Making Late Elementary Classrooms Natural Places for Learning: Social Constructivism via Social Software and Web 2.0 Tools

Jon Yellowlees
Graduate Student
Educational Communications and Technology
University of Saskatchewan
February, 2008

Introduction

Social constructivism attempts to address the problem of how students naturally learn best. Today’s technology can support these attempts. When used appropriately by an instructor, social software applications and Web 2.0 tools can effectively assist in creating a social constructivist learning environment. In this paper, I will describe a view of social constructivism and the pedagogical implications that it holds for the classroom. Then, I will review a set of technologies referred to as social software and Web 2.0 tools. Finally, I will focus on opportunities for the integration of these technologies as a support for natural collaboration and communication in a late elementary school classroom.

A View of Social Constructivism and Its Pedagogical Implications

Social Constructivism

Social constructivism, a theory of learning pioneered by the work of Lev Vygotsky, builds on the idea that culture and context are very important in creating understanding. Learning does not occur solely inside the learner, nor is it an external shaping of the learner’s behaviours. Vygotsky’s preferred view of learning was as a social construct which is conveyed by language via social communication (McMahon, 1997).

An environment of multidirectional interaction among instructors, learners and others in cyberspace allows the learners to enter into a cycle of constructing their own truths, testing them against the truths of others and their environment to see if they hold up, and reconstructing where necessary. An individual learner develops through interactions that exchange cultural truths or meanings between the members of a group. In the end, these truths are accepted and owned as personal knowledge by the member learner. Individuals exchange constructed knowledge with others in their context. Over time, both the learner and the cultural context are transformed (Kaplan, n.d.). As a result, collaboration through a culture’s language and subsequent communication is key to understanding a social constructivist model of learning (McMahon, 1997).

Main Tenets of Social Constructivism

Social constructivism takes different forms for different people. It is “constantly changing and open to a variety of interpretations” (Beck & Kosnik, 2006). Ishii (2003) writes that “social constructivism is based on the assumption that individual knowledge and social knowledge are
one in the same. That is to say that the knowledge an individual constructs is that which he or she constructs with society.” For the most part, I agree with Ishii, but I would argue that the individual constructs the knowledge as an individual part of society, rather than with society, because I believe the individual is making meaning from their unique perspective. For the purpose of this paper, I will view social constructivism through the following constructivist lens as described by Tway (2003):

- Knowledge is constructed from experience by learners.
- Learning is a personal interpretation of the world.
- Learning is an active process in which meaning develops on the basis of experience.
- Conceptual growth comes from sharing multiple perspectives and changing our internal representations through collaborative learning.
- Realistic settings that contain integrated assessments should be used for learning.

**Pedagogical Implications**

In this section, I will examine the pedagogical implications of adhering to the main tenets of social constructivism. Social constructivism stresses the fact that learning is a social activity (Tway, 2003). Learners gather knowledge to be internalized from a variety of sources in their environment. Sources can include electronic and print sources, first hand experiences and even a teacher in the traditional role of knowledge provider. However, a teacher’s role should not be limited to that of knowledge provider, but should also include facets of coaching, guiding and facilitating. A teacher can assist learning in a social constructivist environment by promoting active inquiry, by causing learners to question previously held beliefs, and by providing learners with assistance in constructing their knowledge (Kerka, 1997). The teacher’s task is not to deliver the knowledge outlined by the curriculum, but to help the learner discover a pathway to meaningful knowledge for that individual. A teacher taking a constructivist approach is “more interested in uncovering meanings than in covering prescribed material” (Kerka, 1997).

Educators can help learners acquire expertise through the constructivist method of cognitive apprenticeship (Kerka, 1997). Cognitive apprenticeship, also called situated cognition, highlights that “learning and doing are inseparable and that learning is a process of enculturation” (Ding, 2008). Teachers can help students by using the principles of modeling, scaffolding and coaching. The target of cognitive apprenticeship principles is “to empower students to accomplish the tasks independently” (Ding, 2008, p.6).

