Designing for Affect: The Potential of Social Networking for Teacher Education

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Emerging Web 2.0 tools are increasing the capability of designing online learning that provides rich affective environments that positively impact learning communities. Many advocates promote the use of social networking for community building, but some critics have suggested that the links between computer-mediated communication (CMC) and deep learning or engagement are not well documented, proposing that such advocacy is more a potential than reality (Godwin, Thorpe, & Richardson, 2008; Rourke & Kanuka, 2009; San Millan Maurino, 2007).

In this mixed methods case study, the author examined the impact of implementing a social networking tool in an online course to determine whether there was evidence to support positive impact on student outcomes, particularly in relation to the affective domain of learning. Does social networking improve student’s sense of belonging to a community? Does community building impact student evaluation of the course? Does social networking increase engagement and motivation? Most important, does such interaction through social networking have an impact on student learning?

To examine these questions, a social networking tool, Ning (http://www.ning.com), was implemented in an asynchronous distance education college course to supplement the tools in the institution’s online course management system. Ning has become a hot tool in educational settings over the past two years. The site ranking service, alexa.com, shows Ning as the 63rd most popular Web site in the U.S. in the second quarter of 2009. The social networking site has almost 7,000 Ning networks tagged with “education” via a search in September 2009. Its “Classroom 2.0” site boasts 30,500 members and 7,000 members in “Ning in Education,” suggesting the reach of this tool in both K-12 and higher education.

The following is a report on the impact of using Ning in a summer online course within the context of learning theory and technology affordances in course design. The case study included 51 students enrolled in four sections of an undergraduate summer 2008 class, “Computers in Education.” The online course was fully asynchronous with bi-weekly modules. Students used multiple online collaborative and local productivity tools, although the main content for the educational technology course is structured within a traditional course management system (CMS) supplemented by external tools including Ning. The potential for enhancing learning through the intentional addition of tools to facilitate the affective dimension of learning is demonstrated in this study of a teacher education course with learners indicating exuberance for the new tool, increased satisfaction with the online course, and self-reported positive impacts on their learning resulting from a supportive collaborative environment.

Background

While more students are experiencing distance education, few report that they make this choice primarily because they like distance learning (DL) classes. Typical reasons are more commonly related to flexibility in scheduling or geographic issues that create barriers for reaching traditional campus-based sessions (Rovai, Ponton, Wighting, & Baker, 2007). Even when students indicate that they have had a positive DL experience, many raise the issue that it just doesn’t seem the same as actually being there and interacting in a face-to-face setting (Perez-Prad & Thirunarayanan, 2002). In a recent international review, Armstrong and Franklin (2008) indicated that even digital-age students who enter higher education are deeply enculturated in the traditional processes of schools and classroom learning, setting specific mental models for expectations and interactions. This view includes the hidden assumption of social interaction and engagement well understood within the traditional classroom that establishes a framework for affective aspects of learning. Considering such factors in the design of online learning is proposed as a means to increase social interaction and engagement (Perez-Prad & Thirunarayanan, 2002).

Community building in online courses is a common recommendation as one way to both improve learning from a constructivist perspective as well as establish a social context in distance learning. Further, student-to-student interaction has been promoted as one of the keystones for positive evaluations of distance learning as shown through multiple meta-analyses of DL (Tallent-Runnels, et al., 2006; Young, 2007; Zhao, Lei, Yan, Lai, & Tan, 2005). In addition, student satisfaction was shown to be related to a sense of presence, having interpersonal communications needs met, and being treated as individuals (Dennen, Darabi, & Smith, 2007; Mazer, Murphy, & Simonds, 2007). Today many online classrooms incorporate such common tools as email, discussion boards, and more recently,
blogs, wikis and various Web 2.0 tools that not only can support content learning but enhance interaction. Commonly such tools are used as part of required course discussions, with previous studies indicating use was more prevalent when required and graded (Dennen, 2005; Hamann, Pollock, & Wilson, 2006). Informal use was uneven when the opportunity was made available but not mandatory.

