Collaboration in the Online Learning Environment

Promise and Challenges

(β) basis policy research

Florida VirtualSchool
CELEBRATING 15 YEARS of INNOVATIVE EDUCATION

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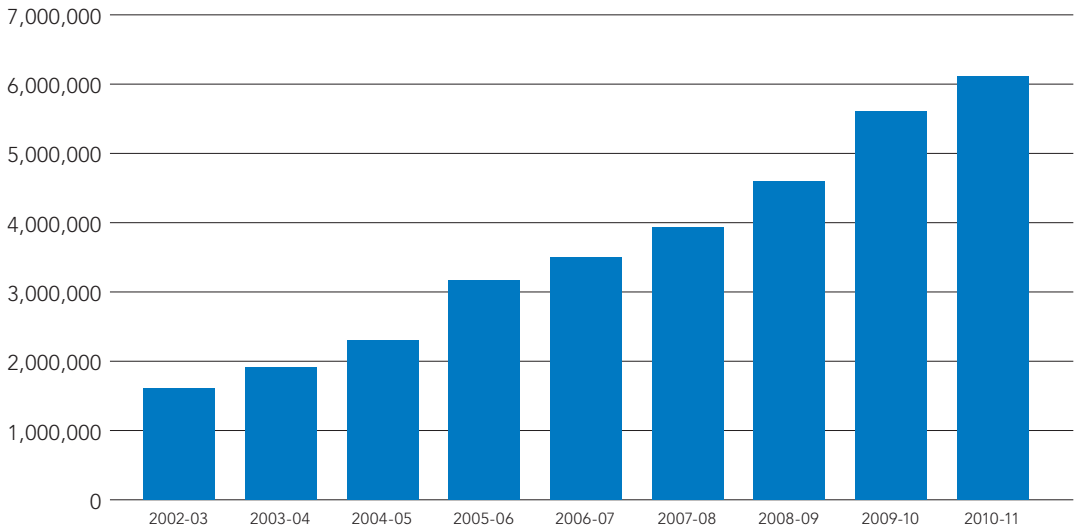
Introduction

Online education is quickly becoming an important force in this country's push to rehabilitate primary and secondary education. According to a recent report conducted by The Sloan Consortium (2011), close to six million Kindergarten through Grade 12 students were enrolled in online courses nationwide in the 2010-11 school year. This number represents an amazing increase from the 1.5 million students enrolled in online courses in the 2002-03 school year. Figure 1 displays this rapid growth in online enrollment from 2002 to 2011.

Figure 1: Total Online Student Enrollment

(Kindergarten through Grade 12 Students)



(Allen & Seaman, 2008; Allen & Seaman, 2011)

The number of full-time online students also continues to rise, with 250,000 full-time Kindergarten through Grade 12 students enrolled in the 2010-11 school year (or a 25 percent increase from the prior year) (iNACOL, 2012). In addition, the number of states with virtual schools has increased substantially, with 40 states offering online classes in the 2011-12 school year (representing more than a two-fold increase from 16 states in the 2004-05 school year) (Smith et al., 2005; iNACOL, 2012). Today, 30 states and the District of Columbia offer full-time online virtual schools. Moreover, parental confidence in the use of technology in education is high. According to the latest Gallop Poll, 95 percent of parents support their children earning credits online, with the majority of those parents citing college admission as a major driver of their children's enrollment in online courses ("Highlights of the…", 2011).

There are many reasons for this sea of change. Virtual schools offer courses that many students would normally not have the opportunity to take through a traditional elementary, middle, or high school. Online classes provide students from high-poverty or rural areas with vital access to advanced courses, or even just regular courses not offered in their local schools. Students with disabilities or nontraditional learning styles may benefit from an online environment in which instructors can apply innovative technologies in lesson plans. Online schooling is also often used for credit recovery, which is a process students undergo to gain credit for a course they previously failed.

