

Chapter 12

Online Collaboration and Social Networking

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Key Questions

1. Think about a lesson or activity that you already do or have created. How would you use the applications in this chapter, or other online applications, to create an online collaborative environment for your classroom? What are the potential benefits for your students in using this mode of learning?
2. How does online collaboration differ from face-to-face collaboration? How can online collaboration add to what you're already doing in your classroom?
3. How would the type of collaboration discussed in this chapter, online collaborative environments, be difficult to implement in your situation? How could you overcome the difficulties within the constructs of your system?

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Background

The incorporation of collaborative learning activities in the classroom can create challenges for both the teachers and the students. Teachers create the activities to engage the students in experiential learning, but collaborative activities are not always successful. Take for instance a ninth grader in a biology class who is informed that she will be working with a group of her peers to examine, observe, and experiment with pill bugs (*Armadillidiidae*). Each member of the group is asked to bring in five specimens. However, the next day she is the only one to bring in the specimen. The activities based on the specimen include recording, reflecting, and understanding the pill bugs within a traditional personal journal. This journal is only seen by the student and teacher, thereby removing the collaborative segment of learning. In addition, the lack of pill bug specimens limits the extent to which the group can engage in the course experiment, thereby negating the collaboration, and creates a disconnection between the student and the rest of her group.

Chances are that at some point in your educational career, as a teacher or a student, you have experienced a similar “collaborative learning” activity that was less than beneficial. Teachers purposefully create these activities to help students gain deeper insight into the task at hand by having disparate ideas defined, debated and developed into a collective meaning (Roschelle, 1992). Collaborative learning has long been used by teachers in both the face-to-face and online learning environments to varying degrees of success. The ISTE NETS*S, The Common Core, and many of the discipline specific standards are inclusive of collaborative student engagement. This chapter will define what collaborative learning is, how it differs from other types of learning, how it can benefit the learner, and how online environments can be used to support and enhance collaborative learning activities.

Theoretical Constructs of Collaborative Learning

Teachers employ many different strategies to ensure that their students are successful in learning the requisite content for their classes. These strategies include:

- Direct instruction (i.e., lecture and drill and practice)
- Indirect instruction (i.e., problem solving and concept mapping)
- Independent Study (i.e., research project and computer assisted instruction)
- Experiential learning (i.e., field trips and role playing)
- Interactive instruction (i.e., collaborative learning and problem-based learning) (Saskatoon Public Schools. n.d.).

All of these strategies have a place in the classroom and each benefit the students differently. Bransford, Derry, Berliner, Hammereness, and Becket (2005) argue that the best teachers come to the table with an extensive knowledge of instructional

strategies and have a keen sense of when to employ these strategies in different situations. In this chapter we are not suggesting that collaborative learning is the only strategy to be employed in the classroom, but rather, that when it is used, it is used with a sense of purpose.

Dissemination vs. Collaboration

Traditionally schooling has been conducted through a dissemination model. Dewey (2007) states, “the subject matter of education consists of bodies of information and skills that have been worked out in the past; therefore, the chief business of schools is to transmit them to the new generation” (p. 17). When Dewey wrote *Experience and Education* in 1937, he understood that the traditional view was a limited one and that students needed much more than having predetermined information transmitted to them. He argued that students should have the opportunity to use the scientific method to explore concepts and engage in “the formation of ideas, acting upon ideas, observations of the conditions which result, and organization of the facts and ideas for future use” (p. 88). The need for such experience in education has been exacerbated by an exponential growth of accessible knowledge (Carroll, n.d.). Jim Carroll, a futurist, goes on to say that by no later than 2020, learning will focus on “just in time knowledge;” which is a modern notion of having all knowledge at our fingertips rather than memorizing information that was learned. What this means for education is that we must move from disseminating information to engaging with information through analytical processes.

This changing landscape of knowledge production supports the Bransford et al. (2005) argument for an array of classroom strategies. Collaboration, as an instructional strategy, gives students the opportunity to work with just-in-time knowledge and engage in the processes described by Dewey. Collaboration differs from dissemination in that the learner is actively working with the information to determine what it means, how it relates the individual and the community, and how it can be used in the future. Furthermore, collaboration gives learners the opportunity to share, receive and critique information with and from others, including knowledge that they arrive with, knowledge they create, and knowledge they can search for in that moment.