Social network sites (SNS) in higher education

With the growth and popularity of social networking external to formal educational settings, advocates have argued that these tools not only provide powerful affordances for community building in distance learning, but potentially are transformational technologies for higher education more generally (Hart, 2008; Mason & Rennie, 2008). Social networking covers a wide range of online environments, with many formal definitions broad enough to encompass almost any Web 2.0 tool (Alexander, 2006). Boyd and Ellison (2007) include three criteria in their definition of social network sites (SNSs) which are:

web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. (paragraph 4)

They note that many SNSs allow users to write comments on “friend’s” profiles and send private messages although these are not universal features. Rather than communities organized by topic, SNSs are “structured as personal (or “egocentric”) networks, with the individual at the center of their own community” (Boyd & Ellison, 2007). Perhaps more critical from an educational viewpoint, many of the SNSs are enhanced with multiple collaborative tools that go beyond the personal profile and “friending” links, including the ability to post and share files (text, images, audio and video), participate in discussions or blogs, co-create and edit content with wiki-like tools, and link in and tag external resources from other web sites paralleling social bookmarking. Sites such as Flikr or YouTube, despite meeting the Boyd and Ellison criteria, are in fact more commonly seen as environments primarily for sharing content, digital pictures and video respectively, rather than SNSs. Studies of users of SNSs have shown SNS sites have the capacity to increase social ties and interaction, provide an outlet for self-expression, and assist in helping with information seeking and task completion (Gallant, Boone, & Heap, 2007).

While various public collaborative environments existed on the Internet as early as the 1980s, the emergence of social networking as it is best understood today arose with the massive commercially-supported sites early in this decade, including MySpace in 2003 and Facebook a year later. By mid-2009, these two sites had rapidly moved to the top five for Internet traffic in the United States, and within the top 11 internationally as reported by alexa.com. Because Ning itself is a new SNS, limited peer-reviewed studies of its use in instruction are in print. Other studies of teaching use of social networks have been published (Mazer, et al., 2007; Minocha, 2009), while Ning education sites such as “Ning in Education,” http://education.ning.com/, abound with personal testimonies to the effectiveness of Ning in teaching.

Social networking provides novel affordances for computer-supported collaborative learning (CSCL), particularly in asynchronous environments (Grant, 2008; Idris & Wang, 2009). In a recent report studying the uses of social software in the higher education, Minocha (2009) found that educational goals for employing SNSs included initiating new ways of learning, giving control to students, providing transferable skills, peer-to-peer learning, enhancing reflective learning, creating a digital identity, and fostering social engagement. The case studies reviewed showed multiple benefits in using SNSs, including retention, socialization, collaborative learning, engaging students, sense of control and ownership, problem-solving and sense of achievement, visibility of artifacts created, integration of multimedia, adding novelty and excitement to the learning environment, overcoming isolation and geographic differences, and students’ positive perceptions of the educator involved in SNS initiatives.

From a design perspective, these tools are well suited to provide a learner-centered orientation and support both formal and informal learning interactions seen as critical to community and collaborative meaning-making in constructivist learning. Further, the public and no-cost nature of these tools allows designers and instructors to incorporate them in post-secondary education without the restraints often imposed institutionally on what software or support resources are available for instruction, allowing freedom to mix and match to meet specific course objectives and pedagogical strategies (Boyd & Ellison, 2007; Grant, 2008). Others have advocated for the use of social networks in formal educational settings based on the prevalence of use by the current digital generation of students and their expectations for technology integration (Hart, 2008; Pence, 2007). As noted in a recent reports on
the use of Web 2.0 tools in higher education, institutional supports are uncommon and most adoption of SNSs for teaching has been at the individual staff level (Ajjan & Hartshorne, 2008; Armstrong & Franklin, 2008), although administrative uses for recruiting and public relations have grown over the past year.

Affective domains of learning and SNSs

The implementation of intentional affective strategies in the design of online learning environments have often been ignored in higher education because of a lack of good tools and because of attitudes that equate adult learning solely with cognitive functioning (Craig, Graesser, Sullins, & Gholson, 2004; Main, 1992; Pierre & Oughton, 2007; Shephard, 2008). Pierre and Oughton (2007) note the affective domain “refers to our attitudes and willingness to take part in new things, and ability to make decisions about how we operate and behave in a variety of circumstances” (p. 3), so that it is essential for both motivation and cognition. Hudlicka (2003) stated in a review of the psychological research on affect that it is “critical for the successful completion of a task, for avoiding (often disastrous) errors, for achieving optimal performance” (p. 6). Individuals in a positive-affect condition reduce time to task completion and are more successful in completing tasks (Isen & Reeve, 2005).