However, major challenges remain that inhibit the success of online education. Prominent among them is the difficulty inherent in realizing collaborative learning in the online educational environment. Its analogs in traditional education pedagogy – namely problem-based, project-based, and collaborative learning – "have been met with enthusiasm among K–12 educators, despite the time, effort, and cost involved in implementation and despite a scarcity of rigorous evidence of their effectiveness" (p. 1159, Wirkala & Kuhn, 2011). We suggest the same could be said of online collaborative learning.

In light of that challenge, this report introduces collaborative learning in the larger context of online education, and then discusses its promise and most salient challenges. In the absence of more prescriptive best practices (Lockee et al., 2011), we conclude with a series of observations on the dimensions of collaborative learning to which educators in online education should turn (or continue to focus) their attention.

Online Education

Online education encompasses a diversity of products, processes, services, technologies, and ideas, all in support of student learning. In the broadest sense, online education comprises "a wide set of applications and processes such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration", including the "delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, and CD-ROM" (Kaplan-Leiserson, 2000). As a dedicated provider of these educational services and technologies, a virtual school is an "educational organization that offers courses through Internet- or Web-based methods" (p. 1, Clark, 2001). A virtual high school, specifically, serves as "a state approved and/or regionally accredited school offering secondary courses through distance learning methods that include Internet-based delivery" (p. i, Clark, 2000).

The oft-cited benefits of online education in Kindergarten through Grade 12 include providing students in rural or high-poverty school districts with access to both regular and advanced courses not offered in their local elementary, middle, or high schools. These courses may serve credit recovery purposes, such that students gain credit for a course they previously failed. Beyond access to expanded curriculum and content, online education enables students to take control of their learning (Means et al., 2010). Online education also opens learning up to a diverse population of students (Freedman et al., 2002; Cavanaugh & Blomeyer, 2007; Tucker 2007). Students with learning disabilities or exceptional learning styles, for instance, can benefit from engaging technology and an education pedagogy that stresses learning on one's own terms.

Online education also offers teachers a unique opportunity to engage in innovative instruction. Because online teaching requires far more deliberate lesson planning, teachers must examine their lessons carefully and apply a harsh editing eye to their teaching style (Lowes, 2005). Additional benefits (for students and teachers alike) stem from the opportunity for immediate feedback, availability of visually-stimulating tools, and computer applications that promote cognitive complexity (Lowes, 2005).

That said, online education is a relatively new concept, and pedagogy unique to technology-centered education is only now being formed (Freedman et al., 2002). Neither sufficiently-prescriptive standards nor consistent studies on best practices have been produced to help educators develop effective strategies (Reeves, 2003; Cavanaugh et al., 2009; Greenberg, 2009; Freedman et al., 2002). Research also reveals a lack of proper assessment mechanisms and tested strategies for Kindergarten through Grade 12 online learners (Cavanaugh et al., 2009; Reeves, 2003). Perhaps most importantly, many educators and parents remain concerned that online courses will not provide students with a proper social education as a consequence of learning in an online and often asynchronous environment. They worry their children will not engage, work, and learn in collaboration with others.

Collaborative Learning in Online Education

Concept

Within traditional education pedagogy, it has long been thought that the social dimension of education plays an important role in preparing students to operate within their personal and professional worlds. Online education is unique in that it does not necessarily result in students socializing with one another or with their instructors, leading to educator and parental concerns over issues of social isolation, student-teacher interaction, and limited opportunities for active participation.

Typically, the social dimension of online learning is described in terms of *interaction, cooperation,* and *collaboration,* each with roots predating the advent and growth of technology-centered education (Lai, 2011). *Interaction* was originally defined by three basic modes – learner-content, learner-instructor, and learner-learner – that describe students' experiences with course materials, teachers, and fellow students, respectively (Moore, 1989). While these modes have long been considered the foundation of interaction in traditional education, the dramatic growth of online education has led to recognition of another type of interaction, learner-interface (Hillman et al., 1994). Learner-interface refers to the interaction that occurs between a student and the technology that he/she uses while enrolled in an online course.

