

Increasing Interactivity in the Online Learning Environment: Using Digital Tools to Support Students in Socially Constructed Meaning-Making

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Abstract

As more and more library and LIS education migrates to the online environment, college and university faculty are called upon to expand their pedagogy. Interactivity has been cited as one factor in attracting and retaining students in online courses and programs. LIS educators can reach outside the online learning management system (LMS) to discover Web-based tools to develop more interactive learning experiences for students' use in the virtual classroom. These activities and tools can help faculty as they enact a social constructivist teaching philosophy that increases the focus on students engaging with course content while they learn with and from one another as well as from the instructor. This paper describes one educator's journey in stretching boundaries and using student-created Web 2.0 tools and multimedia to curate course content and support students' collaborative learning experiences and collective meaning-making.

Keywords: digital tools, LIS education, online learning, social constructivism

Today, I teach 100% online. I began teaching library and information science (LIS) graduate students in the face-to-face classroom almost two decades ago. In the intervening years, LIS programs have offered more distance learning options and many, like the one in which I teach, are conducted totally online with no required face-to-face class meetings. This sea change has made many LIS educators

consider how the delivery of our courses affects what students learn. As McLuhan noted in *Understanding Media: The Extensions of Man* (1964): "The medium is the message."

The Online Learning Consortium (OLC), formerly known as the Sloan Consortium, reports that 7.1 million students took at least one online course in 2013. Although the growth rate of 6.1% in online enrollment is the lowest recorded since the report began eleven years ago, the proportion of higher-education students taking online courses is at an all-time high, 33.5%. In the OLC's report *Grade Change: Tracking Online Education in the United States, 2013* (Babson Survey Research Group, 2013), 74% of the chief academic officers who responded to the survey rated "the student learning outcomes in online education as the same or superior to those in face-to-face instruction" (p. 4). Still, only one third of the respondents reported that "they expected there would no longer be concerns about the quality of online instruction" (p. 20). It seems two-thirds of these academic leaders share my concerns regarding the quality of online teaching and learning.

Other data from the survey points to a need for vigilance and improvement in online course delivery and content. Of those academic leaders who participated in the OLC survey, 68.9% believe that "students need more discipline to succeed in an online course than in a face-to-face course" (p. 17). Forty-one percent reported that "retaining students was a greater problem for online courses than for face-to-face courses" (p.

18). What strategies then can online educators use to reduce drop-out rates and encourage students to develop the necessary self-discipline to succeed in online education?

According to the 2,500 students surveyed in “The Five Faces of Online Education: What Students and Parents Want” (Boston Consulting Group, 2014), half of the survey participants think that blended courses deliver *better* outcomes in education than traditional instruction does, and more than 50% who have taken an online course said they found online courses as effective as on-campus classes. Even students in traditional colleges are “starting to prefer customized, blended-learning experiences.” The survey also found that “students desire a much greater level of interactivity than current learning environments often provide.”

Given this context in higher education, instructors may find that establishing an engaging, interactive learning environment in the online classroom is a challenge. Integrating technology tools into face-to-face, hybrid, or purely online courses can become a full-time professional development task, passion, or even an obsession. Given the pressure to “keep up,” some faculty may decide that working within the online learning management system (LMS) is enough. Others keep their eyes and ears open or actively seek tools that support virtual communication, social networking, and new forms of collaborative learning.

In order to keep the courses I teach technologically relevant, I follow technology bloggers, subscribe to listservs, and read the literature about technology integration that can benefit my own teaching and benefit the graduate students I teach, most of whom are school librarian candidates. My belief that learning is a social activity and meaning is socially constructed (Vygotsky, 1980) guides the instructional design of my courses; the quality of students’ online interaction is a critical concern for me in the courses I teach. I do not want the preservice school librarian candidates in my courses to experience our class as a correspondence course in which they can engage as independent rather than connected (with each other) learners. To that end, I employ collaborative learning strategies for preservice school librarians because, once they are working in the field, they will be required to collaborate with colleagues as instructional partners and will model collaboration for preK-12 students.