Affective issues are known to “exert powerful influences on learners' ability to engage with learning and to progress” (Rose & Meyer, 2002, Ch. 2). Rose and Meyer (2002) argue that understanding affective issues can help teachers support all learners more appropriately. Of the three learning networks, affective networks are perhaps intuitively the most essential for learning, yet they are given the least formal emphasis in the curriculum. All teachers know how important it is to engage students in the learning process, to help them to love learning, to enjoy challenges, to connect with subject matter, and to persist when things get tough. When students withdraw their effort and engagement, it is tempting to consider this a problem outside the core enterprise of teaching. We believe this is a mistake. Attending to affective issues when considering students' needs is an integral component of instruction, and it can increase teaching effectiveness significantly. (Chapter 2)

Over the past three years, there has been increasing advocacy for and research showing the critical importance of the socio-emotional aspects in distance education (Xia, 2007), an area long recognized in the traditional classroom as a key to motivation, engagement, satisfaction, and positive interpersonal interactions leading to effective learning (Main, 1992). Based on research on distance learning courses, students are seeking presence and the immediacy of the face-to-face classroom (Perez-Prad & Thirunarayanan, 2002). Beyond interaction, social networking is enabling new capabilities to support affective domains of learning, in part because these new tools make this a more easily envisioned and achievable goal (Minocha, 2009). This study is an examination of the premise that social networks can enhance the affective aspects of learning in a distance education class.

Method

The research design is a mixed methods case study following Yin (2003) in using both qualitative analysis and rich description. The use of case studies was recommended by Godwin, Thorpe, and Richardson (2008) as a way to better understand the high variance and conflicting results of earlier studies of computer-mediated interaction in distance education. In particular, the authors noted the need to fully document the specifics of design to avoid over-generalization as well as point to variables that potentially impacted these mixed results.

This case study involved two classes representing four sections of an undergraduate educational technology course. The class was an asynchronous online course offered in summer 2008 conducted in a six-week condensed format at a large public research intensive university. No face-to-face sessions were available, although each class had two optional synchronous sessions for students with questions. Only four students total attended these optional events. Each class was taught by two instructors with a different lead in each class. The course is required for students in teacher certification programs and an elective for graduate students.

The two classes included 51 students, with 11 males and 40 females reflecting the common predominance of females typical of education courses. 60.1% were in teacher certification programs with 23 undergraduates and 8 post-baccalaureate. The remaining 19 students were in graduate programs or were practicing teachers taking summer courses for professional development. For seventeen students, the class represented their first online course experience, with twelve more having taken only a single one. The class represented a range of age groups, with 27 students in their early twenties and the rest older, including five students over 45.
Data for this analysis came from multiple sources, including course materials and teacher field notes, student artifacts, and student achievement via final grades. 48 students completed an end-of-course evaluation which included open-ended questions about the course and the use of social networking. Analysis included both statistical and qualitative coding. Data on their use and interactions was combined with post-course evaluation comments to analyze levels of interaction, tool use, satisfaction, and impact on actual and perceived learning. Analysis included coding and thematic analysis of textual comments on evaluations and social network analysis of interaction patterns recorded within the course Ning site.

The Case Setting

As part of an iterative design process which has been ongoing over four years to improve student evaluations and satisfaction with a required educational technology course for preservice teachers, a social networking tool, “Ning,” was incorporated as a central component of summer classes. Initiated when a comparison of face-to-face versus online classes showed consistently lower student satisfaction ratings on evaluations, even with the same content and instructors, the course has become a laboratory for an ongoing design research study on the impact of tools and strategies on student learning, attitudes, and engagement in online learning (E. Hoffman, 2008; E. Hoffman & Menchaca, 2008; E. Hoffman, et al., 2008; E. S. Hoffman, 2009; Menchaca & Hoffman, 2009).