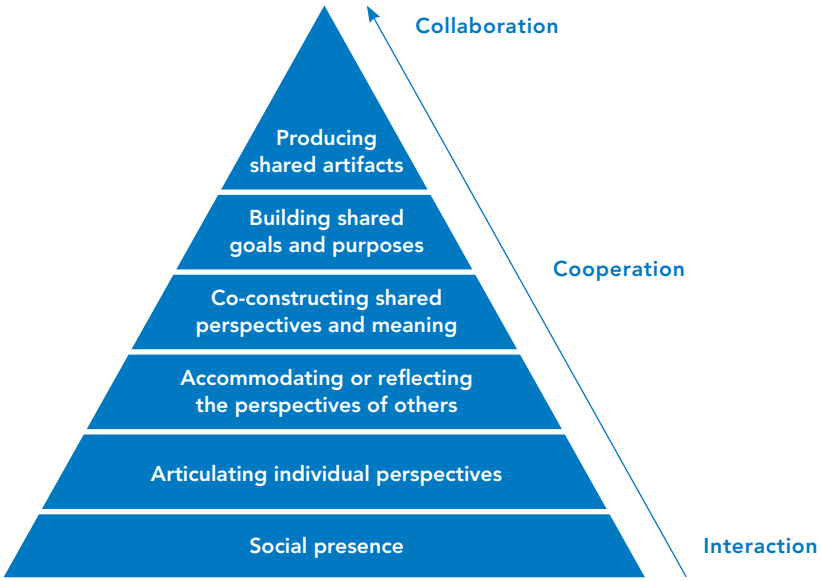
Interaction, though, tends to entail the student only using someone or something else to further their learning. This limitation is easy to conceptualize in the learner-interface mode, if one were to think of a student interacting with an educational software program. Imagine, instead, one student just passing information (e.g., the answer to a chemistry instructor's question regarding perfectly symmetrical tetrahedron molecules) along to another student, without imparting anything regarding that information's origin, relevance, or meaning. In this example of the learner-learner mode of interaction, the second student might be learning; however, the first student is not doing much more than transferring that information (Grosz, 1996).

According to Roschelle and Teasley (1995), "*cooperation* is accomplished by the division of labour among participants, as an activity where each person is responsible for a portion of the problem solving," while *collaboration* involves the "mutual engagement of participants in a coordinated effort to solve the problem together."

Both *cooperation* and *collaboration,* in contrast, require collective effort. They entail shared or group engagement in support of learning. According to Roschelle and Teasley (1995), "*cooperation* is accomplished by the division of labour among participants, as an activity where each person is responsible for a portion of the problem solving," while *collaboration* involves the "mutual engagement of participants in a coordinated effort to solve the problem together" (p. 70). Other researchers share Roschelle and Teasley's belief that collaborative learning relies on a shared goal (Grosz, 1996; Murphy, 2004; Watson & Gemin, 2008). Some researchers use cooperation and collaboration interchangeably (Hooper & Rieber, 1995). However, we choose to preserve this distinction, in an effort to position collaborative learning as the more advanced and desirable pedagogical approach of the three.

Murphy (2004) lays out a model showing the gradual transition from interaction to collaboration (see Figure 2). Like Roschelle and Teasley (1995), Murphy defines collaboration as a joint effort that grows out of interaction. Cooperation, which is not included in Murphy's original study, can be placed directly in between interaction and collaboration in this model. Interaction begins at social presence, which describes a student's presence within a classroom. Interaction gradually becomes cooperative as students share their views with one another and work together to solve problems. Collaboration then follows as students produce something together under a common goal.

Figure 2: From Interaction to Collaboration



(Murphy, 2004)

Promise

Against this backdrop, researchers continue to reach common a consensus that online education will have to incorporate social activities that occur within a traditional classroom (e.g., Roblyer & Wiencke, 2003; Smith et al., 2005; Shea et al., 2001). On the whole, research indicates that online students perform just as well or modestly better than their classroom peers. In a meta-analysis of online learning conducted in 2009, Cavanaugh et al. reviewed a collection of 226 publications written on the effectiveness of online learning between 1997 and 2008. Their analysis reveals that Kindergarten through Grade 12 students who learn online perform as well as their counterparts in regular classrooms. This "no significant difference" phenomenon, which describes a lack of difference between student achievement in online and classroom settings, is backed by a number of other meta-analyses (Cavanaugh et al., 2009; Means et al., 2010; Rice, 2006; Smith et al., 2005).

