically a teams learning style profile, are a prominent factor (Kolb, 1999). Understanding learning styles can assist the facilitator of learning activities, the students engaged in collaboration, and the leadership of the collaborative group. The complex dynamics of a group involve interpersonal communication, conflict resolution, consensus building, and formative and summative feedback. People with different learning styles generate different perspectives on effective strategies for dynamic group interactivity (Kolb, 1999).

Although no single media, method, or learning paradigm will address the wide-range of problems and issues for teachers and learners (Hannafin, 2001), many factors drive teachers to integrate technology into their instruction: government, business, school boards, professional organizations, community members, parents, and the teacher's desire to learn technology. As teachers consider using new technologies, they question long-held beliefs about the purpose and nature of both content areas and instruction

(Sandholtz, Ringstaff, & Dwyer, 1997). Previous studies indicate that appropriate use of technology requires more time for teacher planning and skill development than traditional techniques (Schrum & Fitzgerald, 1996). In essence, the computer becomes an impediment holding the teacher in a time-consuming situation compounded by a lack of administrative and technical support. In some cases, enhanced technical training programs combined with extensive technical support assists teachers in incorporating technology into their classrooms (Bradshaw, 2002). However, consistent support of technology for teaching and learning, and continued training is rare.

In a qualitative study of an urban high school, Schofield (1995) describes how the social organization of school and classroom influences the use of computers, and how computer use in turn affects the functioning of classrooms. Schofield's study shows that the use of technology in learning shifts the teacher's role from lecturer to coach, or guide, of the classroom. Teachers who become classroom guides facilitate a cooperative learning environment, becoming partners with their students. Partnerships between teachers and learners are the foundation of learner-centered classrooms (Davies, 2000). In another study researchers found that on-line learning tools and expectations combined to generate an awareness of and sense of community in an on-line course (Falvo & Solloway, 2004). Additionally, increased instructional support or scaffolding that focuses on helping learners reflect on and articulate their ongoing understandings will allow students and faculty to achieve greater coherency and experience less frustration (Land & Greene, 2000).

In reality, while more schools come on-line and technology is funded through government funds, grants, and local money, teachers are not being trained to use these

technological systems (Schrum & Fitzgerald, 1996). At the same time, teachers are struggling with large classes of diverse learners who, in many cases, need individualized instruction (Hannafin, 2001). Beyond wanting access at school and home, educators desire substantial time to learn, practice, experiment, and explore the resources for technology (Schrum & Fitzgerald, 1996). Educators need this reasonable access to technologies without having to incur personal expense. Teachers continue to express serious concerns about teaching with technology; when their concerns are addressed they can move on to help address the concerns of their students (Rakes & Casey, 2002).

Computers, the Internet, or distance-learning cannot replicate the art of teaching. These tools can, of course, augment an already high-quality educational experience, but to rely on them as any sort of panacea would be a costly mistake (Flowers, 2001). Instructional designers remove barriers to individualized learning when they focus on information objects, scaffolds, discourse action communities, and facilitation (Moller et. al., 2002). The use of on-line learning tools must fit instructional goals (Strehle, Whatley, & Kurz, 2002) and fit the needs and learning styles of users and instructors (Leopold-Lusmann, 2000). Additionally, on-line learning provides an environment that is time and place independent (Deal, 2002). These online courses are typically conducted in one of three environments: completely online without face-to-face interaction; as hybrid courses where the class meets face-to-face frequently, as well as online; and as face-to-face sessions with integrated web-based support materials and activities (Horton, 2000). The investment goes beyond buying expensive equipment; school systems need to invest in educating teachers to properly integrate the technology (Blair, 2002).

Method

This study took place during the 2004-2005 academic-year at two mid-sized public universities one in the Northeast and one in the Midwest. Close to one-hundred graduate teacher education students participated in the study. Qualitative and quantitative data for this paper includes class records, reflective statements, observation notes, student projects, the Kolb (1982) learning style inventories and the student collaboration survey (Wang et al, 2001). After the data were coded by standard quantitative (including t-tests and two-way anova) and qualitative research methods, significant relationships, issues and themes emerged.

Results

The preliminary results show how collaborative activities, and student perceptions of collaboration skills used in conjunction with the heightened awareness of learning styles and worked to establish a relationship-oriented, learner-centered collaborative community. Additionally, many students value opportunities to give and receive assistance and support from peers. In the pilot group, participants rated the collaboration activities as being useful for their learning and as being an enjoyable experience.

This is an on-going study where additional data is being collected to explore links between learning styles and attitude toward collaborating through the use of technology. Although the initial pilot data for this study did not show any significant relationships, further exploration of those possible links is deemed necessary by the researchers.

Because collaborative groups in this study are assigned randomly, at least two hundred participants will be needed for reliability.

Summary

The predictions for technology infused classrooms and on-line teaching environments state that by 2007 more than half of all university students will take courses on-line and all students will use technology daily in their studies (Horton, 2000). The social construction of knowledge demands the necessity of community in online classrooms and technology rich learning environments. Research that supports the instructor's capacity to use technology to facilitate collaboration is imperative. The researchers in this ongoing project home to continue exploring these important issues.

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