In this paper, I share my efforts to use technology tools to invite online students to engage in collaborative learning with one another.

I have done my best to maximize the benefits of the tools offered within our university’s LMS, and I have required that school librarian candidates engage with freely available Web-based tools in order to learn the tools they will use in practice with preK-12 students and classroom teachers. I also believe the study of one’s own teaching and the integration of findings into faculty teaching practices are necessary in order to improve teaching and provide service to the profession (Boyer, 1997; Shulman, 2000). This is the context in which I share my never-ending quest for “hands-on,” interactive, collaborative learning in the online university classroom.

Literature Review

The literature that forms the foundation of my journey comes from social constructivist, activity, and situated cognition theories and LIS and education research related to the efficacy of online learning. Social constructivism posits groups construct knowledge together through sharing ideas and artifacts around which they develop shared meanings (Vygotsky, 1980). Johnson (2014) asserts that social constructivist theoretical assumptions are best applied to shared online experiences. During this enculturation process, learning is continuous and the group’s influence on the cognitive development of each individual is assured.

Activity theory suggests that human beings think through their use of tools (Vygotsky, 1980). It is with tools and actions that people demonstrate their cognitive processes and their achievements. Activity theory is supported by the theory of situated cognition, which posits that knowing is inseparable from doing. People learn through their experiences and the tools, technologies, languages, and other cultural markers they use help them ascribe shared meaning to those experiences (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, 1990). Taken together, social constructivism, activity theory, and situated cognition argue that knowledge is situated in activities and supported by social, cultural, and physical contexts. My goal is to apply these theories in online learning environments in an authentic rather than decontextualized manner in order to enable school librarians to enact their knowledge in their own real worlds—their current or future school libraries.

LMS Online Discussion Boards

In many online course contexts, the LMS’s discussion feature is used as a tool to enculturate learners into what Wenger (1998) calls “a community of practice.” Through online

discussions, learners engage in shared meaning making through collective discussions around ideas and artifacts. As Gee (1990) notes, meaning is constructed in discourse communities. The discussion forum in the online classroom is one such community.

Many researchers have studied how individual and shared meanings related to course content are achieved via LMS threaded discussions (Gilbert & Moore, 1998; Swan, 2001; Yukawa, 2010). Some have studied the importance of discussion group size (Kim, 2013) or being sensitive to how tools encourage or discourage interaction and balancing the needs of individuals and the group (Koole & Parchoma, 2012). Recent studies suggest that online anonymous group discussions generate better collaborative results than those held in the face-to-face classroom (Kim, Hong, Bonk, & Lim, 2013; Jong, Lai, Hsia, & Lin, 2013). A study by Fulton, Botticelli, and Bradley (2011) found that online discussions contain socio-emotional components in which discussants exchange empathetic messages and engage in self-disclosure. Rice and Gattiker (2001) found that online communication is effective for synthesizing learning.

When instructors require participation in the online discussion forum at set intervals and over a period of days, this asynchronous strategy provides students with sufficient time to reflect and extend their thinking in their responses to classmates (Moreillon, 2013) and necessitates their continual engagement with one another. While online discussions can lead students to higher levels of thinking, instructors must develop prompts or design discussions that will engender dialogue and motivate students to think critically about the information provided by the instructor or posted by classmates. My experience tells me that while the LMS discussion board is an essential feature of online learning, it can become a rote activity for students who may use this form of communication in most, if not all, of their courses.

Benefits of Hands-on, Interactive Activities

In addition to discussion forums, the LMS provides a synchronous meeting tool where instructors can hold individual or group office hour chats, deliver lectures, invite guest speakers, engage students in real-time conversations, and the like. While I am religious about offering a synchronous session in each course I teach every other week during the semester, these sessions are problematic. First of all, they must be voluntary; students who live in different time zones and as

far away as half way around the globe may never be able to participate. Many students attend on-line classes so they don't have to "show up" at a specific time and therefore, have not organized their lives around synchronous learning opportunities. If my goal is for everyone to participate, the LMS synchronous meeting tool doesn't help me reach it.