Connections

Collaboration, as an instructional strategy, is about building connections to individuals and content. Lev Vygotsky (1986) maintains that new understandings are rarely the result of individuals working by themselves but rather are developed as two or more individuals interact with one another and the content. He notes that

learners are often in a “zone of proximal development” where there is a breach in what an individual knows or can do by herself and what is possible in collaboration. He argues that individuals can be blocked by their own views and that these blocks can be broken down through discussions and reflections with others.

Grouping

The ideas of Dewey and Vygotsky are widely known in the field of education, but their theory does not always lead to good practice (i.e., the example at the beginning of the chapter). Group work is at the core of collaborative learning and requires a great deal of forethought before being implemented. Cohen (1994) has defined guiding characteristics for successful group work. Within her extensive guidelines, she suggests that two of the most salient points in collaborative learning are:

1. Interdependence—Goal or Resource?
 - (a) Goal interdependence: individual goals are dependent upon all other members achieving their goals
 - (b) Resource interdependence: goals can only be accomplished with information provided by other group members (jigsawing)
2. Student Interactions and roles—Specific or open
 - (a) Specific roles: best when the teacher has given a more structured group goal
 - (b) Open: best for ill structured problems, allows for the group to create as they go

As teachers engage students in collaborative work, having a set of guidelines by which the activities will operate establishes more positive outcomes. This is true in both face-to-face and online learning environments.

Artifact Development

Collaboration is not only about the interactions among members of the group and the development of their ideas but also about the development of artifacts to demonstrate the growth of the group. In the introduction to *Constructionism in Practice* (Kafai & Resnick, 1996), the authors maintain that the act of developing artifacts creates a relationship between the designer(s) and the artifact, which in turn create deeper understandings of the overarching ideas. Furthermore, they suggest that through the collaborative creation of artifacts the collaborative community further develops itself. In a well-designed activity, students working together to create artifacts also build community.

Online Collaborative Environments

From the early 1900s, ideas and research about collaboration have been worked into school curriculum. In the last 20 years, technology has allowed for collaborative activities to move from a face-to-face environment to an online environment and in some cases a mash-up of face-to-face and online collaboration. Regardless of whether collaborative learning environments take place in face-to-face to online environments, the theoretical constructs remain the same. “The Web 2.0 learning environment is grounded in socio-cultural learning theory. The aim of a socio-cultural approach is to comprehend the developmental processes involved in rituals (activities), at the level of individuals (identities), social (interpersonal), and cultural (community) processes” (Tu, Blocher, & Roberts, 2008). As Tu et al. continue, this theory negotiates the ways learning is constructed. Learners develop stronger skills through generating content, reflection, review/modification, and making processes visible. Schmitt, Dayanim, and Matthias (2008) are paraphrased by Tu et al. as saying that “Web 2.0 environments allow learners to make their learning process (mental models) visible and to view others’ learning process; furthermore, it empowers learners with multiple opportunities to take control of how they improve their thinking and refine their metacognitive strategies. It is the process of negotiating and managing how they would like to learn through self-reflection and assuming responsibilities.” In online collaborative activities, students are able to negotiate and create new information.

The following sections will describe specific online tools and environments, how they can be used to support collaborative learning, and provide scenarios of what collaborative learning might look like when using the tools and environments. While we are naming specific collaborative environments, it is important to remember that environments will change. The ideas about how to use the environments to promote collaborative learning will remain the same as you and your students work in future environments.

This section has been separated into collaborative tools, social media, content management systems, and collaborative development environments. The categories are set up in this way to show the differences in online collaboration and how it can be implemented through standalone, completely integrated, or developmental sites. At the end of each of the categories, examples and/or scenarios will be discussed that demonstrate their use within collaborative learning activities.