While the literature on the effectiveness of online collaborative learning, specifically, is relatively thin, there is some evidence of its influence. Students taking online courses, for instance, report higher satisfaction with their learning experiences when they are engaged in collaborative assignments (Hooper & Rieber, 1995; Shea et al., 2001). From a psychological standpoint, collaboration within a classroom or workplace "is positively related to a number of indices of psychological health, such as emotional maturity, well-adjusted social relations, strong personal identity, ability to cope with adversity, social competencies, and basic trust in and optimist about people" (p. 1024, Johnson & Johnson, 2002).

Online collaborative learning also promises potential to boost academic performance. A survey-based study (albeit in higher education) conducted at two southern state universities of 332 students revealed that 72 percent of students believed that collaboration with an instructor contributed to academic success, while 52 percent believed that collaboration with other students brought about greater academic achievement (Gaytan & McEwen, 2007). In another study, 101 groups of secondary education students were assessed as they worked on a historical inquiry task, and researchers found that groups who invested greater resources into regulating the process of collaboration performed far better than their counterparts (Janssen et al., 2012).

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Online discussions, while not naturally collaborative, represent an important first step in developing collaboration between students in an online course offering. They also speak to the practice's fundamental promise and challenges. A study comparing online and face-to-face learning used student feedback to compile a list of benefits and restrictions of online discussions (Ellis, 2001). The benefits most often cited by students regarding online discussions are that they can be pursued in a convenient time and place due to their asynchronous nature in an online environment, and that online discussions make it much easier for students who are quiet or reflective to participate. Other benefits cited by students include having the instructor as more of a moderator as opposed to a leader, being able to see conversation prompts at all times, and the ability to express one's views in an environment with less pressure to fit in among peers (Ellis, 2001).

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Challenges

Many challenges that instructors and students face in online collaborative learning mirror those of the traditional classroom. Current research tends to focus on issues related to student behavior, such as social loafing, free-riding, and groupthink (Johnson & Johnson, 2002; Roberts & McInnerney, 2007; Hill, 2002). In the previously referenced study comparing online and face-to-face learning, students reported their main problems with online interaction to be the absence of face-to-face nuances and the inability to understand the depth of their classmates' feeling regarding topics of discussion (Ellis, 2001). While also a problem in a traditional classroom setting, student isolation and antipathy toward group work is amplified in an online environment (Hill, 2002; Roberts & McInnerney, 2007). In order to combat these issues, instructors are left with the hard task of designing collaborative assignments that are sufficiently detailed and engaging to get and keep students involved.

Likewise, many challenges to realizing the theoretical benefits of online collaborative learning confront those in online education. By way of example, online education poses a variety of policy, financial, and practical quandaries. In the absence of policies to regulate and assess online learning, success stories can be often be isolated, while unsuccessful programs go unnoticed (Greenberg, 2009). Furthermore, start-up costs for online programs can prove substantial. These programs require more staff to address technical matters, and the development of a single online lesson requires far more preparation time than is required for a tradition classroom lesson because of the extra time needed to learn, integrate and develop technology (Blomeyer,

2002). Without additional funding in place to compensate for these differences, online instructors often feel over-worked (Reeves, 2003).

Teachers also must undergo a difficult transformation when moving from a traditional classroom to an online course. Technological complexities may hinder instructors' abilities to teach effective online courses (Lowes, 2005; Greenberg 2009). Given that technology changes every day, teachers need constant support and training in order to utilize educational technologies to their fullest potential (Lowes, 2005; Freedman et al., 2002). Teachers must also adapt to a new form of interaction with their students. Many teachers who are new to an online environment report a lack of genuine interaction with students to be a significant challenge (Lowes, 2005). Lacking a personal relationship with their instructors, students often become disengaged with course material and their fellow classmates.

