

# Building a classroom learning community: three instructional design principles for a Web 2.0 world

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**Abstract:** Sampling teachers from the Intel Teach Essentials course on Web 2.0 tools, the researchers interviewed 39 teachers using blogs, wikis and other Web2.0 applications in their classrooms to explore the factors they feel are important to effective use. These three principles are explained: Web2.0 tools need to be part of the classroom's daily practices; the community is the audience and the audience matters; and behavioral guidelines that encourage students to take intellectual risks and give and receive feedback are important for the offline and online community.

## Introduction

Current discussions among technology advocates suggest there is tremendous potential of Web 2.0 applications to transform students' learning (Baird & Fisher., 2006; Consortium for School Networking, 2009; Ito, et al., 2010; Kist, 2010). However, survey studies find that even if Web2.0 tools like Facebook, MySpace, wikis and blogs are part of nearly every student's home life, these technologies are barely used in school (Consortium for School Networking, 2009; Interactive Educational Systems Design, 2009; National Center for Educational Statistics, 2010). Given high expectations but little school use, there are renewed calls to do qualitative and situated research on Web2.0 in the classroom to better understand how these new networked technologies and social media might play out and be harnessed for student learning (Greenhow, Robelia, & Hughes, 2009). With funding from Intel®, the Education Development Center's Center for Children and Technology (EDC/CCT) was able to visit classrooms around the US to observe and talk to teachers and students in order to document the range of activities that are emerging in US classrooms with Web2.0 tools and social networking technologies. We conducted qualitative research over two years with 39 teachers who are innovating with Web 2.0 tools in their classrooms. The teachers and schools were recruited through the Intel Teach Essentials Course V10 and its network of state-level trainers and technology coordinators, in order to learn more about the educational benefits and challenges of such tools (Light & Polin, 2010). One clear finding is that these innovative teachers are using Web2.0 tools to create on-going conversations among students and from our interviews and observations about building that community and creating meaningful and enriching communication among teachers and students using social networking, blogs, and wikis.

This field-based study is only an initial exploration of Web 2.0, but the initial findings suggest three possible design principles that, we feel, merit further exploration and research. The overarching message is that, as with all technology, careful instructional planning is important and there were three principals that clearly shaped how these teachers are using Web 2.0 to create sustained, meaningful communication that other teachers should consider: these tools are part of daily practice, audience is important, and guidelines for appropriate behavior are fundamental.

## Methodology

### Analytical Framework

Our analytical perspective comes from the literature emerging around the concept of Technological Pedagogical Content Knowledge (TPACK) (Ferdig, 2006; Freidhoff, 2008; Harris, Mishra, & Koehler, 2009). TPACK suggests, first, that the instructional design around technology tools is crucial

for success (Ferdig, 2006); that specific tools work in particular ways that may or may not support the instructional objectives. Second, that the technological affordances of a tool vary by specific learning goals and content area. In our research we asked teachers to explain their instructional objectives for the use of each Web 2.0 tool and explain the perceived affordances of each tool and how the affordances facilitate or inhibit those pedagogical objectives (Light & Polin, 2010).

For the first year of research, we developed an artifact based interview protocol about the unit plan and its implementation in the classroom. The interviews asked teachers to describe the lesson activities, student reactions and to judge the success of the lesson. Each participant was asked about the use of Web 2.0 tools, as well as guiding questions, assessments and 21<sup>st</sup> century skills. The interviews were performed face-to-face when possible or over the telephone. An early finding from the first year of research was that, in most cases, these teachers had created wiki sites and blogs that supported many different student activities, not just a single lesson plan or unit. For the second year of research, we decided to look more broadly at the classroom environment, and explore how teachers were using web 2.0 across their teaching. For the second year, we developed a standard interview protocol for each teacher about her use of technology in the classroom with a particular focus on all the web2.0 tools they used. After this general conversation, we then asked teachers to explain in depth one particular web2.0 learning activity and to describe the lesson activities, student reactions and to judge the success of the lesson.