In a study that compared outcomes for 6,000 learners in a blended learning environment, researchers found that supplementing online learning with face-to-face, hands-on activities showed statistically significant improvement in learners' understanding of the course content (Chandler, Park, Levin, & Morris, 2013). Another study that involved 723 college students seems to confirm that the hybrid course student learning outcomes were superior to those of students who studied in a fully online environment (Shea & Bidjerano, 2013). Another study involving over 9,000 students, researchers found that increasing the time devoted to studying online is only useful when some form of interactivity is involved (Castaño-Muñoz, Duarte, & Vinuesa, 2014). Youngju, Jaeho, and Taehyun (2013) studied ways to lower dropout rates for adult students taking fully online courses. They noted that if students are prepared for learning in the online environment, instructors can improve retention by providing sufficient technological support, interactive learning activities, and a student-centered Web design.

As an educator who teaches 100% online, and in consideration for all of the findings cited above, I strive to increase the hands-on components of the courses I teach. That said, the tools used for 21st-century learning are continuously changing. While there are many tools, it is not always clear which tools will best help learners achieve the target outcomes. Productivity tools and Web 2.0 tools, in particular, have been touted as keeping the user (the learner) at the center. Instructors who strive for an interactive, collaborative online learning environment and who apply these tools in their courses must consider how to scaffold tool use to maximize interactivity. Otherwise, these tools will result in "broadcast" outcomes rather than the intellectual exchange of ideas and information that can foster rich discussion and a negotiated, shared learning experience.

Venturing Outside the Course Management System

In all of the courses I teach, I use wikis outside of the LMS for two purposes. On one wiki, I post the learning resources and activities

for each week of the course and on another, I curate an ever-evolving collection of resources for students' use in our courses and beyond. While students turn in their assignments and engage in online discussions, for the most part, within the LMS, they are required to venture out onto the Web for course content. These "modules" and "resources" wikis allow me to model wiki navigation and features and, on the resources wiki, the collaborative use of these tools. (Students request access to the resources wikis and have editing rights to add content.)

Students are also required to build and customize an individual wiki where they will post their course work and conduct their collaborative work. This allows them to use real-world tools outside of the LMS, curate their learning, and document their communication and negotiations with collaborative partners. The wiki history and the threaded discussion feature (on Wikispaces.com) are the predominant tools I use for assessing students' negotiations and co-constructing knowledge while engaging with course content and co-developing learning products. Teams are encouraged to use additional communication tools such as chat, FaceTime, Google Hangout, Skype, Twitter, and other social networking venues, but they must document these activities with logs linked to their wikis.

Students employ Web 2.0 productivity tools to demonstrate their learning. For the most part, their final work products are co-developed with a partner or small group. While I advocate for school librarian candidates to experiment with these tools in their graduate course work as preparation for integrating them into learning and teaching in their current or future preK-12 school libraries, I have concerns about the "broadcast" nature of most of their work products. Even with a tool such as VoiceThread that easily allows different narrators to record audio on various slides, students often "assign" the narrator part to one member of their team and do not take advantage of the collaborative capabilities of the tool. Even when students present their Web 2.0 products to one another, the content of their presentations or the tools themselves rarely engender a discussion unless I make it a requirement that will impact their grade on the project. My experience confirms what Murray, Pérez, Geist, Hedrick, and Steinbach (2012) found in a study that investigated students' patterns of access to instructional resources in an asynchronous online digital literacy course; students selectively access course content based on their perception of how materials

will influence their performance and grades on assignments.

ApprenNet: A Tool for Increasing Interactivity in the Online Learning Environment

The inventor of ApprenNet.com, Dr. Karl Okomoto from Drexel University, presented a workshop at the 2014 Association for Library and Information Science Education (ALISE) Conference in Philadelphia; I participated in the workshop. Dr. Okomoto developed this tool to support faculty who seek to increase interactivity in MOOC courses. During the workshop, participants viewed examples of the tool in use and had the opportunity to work in small groups to experiment with the product. (ApprenNet involves learners in creating video and providing each other with peer review.) While experiencing the tool, I realized ApprenNet could support course learning objectives for the graduate courses I was teaching in the spring 2014 semester. I requested access, which was granted, and immediately began planning the best ways to integrate ApprenNet.com into LS5443 Librarians as Instructional Partners and LS5633 Art of Storytelling.