Collaborative Tools

Collaborative tools are often stand-alone applications that are “cloud” applications, meaning that the content is backed up online. This implies that some sort of Internet connection must be maintained in order to participate with these applications. However, new innovations have made some of these tools available both

online and offline, although when used offline they are not collaborative. The tools then become asynchronous (used by each user at different times) to be synced up to the original artifact once an Internet connection is reestablished. Most of the tools in this section are able to be used both online and offline and synced when back online.

Google Drive

Once called Google Docs, Google Drive now not only includes the standard document, spreadsheet, and presentation applications but also includes drawing and forms, as well as the ability to watch/create video, audio, and static visual artifacts (especially when used in conjunction with the Chrome browser and the Chrome Web Store where free plug-ins for Google Drive can expand the possibilities of Google Drive exponentially). Working in Google Drive allows both students and instructor the ability to chat while working on an artifact, watch changes being created by other members of the group, and interact with the artifact simultaneously. While Google Sites is not a part of Google Drive, the ability to link to artifacts within Drive and have them show up on a Google Sites Web site is invaluable. As you will see later, Google Drive also integrates well with the Google Plus system and can be used to create an entire collaborative learning environment. Google Drive is also available in mobile formats on most major mobile operating systems, thereby making the information available anytime and anywhere. This service is free.

Zoho

Zoho has applications for several demographics: business, productivity, and collaboration. The applications can be used across their designated demographics, and through a Zoho account, a user can create different artifacts with these tools. In the collaboration section, Zoho offers elements that are often seen in Learning Management Systems (LMS): chat, discussions, mail, and wiki. Zoho also offers document creation and project management applications. This service is free.

Microsoft Office

Microsoft Office Online presents a suite of applications that most learners and instructors are familiar with, while making them available in an online environment. The best function of the new Microsoft Office Online is the ability to collaborate with others in Word, Excel, or Powerpoint, as well as sharing files through SkyDrive, video chatting in Skype, capturing information in OneNote, conferencing with others in Lync, and secure collaboration through Yammer. In addition, like Google Drive, Microsoft Office is now available in mobile format. This is a subscription-based service through the Office 365 subscription (Fig. 12.1).

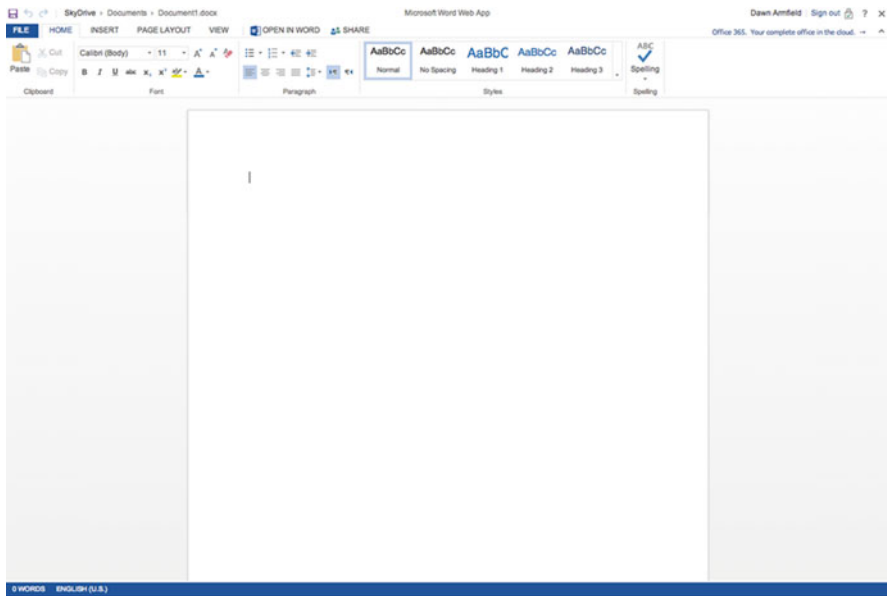


Fig. 12.1 Microsoft skydrive word document. Permission from Microsoft. <http://www.microsoft.com/en-us/legal/intellectualproperty/Permissions/default.aspx>

Adobe

Adobe has recently developed the Creative Cloud, in which all of the Adobe products, including Photoshop, Dreamweaver, InDesign are available. The majority of these applications are not considered “collaborative” in that multiple users can engage simultaneously, but Adobe has introduced a collaborative “other services.” Within this section there is Story CC Plus, which is a collaborative screenwriting application, and Behance, which is a design community. Adobe offers its Touch line of tablet applications that are similar to the full versions of the most popular applications. This is a subscription-based service through Creative Cloud.