As part of the cognitive apprenticeship model, collaboration allows students to interact with experts and peers in order to become better immersed in the disciplinary culture (Ding, 2008, p.6). As a result, group work situations are highly desirable in the classroom. The use of group projects “facilitates the exchange of ideas, reciprocal learning, and community building” (Ding, 2008, p.6).

Opportunities for learners to exchange feedback regarding each others’ work contribute to the knowledge being constructed by the group. “The circulation of knowledge and information among peers serves as a condition for effective learning” (Ding, 2008, p.7). This exchange of feedback could be facilitated through a wiki or discussion board. For example, students may spend a class viewing short student created skits that demonstrate problematic social situations that they are likely to experience. Students can reflect upon the choices made by the characters in the skit and comment on the appropriateness of the choices through a class wiki or discussion board. This extended and asynchronous discussion can raise awareness of alternate choices that
are available to students in similar social situations. In this manner, the group will be constructing knowledge of options available when handling certain social situations along with the possible consequences of each option.

Kerka (1997) asserts that “the learning environment should reproduce the key aspects of communities of practice: authentic activities sequenced in complexity, multiple experiences and examples of knowledge application, access to experts, and a social context in which learners collaborate on knowledge construction”.

Spodark (2005) provides a summary of the pedagogical implications by stating that “we must accept a fundamental shift from teaching with technology to learning with technology”. Ishii (2003) built upon the work of Ernest (1996) in the following list of pedagogical implications for the constructivist classroom:

- Be sensitive and attentive to the learner's previous constructions. A teacher should build upon a student’s previous conceptions, informal knowledge, and prior knowledge. Start units with learners having opportunities to express what they already know or don’t know about a topic. These opportunities may come in forms such as class discussions, journal entries, or brainstorm sessions. Starting in this manner can give the learner a more solid base of understanding to construct new knowledge upon.
- Use cognitive conflict techniques to address student misconceptions. Students will be motivated to examine and adjust their thinking in order to rectify the discomfort of holding conflicting beliefs. A student, that claims all metal items don’t float, may also hold the knowledge that metal battleships do float. Pointing out this conflict can help lead the student down the path of understanding the conditions that must be present for metal objects to float.
- Attend to meta-cognition and strategic self-regulation. Encourage and guide students to take responsibility for their own learning through monitoring their own thinking. Stop often during conversations and readings and have students summarize for themselves the gist of what they have just studied. Have students write down three things that they still don’t know about a topic while they are still researching it.
- Use multiple representations. Approach topics in a variety of ways to maximize the opportunities for students to bridge the gap between the current discussion and their previously held conceptions. Explaining topics, with a variety of examples and through a wide range of activities such as demonstrations, experiments and partner work, gives the learner a better chance to identify with a representation that is personally meaningful.
- Be aware of the importance of goals for the learner. Be cognizant of the discrepancies between teacher and learner goals. Take the time needed for learners to fully grasp and personally value the proposed goals. Class conversations at the outset of teaching units can give learners input into the direction and focus that the class will take. By incorporating the desires and interests of learners, the co-operatively developed goals will be strived for with increased determination.
- Be aware of the importance of social contexts. Appreciate that knowledge of different types occurs in a variety of social environments. Students from farming backgrounds may have a wealth of hands on experiences with a variety of simple machines, but may struggle to recall the three classifications of levers. Helping learners approach new knowledge through their experiential knowledge would be appropriate.
Ishii (2003) also outlines five guiding principles of constructivism for classroom application based on the work of Brooks and Brooks (1999). Those guidelines are:

- Pose problems of emerging relevance to students. Starting with student interests increases motivation and student engagement. Asking students relevant questions causes them to contemplate their own knowledge and beliefs.
- Structure learning around primary concepts. Building lessons around a main idea helps the students to see the relationship between the topics that are subsequently discussed. It also invites students to participate in that broad topic in a style suited to their individual dispositions.
- Seek and value students' points of view. Delving into the students’ thinking process provides opportunities for the teacher to continue to make learning more meaningful by challenging the students’ reasoning. Students must be given opportunities to share their points of view in an environment where the teacher is able to listen attentively to them.
- Adapt curriculum to address students' suppositions. Plan opportunities to explore the students’ beliefs and if they are held confidently.
- Assess student learning in the context of teaching. Keep the settings of learning and assessment connected. “Authentic assessment is best achieved through teaching; interactions between both teacher and student, and student and student; and observing students in meaningful tasks” Ishii (2003).

Ishii’s (2003) guidelines can be tailored to a social constructivist approach by carrying them out in situations designed to increase group collaboration through better communication. Such designs can be realized through social software and Web 2.0 tools.

**A Description of Social Software and Web 2.0 Tools**

**What is Social Software?**

The term social software can cover an extremely wide variety of applications depending on how it is defined. For the purpose of this paper, social software will refer to software built around one or more of the following premises as described by Boyd (2006):

- Social software can provide support for conversational interaction between groups or individuals. These conversations can be synchronous or asynchronous. This premise could include instant messaging, cell phone text messaging, email, threaded discussion boards, blogs and virtual meeting software such as Elluminate. The interplay of several people responding to each others’ postings can create a freewheeling discussion that has the ability to go off in many directions.
- Social software can provide support for social feedback. This can occur in the informal form of posting a response to the postings of others on a discussion board, or in a more structured way of giving a thumbs up, thumbs down or clapping in response to comments in virtual meeting applications such as Elluminate. A feedback collection can be displayed by the software in cumulative summaries in order to represent a digital reputation. This type of digital reputation is very important to virtual sellers at sites such as Ebay.
- Social software can provide support for social networks. Applications can help people create and maintain a digital version of existing personal relationships or to start
completely new relationships. Often these tools contain a means of networking to others through a Friend Of A Friend standard. This standard uses a social relationship to a known individual as a means of providing a virtual reference. Social networking sites such as Facebook and Myspace would fit this description. Such sites offer an extremely fluid and flexible method of networking through the Internet. For educational applications, where more control may be necessary, social networking solutions such as Ning and Elgg may be more appropriate. Both of these sites allow educators to create and control more aspects of a social networking site.

In summary, the domain of social software is populated by "tools that depend more on social convention than on software features to facilitate interaction and collaboration" (Levin, 2003).

**What are Web 2.0 Tools?**

The concept of Web 2.0 is actually "...an idea in people's heads rather than a reality… it’s an idea that the reciprocity between the user and the provider is what's emphasized. In other words, genuine interactivity, if you like, simply because people can upload as well as download" (Fry, 2007).

The origin of the term can be traced to a conversation between Tim O'Reilly and Dale Dougherty regarding companies that survived the dot-com collapse. They believed that these surviving companies had some things in common. They felt that the web was at a turning point and decided to mark it by holding the Web 2.0 Conference.

According to O’Reilly (2005), there is still considerable disagreement about “just what Web 2.0 means”. An attempt to clarify what is meant by Web 2.0 is represented in the following chart (O’Reilly, 2005):

<table>
<thead>
<tr>
<th>Web 1.0</th>
<th>Web 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>DoubleClick</td>
<td>Google AdSense</td>
</tr>
<tr>
<td>Ofoto</td>
<td>Flickr</td>
</tr>
<tr>
<td>Akamai</td>
<td>BitTorrent</td>
</tr>
<tr>
<td>mp3.com</td>
<td>Napster</td>
</tr>
<tr>
<td>Britannica Online</td>
<td>Wikipedia</td>
</tr>
<tr>
<td>personal websites</td>
<td>blogging</td>
</tr>
<tr>
<td>evite</td>
<td>upcoming.org and EVDB</td>
</tr>
<tr>
<td>domain name speculation</td>
<td>search engine optimization</td>
</tr>
<tr>
<td>page views</td>
<td>cost per click</td>
</tr>
<tr>
<td>screen scraping</td>
<td>web services</td>
</tr>
<tr>
<td>publishing</td>
<td>participation</td>
</tr>
<tr>
<td>content management systems</td>
<td>wikis</td>
</tr>
<tr>
<td>directories (taxonomy)</td>
<td>tagging (&quot;folksonomy&quot;)</td>
</tr>
<tr>
<td>stickiness</td>
<td>syndication</td>
</tr>
</tbody>
</table>

