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## **Participatory technologies, pedagogy 2.0 and information literacy**

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# Participatory technologies, pedagogy 2.0 and information literacy

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## Abstract

**Purpose** – This paper seeks to explore the impact participatory technologies have had on education and the information environment in which students operate. It seeks to define a pedagogical approach that will capitalize on the benefits of participatory technologies in the classroom and applies this “pedagogy 2.0” to information literacy instruction.

**Design/methodology/approach** – A thorough literature review was conducted on the use of participatory technologies in education as well as theories related to collaborative learning. This review formed the basis of the proposed pedagogy 2.0 model.

**Findings** – Web 2.0 and the growth in use of participatory technologies has had a tremendous impact on the information environment. Instructors seeking to take advantage of participatory technologies in the classroom should also consider altering the classroom learning environment to one that embraces social constructivist and connectivist pedagogies. Changes in the information environment also require a corresponding shift in the way information literacy is conceptualized and taught.

**Practical implications** – This paper suggests an approach to teaching that instructors can adopt to capitalize on participatory technologies in the classroom and improve student learning.

**Originality/value** – This article seeks to bridge the gap between educational research on 2.0 pedagogies and the use of participatory technologies, and the library literature about the impact of Web 2.0 on information literacy. It suggests ways to make the conceptualization and teaching of information literacy more relevant to the current information environment.

## Article Type:

Conceptual paper

## Keyword(s):

Pedagogy; Information literacy; Web 2.0; Communication technologies; Teaching methods.

## 1. Introduction

The past decade has seen exciting and disruptive changes in the way people use the World Wide Web. The growth of participatory technologies and Web 2.0 has undoubtedly altered the environment in which individuals access information and create knowledge. Participatory technologies have made it possible for all people to be both consumers and producers of information and have altered the way that authority is conferred in many areas. Participatory technologies are also impacting teaching and learning. Instructors now have access to tools that can enhance reflective and dialogical learning, increase student autonomy and help create learning communities in the classroom. However, unlocking the benefits of participatory technologies in education requires a shift in teaching approach, embracing pedagogy based more on social constructivism and connectivism than the dominant behavioral paradigm.

With the benefits of participatory technologies also come increased challenges with regard to information abundance and evaluation. This has significant implications for information literacy instruction, both making it more central to the educational endeavor and more difficult to teach. This article considers the impact of participatory technologies on teaching and learning and proposes a pedagogical model in-line with the rise of Web 2.0 that will help instructors take full advantage of these technologies to improve student learning. The impact of the changing information environment on information literacy and how pedagogy 2.0 can address these shifts is also explored.

## **2. The changing educational environment and Web 2.0**

Pedagogical approaches have always reflected the affordances and limitations of the environment in which they were situated. According to Huang and Behara (2007) traditional approaches to teaching were developed in an environment where knowledge was scarce and only held by experts. Such an environment generated behavioral theories of learning, where the focus was on the learned instructor transmitting knowledge to the student. It was the role of the instructor to produce learning in their students, and the internal motivations of students were considered an unknowable black box and irrelevant to the process of learning. The role of student in the behavioral model was largely passive; simply taking in the knowledge that they were given and then demonstrating what they learned through assessment. (Barnes and Tynan, 2007). Even as learning theories that take into account the interaction between student and teacher and the personal nature of learning have gained credence among educators, teaching has still largely remained an instructor-centric, top-down activity.

Over the past decade and a half, the environment in which people learn has changed significantly. The Internet has made it possible for people to access information at the point of need, rendering the ability to find information more important than mastery of knowledge in any one area. Knowledge is no longer thought of as immutable; something one can learn once and forever be considered informed. In many professions, what one needs to know to be considered informed is constantly changing, making it necessary to think of learning as a continuous life-long endeavor. The Internet has opened up a world of learning beyond the formal

classroom, offering people opportunities to develop their own personal learning environments.

Few things in recent years have been more disruptive to education than participatory technologies and Web 2.0. Web 2.0 was built on an “architecture of participation,” where users are both consumers and producers of information. While Tim Berners-Lee, creator of the World Wide Web, argues that he’d always intended for the Web to be a two-way medium (Berners-Lee, 2000), it wasn’t until the early twenty-first century that participation in the creation of knowledge on the Web started to become a mainstream activity. This shift took place as the tools for participation became easier to use. When sharing knowledge and media is as easy as typing words into a box or clicking a button, it becomes something that anyone with Internet access can do. Tools like blogs, wikis, rating and review sites, Twitter and YouTube made it possible for anyone to share their ideas with the world.

Participatory technologies have challenged traditional ideas about authority. A 2005 comparison of the accuracy of content in the Wikipedia, a wiki-based encyclopedia developed and edited by the public, and the Encyclopedia Britannica showed that the Wikipedia had more up-to-date science and technology articles and almost the same number of factual errors as Britannica (Giles, 2005). Trust and credibility are conferred differently on the Web, through a track record of positive contribution rather than through one’s affiliations. The shifting views of expertise and authority challenge traditional educational paradigms where the instructor is the only one with the requisite expertise to teach.

Formal education is also being impacted by the movement of knowledge creation and dissemination towards the Web. Learning is no longer happening solely in the classroom and the divisions between learning, work and recreation are becoming increasingly blurred. Individuals use participatory media to connect with friends, stay informed professionally, and engage with others in learning communities. Learning is open, networked and always happening. This shift in the way people are learning has led many educational theorists to wonder whether traditional pedagogies are adequate to engage and educate the current generation of students:

In this learning landscape there is a need to rethink models for teaching and learning in order to replace outmoded 'closed classroom' models which place emphasis on the delivery of information by an instructor and/or from a textbook rather than being learner-centric (Mcloughlin and Lee, 2008).