### **Definition of Web 2.0 Applications**

Web 2.0, a term we use almost every day, is an ambiguous concept that refers both to a large and shifting set of technological tools and to an approach to the socially and technologically integrated use of technology. Some studies use “web 2.0,” others use the term “social computing” (Redecker, 2009) or simply the phrase “digital age,” (Greenhow, et al., 2009). Some of the touchstone authors in the field talk about new media practices (Ito, et al., 2008) but they are all talking about tools, ranging from blogs, Facebook, and media-sharing sites to platforms such as virtual worlds or virtual learning environments, and even Web-based applications, for example, VoiceThread or Google Earth. In addition, scholars often refer to a Web 2.0 approach or connectedness as much as to any one tool. For example, videos have been available over the Internet for years, but it is the ability to upload and share videos on YouTube and similar sites that has brought video into a Web 2.0 context. In our interviews, with teachers we decided not to limit teachers by imposing a rigid definition or a restricted list of application. We asked teachers about their use of “web 2.0” tools and supplied a few examples, but allowed each teacher to talk about all the tools, application and websites she might be using

### **Sampling**

Our sampling strategy changed across the two years of research in terms of who we were interviewing and what aspect of their practice we focused on. The change in sampling was a response to our early findings (Strother & Light, 2008). In the first year, the sample consisted of teachers who participated in a professional development experience promoting Web2.0 – Intel® Teach Essentials 10 – and the research focused on the teacher-made materials from that training. In the Essentials 10 course, teachers are asked to design a unit plan using Web2.0 tools and other technologies with students. Study participants were recruited through trainers as well as through an open email request to teachers who had completed the training. We collected 28 unit plans from which we randomly selected 12 units.

In the second year, because we wanted to explore a range of tools in the classroom and to visit all study participants, we decided to recruit schools or districts with multiple teachers using Web 2.0. Using the network of Intel training agencies across three states, we recruited three districts that were well known in their states for experimenting with Web 2.0 tools in the classroom. Each district had five or more teachers who were using a variety of Web 2.0 tools and agreed to speak with us. Not all teachers were Intel participants, although all of the teachers were receiving support from district technology coordinators who were Intel Master Trainers. We spent 2 to 3 days in each district, observing classrooms and interviewing teachers, administrators, and students about Web 2.0. In the second year we spoke with 27 educators from 13 schools across three districts. To review the entire sample, across both years we spoke with 39 educators from 22 schools. The sample included teachers in many states – from Alaska to Florida – and included classroom teachers, technology coordinators, and administrators.

## **Data analysis**

The field notes from the interviews and observations were coded for key themes. Once patterns were established within the interview data, teachers' interviews were cross checked with observation notes to ensure greater reliability of the interpretations. Additionally, artifacts like lesson plans, student web pages were reviewed if applicable. The full report (Light & Polin, 2010) presents discussion of over 60 applications which we divided into four categories: (1) tools that create or support a virtual learning environment; (2) tools that support communication and cultivate relationships; (3) resources to support teaching and learning; and (4) tools enabling students to create artifacts representing what they are learning. This presentation looks across all of that data to discuss three salient factors that shaped how these new technology tools are being used to create a virtual community of learners in the classroom.

## **Three general instructional design principles for Web 2.0**

In our review across all the tools and activities we encountered, there were at least three general factors that appeared to shape successful uses of these tools to promote a learning community – daily use of the tools, careful consideration of the audience and guidelines for appropriate behavior. When teachers explained Web 2.0 activities that they felt had not met their learning goals or otherwise engaged their students, at least one of these three dimensions was missing. Conversely, these factors were evident in the activities and practices that the teachers (and often the students) felt had met their goals and engaged students. The following sections review each design principle.

### **To promote an emerging learning community, the Web2.0 tools need to be part of the classroom's daily practices**

First, most of the Web2.0 activities we saw that become the underpinning of these learning communities were not “special projects” but daily practices using these tools. Much of the current research or discussion of web 2.0 centers on individual learning activities or projects (Dastbaz, Flynn, & Clipsham, 2005; Ellison & Wu, 2008; Kist, 2010) but that was not what we saw in these classrooms. Most of the teachers we interviewed had created virtual environments that functioned as an extension of their classroom community, with a focus on generating an ongoing discussion among the students about what they were learning. These virtual classrooms served as a type of online “homeroom,” functioning the way a Web portal might have functioned in the past—as the starting place for most of the online activity connected to a particular class. These virtual classrooms used interactive communication tools such as class blogs, text messages, or wikis to encourage students to share and debate ideas or to work collaboratively.

For example, in one classroom we observed, which was using a site called Edmodo ([www.edmodo.com](http://www.edmodo.com)), the teacher and students used the virtual classroom constantly. The class website linked the students to all the online resources they would need: a class blog in the center of the screen was a forum of constant communication, and students could collaborate through the site and hand in work. Students knew to go to this space to keep up with the latest information about assignments, as well as to communicate with their teacher and connect with one another about the work in which they were engaged.