One of the points that O’Reilly (2005) makes in the chart, is the contrast between taxonomies and folksonomies. In Web 1.0, directory sites such as yahoo.com used a taxonomy to help users locate information. To reach a specific online newspaper, one might make the following sequential clicks; news, newspapers, the desired city, and finally the online newspaper’s site. This rigid path is emblematic of Web 1.0. Its content was chosen and structured by a person
external to the user. The user can gain information from the site, but cannot add information to
the site or improve existing information. In Web 2.0, we see a movement towards folksonomies.
Folksonomies are taxonomies created by the individual user through the use of tags and social
bookmarking sites. Users can tag descriptions to sites in their bookmarks and then later search
their bookmarks based on tag criteria. Since these bookmarks can also be easily shared, one has
access to sites that others tagged with similar descriptors. Folksonomies are emblematic of Web
2.0 because they allow the individual user to make additions and modifications to the site which
are useful to themselves and accessible by others.

Opportunities and Barriers to Classroom Use of Social Software and Web 2.0 Tools

Using Social Software and Web 2.0 Tools in the Classroom

In this section, I will describe possible applications of social software and Web 2.0 tools
to address the pedagogical implications of social constructivism outlined in a previous section.
The following nine activities target a late elementary level classroom, but they can be applied to
a wider audience as well.

1. Guide students in the creation and distribution of podcasts. This activity has the capacity
to be very authentic in nature. Students can podcast scripted news reports after school
events or do a report recorded live from the scene. Alternatively, students can produce
podcasts of stories they have written in the style of an old radio serial. The fact that a real
audience of their peers, and possibly others, will be listening makes this an authentic
activity by which to share knowledge with other members of the students’ community.

2. Moderate a discussion board for the students on topics that are meaningful to them. Give
them opportunities to generate discussion topics regarding social situations in which they
find themselves. The discussions will help them to appreciate others’ points of view and
may bring them new perspectives which conflict with their previously held ideas.

3. Facilitate the enrollment of students into Multi-User Virtual Environments for learning
such as the River City Project. This simulation allows students to build knowledge as
community in an environment highly relevant to the students’ lives, as it has the “look
and feel of a videogame” (The River City Project, 2007). Students are able to control a
character, or avatar, in a 3-D world. Through their avatar, students can walk around their
environment, interact with objects and communicate with other avatars that are
representations of other real students. While in River City, students learn about scientific
inquiry and problem solving by helping to remedy a fictional city’s health problems.

4. Assist students in the creation of blogs that contain their ongoing views and emotions
regarding current events and other significant issues in their lives. The time and care
taken in creating these blogs will reinforce the feeling that their views are valued.
Responses to blog entries will give them feedback from peers or those who they may
consider experts. Personal reflection upon this feedback will likely result in a posted
response from the blogger that continues the “circulation of knowledge” (Ding, 2008,
p.7).

5. Encourage students to share, organize and uncover web bookmarks using social
bookmarking sites such as Del.icio.us, faves.com and diigo.com. Students may find that
the realm of things that interest them is widened through exposure to the interests of
those around them in both their physical and virtual communities. They can connect to a
network of peers and experts in which they can collaborate on knowledge construction in a shared social context (Kerka, 1997).