Social Media

Social media designates online social interactions through communities. Social media has been a part of the Internet since its early days (bulletin board systems ran in the 1980s and entire communities were built up around them), but really gained prominence in recent years with different sites like MySpace, Facebook, and Twitter.

Facebook

Facebook is probably the premiere social network site, but it also works well for online collaborative learning. Facebook allows each user to create a unique profile, have access to messaging, connect with different pages and groups within the site, and respond to discussions, polls, and interactive presentations. In addition, outside information can be easily linked for discussion, images and videos can be embedded in discussions, and interaction can be limited based on a user's privacy setup.

Blogs

Blogs began in the mid-1990s and are one of the longest running communication devices on the Internet. Used by individuals as well as businesses, blogs can be developed to produce daily information quickly or developed as content management systems. Blogs are typically recognized for their reverse chronological entries with the ability to comment on entries. The two most popular blogging platforms are Wordpress.com and Blogger because of their very large developer community (which contributes plug-ins, templates, and extensive functionality) and their ease of use.

MicroBlogs

Microblogs are similar to blogs in that they use reverse chronological order, but they can vary greatly from there. Typically, microblogs consist of condensed information. For instance, Twitter is considered a microblog. On Twitter, users have 140 characters per post to use. Links, videos, and photographs can be included in the post, but the links count against the 140 characters. Other users can comment, but it is often a part of the "stream" of information that updates on Twitter. Another popular microblogging site is Tumblr, which is very similar to Wordpress and Blogger, but is usually very specific in its content and audience appeal. While readers can leave comments, posts are more typically "favorited" or shared rather than used for direct engagement.

Social Bookmarking

Social bookmarking, popularized by Delicious, is a way to use folksonomy (shared knowledge that creates the tagging) to link like information and to share that information quickly with others who follow. A more popular social bookmarking site for those in academics is Diigo, which allows not only tagging but community building and interaction within the bookmarking site.

Mandalay/Academia

Sites like Mandalay and Academia are typically used by researchers to connect, organize, and share research, whether it is their own, collaborative information, or a general knowledge base situated around a specific topic.

Content Management Systems (CMS)

CMSs often consist of more than one section and are typically all-inclusive sites. For instance, a student could log in to her profile, see recent comments made to her, connect with others through the site, visit other pages within the site, and engage in different areas of the site. They can exist as a full learning environment. These systems are set up to be used in educational environments and in many cases have specialized tools to allow for students and teachers to work across the contents.

Ning

Ning was designed for users to create their own social networks. Used by educators, Ning becomes a useful environment as an add-on to other online courses or as a standalone course shell. Discussion boards, profiles, blogs, pages, and chat can be used within the Ning platform.

Drupal

Like Ning, Drupal can be used to create an individual social network. However, unlike Ning, it is not a pre-setup system. Some Internet Service Providers (ISPs) offer Drupal as an add-on within a site's setup. Drupal can be heavily modified to create the exact system that a teacher would want for her classroom. Examples of Drupal include <http://whitehouse.gov> and <http://www.woodfordscience.com/>

Moodle/Blackboard/etc.

Learning Management Systems are set up similarly to Content Management Systems, but with a focus on education. Each of these types of systems have discussion boards, grades, chat, assignments, quizzes, and e-mail built into the system. These systems are used at both institutional and individual levels by educators at all levels of instruction and are typically closed systems where users need to belong to the school and/or system implementing the course. They are not all created the same, however. While most of the systems are proprietary and owned by



Fig. 12.2 Moodle screenshot used in accordance with GNU general public license and Moodle's trademark policy. Used in accordance with the GNU General Public License (<http://docs.moodle.org/dev/License>) and Moodle's Trademark Policy (<http://moodle.com/trademarks>)

corporations, Moodle is open source, and is developed and maintained by the community it serves. This is an example of an open Moodle system: <http://moodlecommons.org/> (Fig. 12.2).