These classroom activities were often quite different from how web2.0 tools, like wikis and blogs, are used in the real world. Wikis and blogs are often lumped together, but our observations suggest that they function differently from each other as pedagogical tools, and that they also function differently in classrooms than in the “real world”. Blogs in the “real world” are often places for experts or celebrities to share their opinions or activities – blogs privilege the individual voice and, for example, it is not really about having a dialogue with Justin Bieber. Wikis, in contrast, are typically multi-authored documents – like Wikipedia – that privilege the final product and the authors are almost anonymous. But, what we found was that teachers were using these tools in different ways to support the process of discussing and sharing ideas.

Outside the classroom context, blogs are usually written by one individual, however the teachers we interviewed were much more likely to be using class blogs, a shared blog where students posted in

response to a prompt and each others' comments, rather than individual blogs. The teachers we interviewed saw blogs as more effective as conversation tool, to inspire interest and communication.

Regarding *Individual blogs*, teachers often found individual student blogs challenging and only certain uses were effective. From what we observed, it was difficult (though not impossible) for teachers to create meaningful educational activities using individual blogs as part of daily practice. In the absence of any "big project" or special activity, students were often unmotivated by the individual blog tasks for various reasons. Privacy was an issue, some students were hesitant about having schoolwork on certain topics publically available for friends and foes alike to read. For example, one teacher talked about a failed blog activity that asked students to blog about a time when they had been bullied or had bullied someone, but less problematic topics were also sensitive for students (we explore that below with issues of audience). There is also an issue with safe topics if students felt they have nothing meaningful to say about the topic that they want people to hear or they suspect nobody wants to read. For example, a French teacher, exploring how to use web2.0, asked students to post the French names of three favorite foods to their blog and then comment on their peers' selections. None of the students found this to be very interesting which she described as "no worse than any other homework", and the teacher was also unhappy with the activity.

The most successful individual blog tasks we learned about were when the blog was principally a means of communication between student and teacher only, either by design or by default. One teacher of students with emotional and behavioral challenges uses private blogs (with access restricted to the teacher) as a space for students to reflect freely on their classroom experience and learning. She requires students to post regular reflections on their blogs, where they can express their feelings about the class. Students can access their blogs anytime from anywhere over the web. These blogs served as the students' private journals, and the teacher felt that they were an effective way for her to understand what individual students were thinking and feeling about the work of the class. In a very different example, a Spanish teacher we spoke to uses a travel blog activity: each week, students blog about an imaginary visit to a different country. It was not important for the other students to read each other's work - her goal was to get her students to write in Spanish. The motivating part for the students was the ability to surf the web for Costa Rica, Argentina or Spain to learn what teenagers do there through pictures, news stories, advertisements, youtube videos or songs and just click and drag into their blog. She also spices the activity up by asking students to explore current public debates in the news during their "visit". For example, in the Costa Rica blogs students learned a lot about local divorce laws (and legal terminology in Spanish), which were being debated in the parliament that week.

Although this is not what the literature suggests or recommend (Baird & Fisher., 2006; Kist, 2010), *Classroom blogs* were much more common in our visits, the teachers' goal is to generate a discussion among students via the comments about what they are learning. This is almost always in response to a teacher-generated prompt. We found examples of blog tasks that had at least one of the following four pedagogical objectives: to elicit prior knowledge; generate interest; support student debates; or provide students with feedback from their peers. Students were comfortable with these tasks and communicating with their classmates because teachers assigned these types of tasks frequently. A number of teachers used blog tasks as activities to explore prior knowledge or generate interest before a unit. One teacher we interviewed often does a blog task for homework prior to each new unit. To start her civil war unit she required students to respond to the prompt, "What do you know about the Civil War?" Students started off just posting one fact but quickly used the space to discuss, challenge, and explore their own and others' knowledge and assumptions, with students going to their parents or online resources for more information - and all of this before she even starts her unit. Not only did this ignite advance interest and engagement in the topic, it allowed the teacher to get a sense of students' previous knowledge of the topic before she began the in-class lesson.