Objectives for Using this Tool

I used ApprenNet selectively to replace previously planned online discussions based on my assessment of its usefulness in helping students reach course learning outcomes. First and foremost, the tool increased the interactivity among students so they could learn with and from one another. It helped me spotlight specific course objectives; the benefits of serving as an instructional leader through classroom-library collaboration (LS5443) and applying effective storytelling techniques (LS5633). As the educational technology industry knows, novelty can engage learners; increasing student engagement and motivation to learn is an overarching goal in all classrooms.

In addition, experimenting with a new tool allowed me to authentically demonstrate risk-taking in these two courses. I believe it is essential for 21st-century librarians to take an experimental approach to working with new technology tools. Sharing my own learning curve with students and my excitement tempered with a bit of uncertainty in using this tool for the first and even second time showed students that taking calculated risks with technology tools and taking risks

with collaborative partners. In this case class members, our graduate assistant, and I took this (calculated) risk together.

ApprenNet Implementation

The ApprenNet tool provides students with a four-part strategy learning experience. The first part is the challenge, which the instructor provides and to which the students respond with a video. The second part is the peer review in which the students review a number of classmates' video responses (determined by the instructor); the videos are randomly assigned to peer reviewers. Students use an instructor-created rubric to assess the responses and provide narrative feedback to each other. In the third phase, students view an expert response video provided by the instructor or an external (to the course) expert. Finally, students have the opportunity to read expert feedback and feedback from their peers, and view the top five ranked videos as determined by their classmates. (The instructor can add additional videos to this list if desired.)

For example, these were the directions for the LS5443 Librarians as Instructional Partners learning experience, which was conducted in February, 2014. The challenge was presented as a job interview role play delivered by a school principal (me) who asked students how they would personally benefit from being hired as the librarian in a school that had not had an exemplary school librarian or library program in the past.

The Four-Step Strategy:

1. **Challenge:** Watch a challenge: Classroom-Library Collaboration for Instruction: "What's in it for you?" Submit a video response. Please submit just one response per student.

Note: We recommend a video of one to two minutes.

2. **Peer Review:** Review five videos, randomly assigned to you, and provide feedback.

3. **Expert Response:** Observe an expert response to the challenge.

4. **Analysis:** Read expert and classmates' feedback to selected responses.

Note: Our LS5443 graduate assistant, a former school librarian, provided the expert response for this challenge.

Student Feedback in LS5443: Librarians as Instructional Partners

As a regular part of the course, students in each class completed an anonymous follow-

up survey to gauge their satisfaction with the ApprenNet tool and this format for learning with and from their online classmates (see Appendix A). In LS5443, twenty out of twenty-three students took the survey. While 65% said they "liked" the video discussion format, 75% said using ApprenNet was more "difficult" than the LMS discussion board forum. Thirty percent reported they had trouble viewing the videos. Of those, 20% noted difficulties related to recording their own video responses; 30% cited difficulties that were remedied by ApprenNet.

When asked if they were the instructor would they would use this tool again, 55% provided "yes" responses, 25% indicated "maybe," and 20% said "no." Of those who said "yes," three noted the experience was enjoyable, engaging, or fun. One wrote: "It was nice to have a change." Another said, "Yes, because it's different [from the LMS discussion board]." One who noted it was harder than the "regular" discussion said, "As a viewer I was much more interested than with the usual discussion board postings." Another wrote: "This tool gives [online] students a chance to practice their speaking skills instead of always focusing on their writing skills." One student who responded "yes" to this question also believed the responses had "less depth" than those on the LMS and noted that the tool didn't provide for responses to classmates' feedback.