Collaborative Development Environments

Google+

Google+ has been set aside from the other systems because it is inclusive of many of the aspects of the collaborative tools, social networking, and CMSs. While on the surface it may seem more akin to Facebook, its strength is in the connections it has to all of the Google applications as well as the ability to set up separate communities within the environment that can have different levels of engagement and privacy. In addition, Google+ (or G+ to longtime users), incorporates visual tools like Photos, Hangouts, Hangouts on Air, and Events to engage users with both visual and textual information. Most notable in this collection are Hangouts and Hangouts on Air. Hangouts on Air is exactly the same as Hangouts, but with the addition of being recorded for later viewing. Hangouts allow for up to ten people to video chat and collaborate. Collaboration tools within Hangouts include Google Drive,

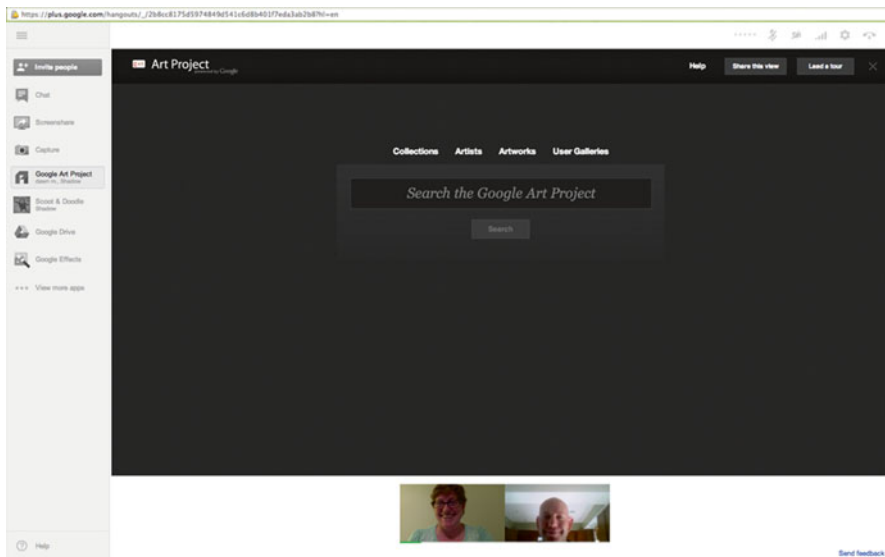


Fig. 12.3 Google art project. Image used in accordance with Google Product permissions (<http://www.google.com/permissions/using-product-graphics.html>). It should be noted that the authors of this chapter used G+ Hangouts with Google Drive to create this chapter

YouTube, Screenshare, Chat, A Story Before Bedtime (a collaborative book reading application), Google Art Project (which looks at works of art from various museums around the world), Cacao for Hangouts (concept mapping), and Scoot & Doodle (drawing). While Google+ does not have grades, it would not be difficult to link to a secure grading application from within community to provide a free, full collaborative development environment (Fig. 12.3).

Conclusions

Collaborative activities provide learners with opportunities to expand their understandings of course content and the world around them. Learners who engage in collaborative activities retain the knowledge because it is instilled through knowledge sharing and building. Learners engage in the “just-in-time” knowledge, as well as creating knowledge in the collaborative unit. This enables them to construct stronger arguments and conclusions based on practical experience in the knowledge building.

Google+ and the other collaborative environments can be used across the curriculum. The applications and environments we have shown here are but a few of the thousands that can be found online. These are merely suggestions for what could be done in a classroom using tools that are widely available to most demographics. The tools in and of themselves are not important. It is the implementation and consistent development of the collaborative learning within the online environments that is important.