A warm up activity can also generate interest without directly asking about the topic per se. A language arts teacher we visited uses a blog task to generate interest before teaching the science fiction novel *Flowers for Algernon*, posting the blog prompt, "What is intelligence, and does it matter?" After conducting a spirited online debate about street smarts, book learning, and human dignity throughout the evening, the next day her students started to read the novel about a man whose very low IQ is artificially tripled but then finds his newfound intelligence quickly slipping away as the effects wear off. This activity helps her students understand how literature can help us examine deeply human issues.

The above activities are blog debates that were warm up activities, but we also heard about many blog debates that were the key learning activity. A group of 7<sup>th</sup> grade language arts students recounted a vibrant debate they had on their class blog about whether the Iditarod Dog Sled Race was animal cruelty or not. Complete with photos of happy sled dog, tired sled dogs and mushers whipping their dog teams,

the activity generated hundreds of posts as students argued their positions. When asked to compare a blog debate to a classroom debate, students generally feel they are different, saying that the blog allows them to participate even if they were too shy to speak in class. A blog also allows them to give more thoughtful and more critical feedback, because they can take time to look up more information or craft a statement that is critical without being mean-spirited.

In addition to student debates, another example of the fourth goal, students giving feedback to each other, is a middle school art teacher who uses a class blog for her middle school students to do critiques of each others' work. She spends a lot of time early in the year helping her students learn to give and receive criticism about their artwork as a whole class. After a few weeks of face-to-face critiques for training, she moves online. Each week on her class blog, a student posts a digital image of a recent work with a self-critique; over the week the other students post their feedback. She wants her students to learn to be self-critical without giving up and to be able to give support and helpful advice to others.

### **The community is the audience and the audience matters**

This discussion of which activities are engaging or not leads us to the second design principle we learned about web2.0 communication - audience matters. The research on web 2.0 in children's lives outside of school suggests that children are aware of who reads their Facebook posts or their tweets and that this is frequently a source of tension and conflict (Ito, et al., 2010; Livingstone, 2009). As students, children and youth are very sensitive to the relationship between who they are communicating with and what they are talking about with these tools. Potentially even more sensitive to such issues because the school topics are not always voluntary. The teachers we interviewed address this issue in two ways – by creating different audiences and by carefully selecting activities in relation to the audience.

In a traditional classroom, students are talking to their classmates and everyone knows that the subject and tone of their communication is set by the teacher. However, with networked activities the boundaries can begin to blur and students' work may reach very different audiences who can talk back to students. This is a relatively new phenomenon. With Web1.0 activities like student-created webpages, it was harder for random viewers to talk back to students and teachers could more easily filter negative comments sent to the "webmaster", Web2.0 is essentially about user-generated content and the nature of the tools promotes communicating back and forth directly to users (Fischer, 2009).

Although the educators we spoke to may have worried about other adults, students are particularly concerned about other young people. Teachers often described students self-censoring or limiting participation if they felt the audience for their work might be "hostile". This is particularly important for middle and high school students, partly because of their age, but also because elementary school teachers we saw tended to limit communication to students' parents. Most of the schools and educators we visited limited access to certain tools or sites creating multiple audiences (or communities) ranging from just the class, to the grade-level, to the school and parents, to the broader Internet. During a focus group discussion, middle school students made clear distinctions between what they talk about in MySpace as opposed their class Moodle. And, in many cases the students seemed to prefer communicating in their class environment as opposed to the open web because of perceived pressure on what would be safe speech. One student commented that in MySpace "you just talk about music you like" but in the class moodle "you can talk about what you want to be" suggesting that he felt inhibited to discuss certain things in MySpace but supported in his classroom online community. Another student in the same class also said his MySpace page was always getting hacked and defaced so he did not want to put anything too personal up there.

The experience of a creative writing teacher highlights the tensions around specific learning activities and the audience in a web2.0 environment. Initially, she planned to have students post weekly assignments to individual blogs, but she quickly realized that asking students to post to a public blog - even a public limited to their classmates for this case - undermined all her efforts to get her students to trust her as a reader of their creative, and often private, work as they develop their own voice as a writer. Making students go public demotivated students who are sensitive to peer pressure because they knew "everyone" could read and judge their work. So, the weekly assignments continued to be private, but the teacher created a wiki based collection of "selected" works that the students approved and each piece appeared as part of a larger collection of student work.