This course, “Computers in Education,” evolved from earlier F2F and text based online versions developed by other instructors, with major online revisions in 2006 and 2008. Earlier research findings showed that increasing instructor presence had a positive impact on student end-of-course evaluations, raising the ratings on overall satisfaction and teacher factors to levels comparable to the face-to-face versions (E. Hoffman & Menchaca, 2008). But students continued to write that they missed the interaction of the classroom and either preferred or had no preference in selecting face-to-face over in-person classrooms. Few students said they would prefer a DL option if they had a choice. Discussion boards and group projects helped ensure both student-student and teacher-student interactions, and these were viewed positively. Based on student comments, still missing was the immediacy of talking and informal interactions that made classmates “real,” paralleling earlier studies suggesting teacher presence is easier to establish than student presence (Russo & Campbell, 2004). These absences are the spaces where students informally note the weather, learn about what happens beyond the classroom, comment on the day-to-day events in school, view dress and demeanor, and even commiserate on the level of homework assigned, establishing a positive affective learning environment. Such conversations and interactions beyond content are part of the community building that have been more difficult to approximate in asynchronous classrooms.

The course had been designed using the institution’s course management system, which changed from WebCT to a version of the open-courseware product Sakai in late 2007. Many students had experience with the CMS prior to the educational technology class as it is used both in distance education and as a supplement in face-to-face classes for education students. In this course, the CMS was used to provide content through lesson modules and assignment details. Final assignments were uploaded through the CMS, and grades posted in the online gradebook. The course does not use a textbook with the goal of keeping content highly current and linked to real-world examples, so all readings are done online with multimedia and interactive components as well as text used in presenting concepts.

The course evolved both through new tools and improved design, but a key piece in recent years has been the ability to incorporate Web 2.0 tools. In summer 2008, the most noticeable change for students was the strategic placement of social networking as a course tool with the addition of Ning. Ning was the space for required asynchronous discussions rather than in the CMS. This particular tool was selected because it was more bounded than the major public sites like Facebook and MySpace, allowing for creation of a private class-member only network. Further, Ning includes a threaded Forum tool which not only presents a student’s response but also a thumbnail picture each time they post, a means of continually reminding students that the respondent was a real person. From a design perspective, a social networking tool met needs for a more comfortable, user-centered space for student-student interaction than was found in the institutionally provided course management system. Ning was particularly useful for posting student-contributed files, images, and multimedia. The course Ning became a model for the use of emerging collaboration technologies to support learning objectives while injecting a space that was familiar to the “digital natives” making up not only half the course’s students, but all the children these future teachers will encounter in K-12 schools.

In the first week of class, students were required to join the course Ning, create their profile page including posting a picture of themselves, and encouraged to answer some questions on their profile page to introduce themselves to their classmates. They were informed that the Ning was limited to class members-only so that privacy was assured. No tutorials were provided although the course module linked to help documents found elsewhere.
online for those who wanted additional information. The only initial problems reported were technical related to registering for a Ning account, suggesting students quickly figured out the interface. Students were then required to respond to a Forum discussion question in Ning introducing themselves as a way to ensure each understood the tool which was later used for both required discussions and sharing assignment products such as documents, useful Web sites, and lesson plans. The course design included 12 required discussions over the six week period in Ning, with half of these requiring not only a response to the posted question but a reaction or reflection to other students’ posting. When not required, students had the choice of reacting to other’s answers.

Other features of Ning were offered as options but not required during the course. The instructors periodically posted pictures and videos, created blog entries which included teachers from local schools sharing their experiences, and posted non-required discussions to share information and useful Web resources. Built-in features always evident to students logging in were member pictures, indications of who was online, and updates to what recent activities other students had done in Ning.

**Student Actions and Reactions**

Results from end-of-course student evaluations indicated that all but one student were highly satisfied with using Ning. In coded results from open-ended responses about their reactions to the course overall, almost every response was related to the social network components. Eighteen mentioned the ability to get to know the other students and 17 indicated they like the level of interaction, with over half indicating it was enjoyable and fun. In fact, several said the social connections established were better than in traditional classrooms, including these:

I loved the personal piece of it. I enjoyed learning from my peers and seeing what works for them in their classroom. I also liked that I really got to know those students with whom I had more in common with. It was easy to communicate and nice to learn about everyone in the class, whom I may not have interacted with in a face-to-face class.

[Ning] has various meaningful functions that can replace traditional classroom environment. It makes teaching and learning activities more collaborative, interesting and enjoyable.

Students were satisfied with the ability to discuss ideas in class and the intensity of interaction that developed. There was an appreciation of differences and a strong sense of personalization. Students wrote:

The best thing I like about the Ning experience is the discussion activity with the use of technology. I think that it helps stimulate ideas and develop better communication skills to diverse group of individuals that I hadn't fully known or met but just through pictures and exchange of messages or ideas.