Application Activities

Idea 1 Collaborative Tools Scenario

In a Language Arts course, document applications are invaluable. Not only can students use them to write their documents (essays, letters, outlines, stories, etc.), but students can collaborate with others while doing so. In addition, one of the best areas of collaboration is peer review. When given access to a document, students and teachers can write comments, change the ways documents are presented, and chat within a document to develop more consistent writing styles. In most document applications a revision history can be accessed to see who made the changes and when. Changes can be reverted if any of the collaborators wish to change it back to any stage in the development. As Tu et al. (2008) stated, this type of interaction, the generation, review, reflection, and visible processes, make the learning more permanent. To practice collaborative writing in Google Drive, go to the following site: <http://www.google.com/campaigns/gonegoogle/demos.html>

Idea 2 Social Media Scenario

A social studies class is studying American history and is addressing westward expansion. The teacher wants the students to understand the difficulties faced by the pioneers as they moved west and has decided to focus on the Oregon trail. She has the students begin by playing the original Oregon Trail game at: <http://www.virtualapple.org/oregontraildisk.html>. After 15 min of play, in a full class format, the students are asked to describe what they experienced in their journey so far. After a number of students have described what happened to them in the game, the teacher informs them that they will continue their journey on the Oregon Trail by assuming the persona of an individual who travelled the trail (<http://oregontrail101.com/>). Students will create a blog that they will maintain and update throughout the unit. In this blog the students will describe their travels, post images of where they have been and what they have seen, and tell about the successes, and hardships they encounter. The teacher and their classmates can follow the blogs and ask questions to further engage the students in their character's experience. The students may also interact with others who are on the trail by following them on Twitter (i.e., <https://twitter.com/RealOregonTrail>). This activity allows the students to develop a mental model of what it was like to be on the trail as opposed to simply learning about the trail.

Idea 3 CMS Scenario

Using MathType (<http://www.dessci.com>) in combination with any number of CMS tools (including Drupal and Moodle), teachers can create activities that allow for students collaborate to better learn the concept. In the fifth grade Common Core Standards for Mathematical practice, students are responsible for solving “word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem” (Common Core Standards Initiative, 2012). In the discussion board in the CMS, the students can be given word problems to work through. The students will use MathType to demonstrate their use of equations and use the drawing tools available in the CMS to create visual representations of the problem. After a student has worked through a problem, one or more of their classmates can be assigned to assess their work. The assessing students can give feedback about how the problem was solved and give alternative processes to support their feedback if needed. The teacher can look through and discuss these and assess both the original solving of the problem and the higher order thinking that is needed to give feedback on other problems. This process engages the students in the creation of visuals and the reflective feedback loop which further supports the students’ understanding of complex and abstract ideas.

Idea 4 Google+ Scenario

At the beginning of the chapter a scenario was defined in which a science class was working with pill bugs (*Armadillidiidae*) to understand animal behavior as well as the animal itself. The activities included recording, reflecting, and understanding the pill bugs within a traditional personal journal. Using Google+ the teacher can both extend the ways in which the students collaborate and the level to which the students examine the animal and its behaviors. Beginning by creating a community for her class, the teacher creates a space for the students to work throughout the year. Within this community, the teacher can set up discussions, galleries, and presentations for the students to learn and share. Using Google Hangouts, the teacher can connect with a biologist who is an expert on animal behavior and have the class ask questions and gain insights about what to look for when assessing animal behavior. This Hangout can be recorded and included in the presentation section of the community for future reference.

(continued)

Idea 4 (continued)

From here the teacher can then engage the students in the experimental process. As the students record, reflect, and share their ideas about the pill bugs, they will use other tools. The students can not only observe and take notes in a shared Google Drive document but use a camera from their phone or a tablet to record the actions of the specimen, as well as draw the insects in their natural environments using Scoot & Doodle. The students can work on each of these collaboratively, cocreating the observation notes and the drawing and editing the video to along with the notes. All of these artifacts can be shared with the community for further input. The teacher and the students not only have the opportunity to see what each individual (or group) is working on but get a view of what the whole class is working on, which enables them to draw further conclusions across experiments. The class as a whole could then create a spreadsheet that can be used to demonstrate numerically and graphically behaviors of all of the pill bugs collected by the class. By using Google+, the teacher has given the students the opportunity to create individually, collaboratively, and developmentally to demonstrate understandings through various approaches.

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