Opportunity

As Lai (2011) notes, the research (albeit limited) "emerging from the computer-supported collaborative learning paradigm has generally attempted to determine whether the theoretical benefits of collaborative learning in face-to-face settings can be realized through computer-mediated or computer-assisted interactions" (p. 18). Yet, extant national and international standards for online education tend to lack specificity or prescription when addressing the promise and challenges of collaborative learning in the online environment.

Lesson plans and course activities that give students control over their learning increase student motivation, work ethic, and self-esteem.

Despite these limitations, our review of the practice suggests great opportunity to tap this promise. Specifically, the following eight observations for educators have emerged from our work.

1. As an initial step, educators might consider fostering simple awareness of online collaborative learning at the outset of online courses, from communication of the practice's purpose and mechanics to the identification of those students' learning objectives in planned collaborative projects and exercises (e.g., discussions or debates).

2. While structure and technology (e.g., small groups and real-time, web-based tools) can be leveraged to engage students in collaborative learning (Watson & Gemin, 2008; Garrison, 2006), the effective use of these strategies require deliberately planned lessons (Murphy, 2004; Garrison, 2006).

3. Lesson plans and course activities that give students control over their learning increase student motivation, work ethic, and self-esteem (Means et al., 2010).

4. Two approaches can be used to engage students in collaborative learning: a cognitive approach or a direct approach. A cognitive approach uses discourse (e.g., debating, defining, evaluating, predicting, etc.) to help students understand the perspectives of their classmates, understand different forms of expression, and identify different ways of forming and using knowledge. A direct approach involves a task-specific learning activity, such as writing a report, which involves working collaboratively within a group (Kreijns et al., 2003). These separate approaches teach students to empathize with one another and complete a task together.

5. Instruction that focuses on the academic and social development of students will increase their likelihood of success in online courses. Rather than acting purely as a leader, teachers should act as facilitators of small-group work and problem-based activities. Instructors should also work to develop performance-based assessments (Smith et al., 2005).

6. Courses that combine online and face-to-face interaction have been shown to produce better academic results than purely online or face-to-face classrooms (Cavanaugh et al., 2009; Means et al., 2010; Blomeyer, 2002). Collaboration among students and teachers also works to cement a student's interest and expand his/her knowledge of a specific topic (Means et al., 2010; Smith et al., 2005).

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7. Professional development is paramount. Researchers tend to agree that instructors who are continually trained in online education (with respect to both instruction and technology) deliver the best online courses to students (Smith et al., 2005).

8. Beyond the teacher-student dynamic, educators might also consider using collaborative work to foster both teacher and student connections to parents, peers, and community.

The Florida Virtual School Approach

Florida Virtual School® (FLVS®) remains ahead of the curve in online collaborative learning. Below we note a number of ways in which FLVS incorporates these best practices into their own programs.

1. FLVS is actively exploring the use of lessons to introduce collaboration early within certain courses. These lessons will not only identify the benefits of effective collaboration and communication skills, but also position students to note unique areas for personal improvement and set specific goals with respect to their ability to communicate and work with others.

2. FLVS pays heed to the detailed lesson plans required for successful student collaboration. When designing a collaborative activity, FLVS teachers outline specific directions and rubrics so that students can easily understand activities and their instructors' expectations. Giving students individual tasks that contribute to a larger group project is one highly effective strategy that FLVS has developed to bring about collaboration (e.g., FLVS students writing articles for a class newspaper). While avoiding projects that present too much student choice and potential resultant complications, FLVS teachers guide students through the collaborative process.

3. In an attempt to target all types of learners and engage them in collaboration, FLVS promotes student choice in certain projects. By giving students options in curriculum (e.g., an option of hearing a lecture or reading it), FLVS enables students to take control and grow intellectually and academically through their own unique learning styles. According to FLVS, a good collaboration project allows for many different avenues of completion. Choice not only empowers students to learn in ways unique to their learning styles, but also helps students to approach real-world situations in an environment that accurately reflects the real world. By giving their students choices in how to approach a real-world problem together, FLVS brings students together in collaborative efforts that require intense critical thinking and group work.