I am on Facebook and Myspace, so I enjoyed fixing up my page to show my personality. I also think it forced the class to interact and learn more about each other which is a great thing.

I liked that we could be ourselves in it.

The single area of complaint was that a lack of a tool integrated within the CMS for discussions was confusing to some, particularly noted by a few with experience in previous self-contained WebCT courses. Four students indicated that the need to open an external website and log in separately from the CMS required an adjustment at first, but that this was a short term reaction. All who expressed concern said they were very comfortable with the use of Ning after the first week.

From a content learning perspective, there was little evidence to support the use of this social networking experience as one that directly enhanced student learning. Student performance on required discussions paralleled that of previous classes that did not use Ning. There was variability in length and quality of discussion responses, typically matched by the performance on other assignments. Despite self-reports of increased learning, instructor assessments suggested that the level of learning was not impacted by the interaction and postings using Ning beyond what could have been done in other discussion boards. Because these students take only one course in educational technology, there was no easy way to determine if indeed an individual’s performance was actually better than might have been predicted without social networking. Typically students do well in the class and this was continued in the summer 2008 iteration. Retention was excellent, with only a single student not completing all the required assignments, a rate better than in the typical educational technology F2F classes. Some students noted that the
flexibility of an asynchronous class made it easier to deal with issues outside of school that might have impacted their ability to attend classes and meet F2F deadlines. However, the contribution of social networking to high retention is unknown as other factors appear to have impacted the success rate, with course structure and delivery mechanisms as more likely contributors.

One aspect of variation that emerged in the content analysis on discussion postings when examining differences between the two classes was the level of influence a first posted response had on subsequent answers by the rest of the class. When the first response was in-depth and longer, all the following responses tended to follow this pattern. In most cases, first responses to a discussion were posted by students who consistently responded early and in general, showed high achievement on other assignments in the class. These high quality responses appeared to trigger more critical thinking even from students who were lower performing on other tasks. However, when the first response came from a less high achieving student, lacking the level of critical thinking and analysis about the question, all following responses were weaker, even from the top students. While students had a rubric for how discussions were to be assessed, and in early discussions were provided with feedback to help improve the content of responses, the students were more sensitive to what others posted than some more objective quality indicators.

Analysis of non-required contributions to the Ning discussion Forum showed a mix of short comments of support for ideas and actions, including statements of appreciation for responses that were insightful or helpful. All but four students did this at least once during the semester, with the non-contributors or “lurkers” being students who in general did the minimum required on assignments. Active social use versus lurking did not vary by age, nor by previous experience with social networking or distance education except in a single case of one older student who indicated she was unwilling to share personal information. At the same time, she liked the level on interaction in discussions and left comments on others’ profiles.

One of the most notable uses in student-to-student interactions in the discussion Forums were the students who posted extensive tips to help others with assignments, shared useful tools they found, or provided technical assistance to anyone experiencing difficulties with course tools. About a quarter of the students took on this role during the semester, providing a level of voluntary peer tutoring that was unique to these two classes, went far beyond help usually seen in the technology course, and which clearly contributed to smoothing the way for more novice technology users to be successful and less stressed in the class. Many students commented on how helpful the sharing was overall in the course:

[Ning] was new. I enjoyed all the different things that we are able to do on it, such as: commenting each other, posting discussions and commenting on them, being able to look at classmates' examples for less confusion, etc.

While all found Ning easy to use, there was a marked generational difference in the means for sharing of optional personal information that is a fundamental aspect of social networking interactions in tools like Facebook or MySpace. Students in their twenties, most of whom indicated familiarity with social networking, were more likely to produce long individual, text-based narratives describing themselves and their lives in great detail. By contrast older students tended to write few personal details but readily shared photos of family, children and pets. These latter students typically had not previously used sites like Facebook or MySpace. Students regularly posted personal, non-course related comments on each other’s profile pages but this behavior generally decreased over the six weeks of the course as the assignments became more rigorous. Students had from five to 31 comments on their pages by the end of the semester, with an average of 10.1 per student. Interestingly, most comments were from different individuals with no more than five comments on one student’s page coming from a single person. All but four students posted a profile comment at least once. The “friend” comments in the later part of the semester often centered around the two group project assignments where such personal comments continued. Since groups were assigned, this friendly banter and praise was generally among students who had been strangers when the semester started. In fact, in many cases, the students involved were geographically separated and would have had no contact outside of class. As one student noted, virtual communication continued beyond the classroom in some cases:

I really liked the Ning. I feel like I made friends through the Ning and actually spend quite a bit of time outside of class (chat and email) with people I met. We plan to stay in touch!