All of the "maybe" responses cited technical difficulties. One of those also cited the lack of opportunity to continue the discussion. Of the four students who said they would not use it again, three cited technical difficulties and one wrote, "To me, this was an example of using technology because it is new - not because it is the best/most efficient tool for the assignment... I could have done a better job of the assignment if it was just a written discussion - and it would have take (sic) much less time."

ApprenNet Take Two: LS5633 Art of Storytelling

There were several factors involved in my decision to use the tool again for another course in spring 2014. First, ApprenNet had fixed some of the technical issues, and I was confident students would have fewer technological difficulties. Secondly, students in the other course, LS5633 Art of Storytelling, were required to have the capability to capture video and would have already had experiences recording themselves before using ApprenNet. Finally, I had different course objectives for the storytelling class. I wanted students to learn from each other's adventures in storytelling and to provide each other with

feedback—not as options, but as requirements. I also wanted a space where all students' videos would be conveniently located in one place.

I created the challenge video for the storytelling students using Animoto.com: "To Become a Storytelling Star" (<http://tinyurl.com/bastorytellingstar>). In it I reviewed effective storytelling techniques to engage audiences. Students responded to the challenge by posting their oral retelling of a traditional story before a live audience in their home community. After the storytelling students used ApprenNet to view each other's videos and provide feedback, I administered a revised post-tool use survey that reflected these learning objectives (see Appendix B).

Nineteen students, or 95% of the students who responded to the survey, said they liked using the tool. All twenty respondents said they learned from viewing each other's videos and from the feedback they received from their classmates. Students provided specific responses to the question how their classmates' feedback helped them pinpoint areas for improvement. One student noted, "I liked how the videos were selected randomly. It allowed a variety of voices in the feedback." One student wished the comments she had received were more in-depth; another noted that "some people's critiques were harsher than I would have liked or expected."

When asked what they learned from viewing the top-rated videos, most students mentioned the effectiveness of specific storytelling techniques to better engage listeners. Several commented on the props classmates used in their retellings. Eighty-percent of the respondents said they would use the tool again if they were the instructor; twenty-percent said they would not. Several who said "yes" noted that the tool was fun, user-friendly, and a great way to provide and receive valuable feedback. One said it was a "good way for students to be forced to watch and provide feedback on other's work." Another noted, "I enjoyed watching the videos and liked that they were randomly chosen so everyone had an equal opportunity to be critiqued." One of the students who said "no" had technical difficulties; one complained that she only received four instead of five reviews. Two other students, who noted they were not the instructor, did not seem to understand the hypothetical nature of the question.

Conclusion

Developing "hands-on" experiences in the online learning environment may help more learners enjoy learning, learn more, and remain committed to engaging in course content and

completing their degrees. If educators ascribe to the social constructivist learning theory, then helping students interact with one another around meaning-making with course content should be at the center of successful teaching and learning. For LIS instructors, especially those who teach in 100% online programs, finding ways to increase interactivity in our courses can and perhaps should be a high priority. It seems that new tools that can be used to enhance learn and support teaching are developed daily. As we experiment with these tools, I believe that keeping our focus on interactivity that motivates and engages students in learning with and from each other in the online classroom is a worthwhile pursuit.

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Appendix A

LS5443 Librarians as Instructional Partners Post-ApprenNet Use Survey

1. Did you like the ApprenNet video discussion format? (yes or no)
2. Did you find the video discussion more difficult than the regular discussion board? (yes or no)
3. Did you have difficulties reviewing the five videos? (yes or no)
4. If you had any difficulties reviewing the five videos, what were the difficulties you faced? (open textbox)
5. If you were the instructor in this course, would you use this tool again? (Yes, no, or maybe) Why or why not? (open textbox)

Appendix B

LS5633 Art of Storytelling Post-ApprenNet Use Survey

1. Did you like the ApprenNet video discussion format? (yes or no)
2. Did you learn from viewing classmates' videos and providing feedback in ApprenNet? (yes or no)
3. What did you learn from the feedback you received? (open textbox)
4. What did you learn from viewing the top-rated videos? (open textbox)
5. If you were the instructor in this course, would you use this tool again? (Yes, no, or maybe) Why or why not? (open textbox)

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