A more subtle aspect of the relationship between content and audience is that all community members need an engaging reason to read the work of others. For sustained communication, students need authentic reasons to read and share ideas. If the task is wrong in this regard, the students, aware that

there was no reason to read their work, have no motivation to write in the first place. This is why individual blog tasks can be unsuccessful, but there was the example of a science teacher who had created a project where different groups posted a wiki page on a different skin disease. Beyond a homework requirement, the students had no reason to read wikis about skin disease, the only exciting part of the activity for the students was finding the grossest image of their disease. The teacher felt the students had not been motivated, their work was not very probing and there was little student discussion. In contrast, a successful wiki activity was an AP World History teacher whose students were working in teams to build a wiki covering all the key themes and topics to help them study for the AP exam. During this year long activity, each student was assigned a set of topics with other students reviewing each entry to ensure accuracy and completeness. Since this site will help them prepare for the AP exam, students are very motivated. Also, the blog debates described above were successful because students felt they had something to say to each other. Therefore, the teachers we interviewed were very careful about creating the appropriate community for the activities they were planning and very thoughtful about how they asked students to participate in the community.

**Behavioral guidelines that support and encourage students to share ideas, take intellectual risks and give and receive feedback are important for the offline and online community**

This leads us to the third, and certainly most important, design principle we learned about: the social practices around web2.0 are paramount to making this tools part of a rich learning community and educators consciously controlled access to the community. The teachers we interviewed were all working hard to create both an offline and an online community that was supportive and would encourage students to share ideas, take intellectual risks and give and receive critical yet respectful feedback. Without this type of social community, few of the activities we saw would have been successful. All of the activities supporting ongoing communication were embedded with in a virtual learning environment that teachers created and access was always limited to students in the class or a set of classes that were working together. (Only specific activities or products would be opened up to the outside world). These teachers had built strong in-class communities and had intentionally and carefully carried that achievement over into their online environments. Students in these classes extended their in-class modes of behavior to the online learning environments; they did not mistake these spaces as places for social and personal interactions, but rather saw them as belonging to the classroom and thus limited their use of them to learning activities. But this was how teachers are able to create an environment where students feel safe to share their opinions and ideas and safe to provide feedback and critiques, as well. Most of the teachers we interviewed also saw a clear separation between what they had control over (the educational space they created and the learning that happened within it) and what they didn't (how students communicated with one another outside of class time and class space, whether in person or online).

In one classroom we observed, the teacher and students used the virtual classroom constantly. The class website linked the students to all the online resources they would need: a class blog in the center of the screen was a forum of constant communication, and students could collaborate through the site and hand in work. Students knew to go to this space to keep up with the latest information about assignments, as well as to communicate with their teacher and connect with one another about the work in which they were engaged.

The art teacher mentioned above who required students to blog art critiques of one another's work, spends six weeks at the outset of the year modeling how to do this constructively. She also makes sure that she comments at least once on everyone's blog "so they know [I'm] looking."

## **Conclusion**

Like naturalists exploring an undiscovered forest, our initial objective for this research was exploratory: to go out and collect examples of how teachers are integrating Web 2.0 tools into the classroom. While this study suggests great potential for these tools, it also demonstrates that careful planning is required to align instructional activities and the affordances of these tools. Teachers need to design activities in which the communication facilitated by the Web 2.0 tools is meaningful and relates to students' learning of the content or to their own lives. Although we cannot yet offer any definitive conclusions, a number of hypotheses emerged from the data and we have presented three possible

instructional design principles. All three of these principles seem to be fundamental in taking advantage of web2.0 tools to create an “always on” learning community.

- To promote an emerging learning community the Web2.0 tools need to be part of the classroom’s daily practices
- The community is the audience and the audience matters
- Behavioral guidelines that support and encourage students to share ideas, take intellectual risks and give and receive feedback are important for the offline and online community

Even though, each principle reinforces the other, the social practices that shape a learning community are, perhaps, the place to start since the community itself is what creates the bridge between the online world and the very real students in your classroom and the conversations among them that supports the situated learning.

One of the most salient features of this “always on” learning community, consistent among more sophisticated teachers across all of our sites, is that we are perhaps beginning to see a Web 2.0 approach or mentality. The tools themselves are flexible and interactive, they can be used asynchronously, they are collected together as a suite of resources within a virtual platform, and teachers are integrating them seamlessly into their classrooms to extend and deepen the educational environment. It may not be the tool itself that defines Web 2.0, but *how* it is used to support teaching and learning, both in individual classrooms and as part of a school’s or district’s larger vision. The philosophy that has developed through the use of these tools embraces a Web 2.0 mentality of networked learning where students are enmeshed in continuing conversation about what they are learning.

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