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4. FLVS teachers often engage students in online discussions. However, they also adhere to a cognitive approach when it comes to online collaborative learning. Since discourse can result in disengaged students, FLVS instructors have found that task-specific work is most helpful in developing classroom collaboration.

5. FLVS maintains that online collaborative learning requires students to engage in learning activities that are meaningful to them and applicable to the world at large. When engaging students in projects that require them to work within a group setting (completing a task or participating in discussion), learning becomes an avenue to academic and social transformation facilitated by an instructor, but ultimately controlled by the students. FLVS has worked to produce a rubric that helps teachers evaluate students based on their performance in collaborative tasks. By assessing the extent to which students have engaged with academic materials and their peers, instructors are not simply judging a final product, but instead following student progress.

When engaging students in projects that require them to work within a group setting (completing a task or participating in discussion), learning becomes an avenue to academic and social transformation facilitated by an instructor, but ultimately controlled by the students.

6. FLVS encourages face-to-face instruction in Virtual Learning Labs or blended classrooms that combine online and face-to-face interaction. By designing, guiding, and assessing collaborative exercises and projects, FLVS encourages students to engage the real world and their communities. This face-to-face engagement complements, diversifies, and enriches collaboration among students and teachers within the virtual environment.

7. In a similar vein, FLVS is committed to training its teachers in the instruction, assessment, design, and refinement of effective collaborative exercises and projects. To that end, FLVS continues to develop collaboration-specific guidelines, assessment guides, grading rubrics, constructive criticism forms, current practice repositories, and planning sessions with curriculum specialists, while providing teachers and students with access to cutting-edge technologies (e.g., web 2.0 tools).

8. FLVS urges teachers to take advantage of opportunities for student involvement outside of the classroom. By working in collaboration with their communities, students are able to apply their knowledge to the world around them. In addition, teachers are encouraged to incorporate realistic problems into their lesson plans for students to assess and evaluate.

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Conclusion

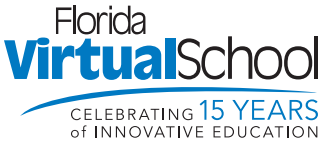
As online education expands, and more students turn to their computers for educational opportunities, the question of how to incorporate social activities into the online environment becomes increasingly paramount. Collaboration among students, instructors, and their communities promises to facilitate continued academic and social development. While the emerging field of online collaborative learning in Kindergarten through Grade 12 remains under-researched, there are great minds helping to shape the field's research agenda, future standards and best practices. With an eye to these advancements, FLVS has implemented a series of efforts to bring collaboration into their virtual-classrooms. Students now have the dual advantage of learning at "any time, any place, any path, any pace™" while collaborating with peers in a socially-stimulating environment.

About Basis

Basis Policy Research (Basis) is an independent research firm specializing in K-12 education. Basis provides both qualitative and quantitative research services to school districts, state departments of education, foundations, and other education-related organizations. We have offices in Grand Rapids, Michigan and North Carolina's Research Triangle, and serve clients throughout the United States. Basis was founded in 2009 with the vision of making rigorous analytics and research services accessible to those on the ground floor of education reform. With a primary focus on helping students, we provide education leaders, practitioners, and policymakers with timely and accurate information that leads to smarter policies and better practices.

About Florida Virtual School

Florida Virtual School (FLVS) is an established leader in developing and providing virtual Kindergarten through Grade 12 education solutions to students nationwide. A **nationally recognized e-Learning model,** FLVS, founded in 1997, was the country's first state-wide Internet-based public high school. In 2000, the Florida Legislature established FLVS as an independent educational entity with a gubernatorial appointed board. FLVS is the only public school with funding tied directly to student performance. Access the school at **www.FLVS.net**.



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January 2013