In open-ended questions on the course evaluations, students consistently indicated that the interactions with students in Ning positively impacted their perceived learning and enjoyment of the course. All but three students echoed this broad theme in unprompted short answers in which they could have written about any aspect of the course. The most common sub-themes were related to affective aspects supported through social networking.
Students specifically commented on increased comfort in working with others they “knew,” the interactions that went beyond required course discussions, and the impact of “knowing” that helped as they worked together on assignments. Many suggested Ning made the course fun and encouraged them to check in to see what others were doing, suggesting it led to a high level on engagement.

I really loved it. It was like WebCT, but it seemed more social and friendlier to work with. It made me want to log onto it because it "tricked" me into feeling like it's not school.

Other themes on open-ended comments at the end of the course included that Ning increased and improved peer feedback, made others more visible, included multimedia capabilities, and allowed for creativity. A number who had taken previous distance classes noted how much they liked this course’s design over previous examples. From an instructor perspective, the use of Ning did not impact assessed learning outcomes but did increase student self-support to figure out course requirements. At the end of the course, two-thirds of the students indicated that they believed distance learning was as good as or equal to learning in face-to-face classes, a significant change from evaluations in earlier classes.

Conclusion

Many of the findings from this research parallel that of earlier case studies of distance learning, including the impact of grading on participation and the expressions of need for interaction and social presence. In examining the impact of the use of a social network in an asynchronous class, there was little evidence in this case study to support the idea that it led to improved student learning as measured by grades, outcomes on assignments, or peer assessments done as part of the course work. In general, earlier improvements related to instructional strategies and design reported in previous design-research studies about the course had greater impact than the use of Ning. While self-reports of learning by the students in the summer class indicated they believed they had been more successful, objective evidence was not there to support their views. They were highly successful but no more than in previous classes.

However, the results are more clear when it comes to issues of motivation, satisfaction, and engagement. These students were ecstatic and uniform in describing their experiences in the class related to what happened in Ning. While some commented on the modules or quality of assignments, every student was positive about some aspect of social networking. They were particularly pleased with the connections they made to the other students in the asynchronous class. None had complaints other than over initial log in confusion which was quickly cleared up. Further, they were energized about the possibility of future DL classes.

Two areas of interest for future research emerged. In the first, despite many popular works about differences between digital natives and digital immigrants, there was no difference in terms of satisfaction or concerns. A unique finding was the difference by age grouping in the use of personal sharing mechanisms, with more text presented by younger students and more multimedia by older ones. Students propensity for socializing varies along other dimensions, possibly personal preferences or learning styles, which remains a question for future research. Lurkers seem to be equally successful and satisfied, making many current measures of engagement in DL harder to link to outcomes. The second area had to do with the social networking impact on the high level of voluntary peer-helping behaviors, particularly for technical and resource sharing. Both of these are now being examined in the context of a summer 2009 version of the course, but at this time analysis is incomplete.

This case study has pointed to the importance of affective domains which can make an online course seem less stressful, pleasurable, and worth attending and completing. These affective elements were reflected primarily in fewer complaints during the semester and in self-reports at the semester’s end. Ning made it possible to accommodate individual needs for personalizing a course and creating an environment in which student presence becomes “comfortable.” To the extent that student satisfaction leads to a continued desire to learn and greater comfort with new learning delivery mechanisms, adding a social dimension to the class was a low-cost effort that had a high emotional payoff as shown in this study. With new tools readily and freely available, instructors and designers have increased options for adding an explicitly affective component to online courses if they can move beyond the cognitive concerns more typical in higher education teaching.

In their recent popular book, “Disrupting Class,” Christensen, Horn, and Johnson (2008) called for more student-centered learning and argued that emerging technologies now appearing will cause disruptive, revolutionary changes to the education enterprise. However, in reviewing the changing landscape of online interaction in the design research process for this course, what emerges is the potentially more gradual shift to personal learning.
environments allowing individual preferences and expressions. The use of social networking tools allows evolutionary changes within existing structures and known pedagogies that result in students who are more engaged and excited by learning.

References