6. Support the students in the creation of a personal artwork gallery on a photo sharing website such as Flickr. Students have the opportunity to exchange feedback with each other by leaving comments for each posted image. Students may gain insight into their work by seeing it through the eyes of others. The creation of thoughtful feedback will demand deep consideration from the students.

7. Coach students in conducting an interview. Help students to arrange and conduct short interviews with experts in the field that they are currently studying. Interviews can be conducted via internet telephone systems such as Skype. This virtual interaction with an expert will allow them to “get better immersed in the disciplinary culture” (Ding, 2008, p.6).

8. Partner with a class from another school to share opinions regarding commonly studied content or literature. A real-time collaborative environment such as Elluminate will allow students to exchange perspectives on issues being studied or literary works being read. The multi-media capabilities of such collaborative environments will allow the students to express themselves through a variety of modes including text, graphics, audio or video.

9. Model the use of a wiki for organizing and facilitating the work of a group. Extend this experience by helping groups of students to use a wiki in the same manner to solve a problem over an extended period of time. The ability to edit the work of other group members will allow them to challenge each others’ reasoning when justifying changes.

Conclusion

Applying social software and Web 2.0 to enhance a social constructivist learning environment is not without its challenges. I have gathered a list of such concerns, but I have not dealt with them in this paper. Instead, I suggest that these concerns present significant opportunities for further study. Schoepp (2005) has outlined the following list of barriers common to technology integration:

- Lack of computers
- Lack of quality software
- Lack of time
- Technical problems
- Teacher attitudes towards computers
- Poor funding
- Lack of teacher confidence
- Resistance to change
- Poor administrative support
- Lack of computer skill
- Poor fit with the curriculum
- Lack of incentives
- Scheduling difficulties
- Poor training opportunities
- Lack of vision as to how to integrate

Some integration barriers are specific to social constructivist approach. Since it is communication and collaboration that we are trying to enhance, students will hopefully be interacting with a larger number and a wider cross-section of individuals. Due to the increased
exposure to others, it is important to keep privacy concerns in mind. Whenever possible, students should use a means of identifying themselves virtually that isn’t easily connected to their everyday identity. According to Aidman (2000), “privacy in the online world is a concern…not just because of possible violations to privacy in the present, but also because of what might occur in the future.”

Web safety concerns must also be addressed as students become familiar with social sites. This familiarity may lead them to be less than cautious when at social sites outside of school time. However, Tynes (2007) contends “that the potential benefits of online social networking far outweigh the negative aspects and that alternative strategies are available for keeping young people safe online”.

In conclusion, if our quest to make schools a natural place for learning is to be successful, then we must follow Spodark’s (2005) advice to make a “shift from teaching with technology to learning with technology”. This shift, made possible with available social software and tools, increases the feasibility of using a social constructivist approach to achieve deeper and more meaningful learning.

An increase in the quantity and quality of communication and collaboration between peers and experts is a key to creating meaningful learning situations. The pedagogical implications of social constructivism swirl around these communicative and collaborative experiences. The technology of social software can help to facilitate these experiences and to create an environment that encourages an exchange of knowledge amongst its members.

Technology provides a catalyst to collaboration and communication in classrooms by increasing the number of perspectives to which the learners are able to expose themselves, as well as the duration they spend considering this feedback. Collaborative learning and perspective sharing are essential for conceptual growth and altering our internal representations (Tway, 2003).

To help us on this quest for methods that truly reflect the natural ways students learn, we have access to the world of social software and Web 2.0 tools. Our path will continue to lead us to more suitable approaches to learning. Brown & Adler (2008) describe their view of this future path:

The building blocks provided by the OER movement, along with e-Science and e-Humanities and the resources of the Web 2.0, are creating the conditions for the emergence of new kinds of open participatory learning ecosystems that will support active, passion-based learning: Learning 2.0. This new form of learning begins with the knowledge and practices acquired in school, but is equally suited for continuous, lifelong learning that extends beyond formal schooling.

References