However, higher education is still reliant on learning platforms and approaches that are not reflective of how people learn in the world around them (Dabbagh and Kitsantas, 2011). Teaching is still largely focused on the transmission of knowledge from instructor to student. Even online learning management systems replicate these models with a focus on faculty content delivery rather than student participation. Learning management systems that have incorporated participatory technologies like blogs and wikis have primarily included those as add-ons and have not made student conversation central to the classroom design. For education to prepare students for the world they will need to learn in throughout their lives, it is necessary to shift from a focus on delivery of knowledge to discovery of knowledge.

### **3. Benefits of participatory technologies**

Participatory technologies have great potential for use in education as they have the potential to create a more engaging learning environment. Increased learner autonomy give students a greater sense of responsibility for their learning and has been shown to improve student achievement (Mcloughlin and Lee, 2008). Participatory technologies offer significant potential for heightening learner independence by giving students choices with regards to technologies and learning activities. Student ownership of blogs and wikis in the classroom gives them a greater sense of freedom and control. Participatory technologies support student autonomy by giving them their own personal space for knowledge-building within a larger community, which allows them to drive their own learning (Minocha, 2009).

One important educational affordance of blogs is the ability for students to reflect on what they are learning. Making sense of one's readings and experiences aids in the creation of lasting learning and reflective journals have been used since long before the birth of the Internet to encourage reflective practice. However, blogs have the additional benefit of encouraging reflection within an environment of peer interaction. The ability to reflect and then engage in dialogue with one's peers allows for the negotiation and creation of knowledge in a community engaged in reflective practice. Wikis take the creation of community knowledge to a whole new level by creating a space in which individual credit for ideas is not given and anyone can edit the work of others. There, students can collaboratively construct new knowledge on a topic through consideration of alternative points of view and



defense of their own ideas (Lin and Kelsey, 2009), critical skills for working effectively in groups both inside and outside of the classroom.

A related affordance of participatory technologies is the creation of social presence online. The sense of identity and belonging in an online community has been shown to increase learner persistence and achievement (Hughes, 2009). Unlike a traditional online forum, where there is no individual ownership, blogs allow students to create their own space for sharing ideas and building identity in the classroom. This medium also encourages more informal and personal writing, leading to greater socialization than is usually found in fora. Dickey (2004) found that blogging reduced students' feelings of isolation in the classroom through identity-building and socialization.

The quality of dialogue in the context of a class can also be improved with participatory technologies. In the traditional classroom, products of learning are not often shared amongst members of the class; only between student and instructor. Participatory technologies allow users to open their work up to everyone in the class, or even the world, for comment in a space where conversation is king. Students can challenge or support each other's ideas through blog comments and can negotiate meaning collaboratively in a wiki. Rather than seeing teaching as being focused on the instructor, students can learn from their peers and even from external experts and knowledge networks. The conversation does not need to be controlled by the instructor, nor does it need to begin and end in the classroom. Increased dialogue leads to a greater feeling of community amongst students, which reduces isolation and increases engagement.

#### **4. The need for a 2.0 pedagogy**

Participatory technologies are being used in all areas and levels of education. Hundreds of articles exist in the literature highlighting uses of blogs, wikis, YouTube, Twitter, Facebook and other social media tools in teaching and learning. Many articles highlight the value of 2.0 technologies for getting students more deeply engaged in learning (Minocha, 2009). However, in many cases, these technologies are deployed within a traditional educational context. Some case studies showed that the deployment of participatory technologies did not result in increased collaboration amongst students, likely the result of not adopting pedagogies that encouraged participation, supported collaborative learning and facilitated the creation of knowledge communities (Hughes, 2009). Luo's (2010) study of librarian use of Web 2.0 technologies in information literacy instruction indicates that the majority of librarians are using the technologies as platforms to easily create content rather than to create collaboration or even illustrate information literacy concepts. Other instructors use participatory technologies in the hopes that they will engage students by virtue of the fact that students are already using them for personal knowledge sharing.

Participatory technologies are not transformative in and of themselves. If a class is still largely focused on a hierarchical model where content from their instructor and his or her views are considered more valuable than student contributions, technologies like blogs and wikis will not create true collaboration. Technology futurist John Seeley Brown argued that “with every new piece of

technology, to make this technology work, you have to change your teaching practices" (LaMonica, 2006). In order to reap the benefits of participatory technologies, an instructor must create an environment in which collaborative learning can more readily occur. Frequently, this requires altering the roles and responsibilities of teachers and students in the classroom.

## **5. Theoretical basis of pedagogy 2.0**

In recent decades, the constructivist theory of learning has become increasingly popular among educators. Unlike the behaviorists, the developmental psychologist and father of constructivism, Jean Piaget, saw student motivation and their worldview as key to the learning process, because they will bring that view into any learning environment. Piaget believed that people construct new knowledge based upon their experiences and then assimilate this knowledge into their already existing worldview (Piaget, 1954). This means that learning is very personal and that each student will not respond to stimulus in the same way, as the behaviorists had suggested.

Lev Vygotsky built on the work of Piaget to develop the idea of social constructivism, the notion that individuals not only learn from their experiences, but also construct knowledge collaboratively with others. Vygotsky argues that

learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. Once these two processes are internalized, they become part of the child's independent developmental achievement (Vygotsky, 1978).

Accordingly, social constructivists view group work and group discussion as central to the learning process.

Constructivist pedagogy views students as active participants in learning who construct knowledge based on their existing understanding as well as interactions with peers and their instructor. Unlike in behaviorism, the instructor is not seen as being wholly responsible for student learning. Instead, the instructor is seen as a facilitator, creating a positive environment that encourages learning (Barnes and Tynan, 2007). The goal of translating this ideal into formal education has proven elusive as traditional pedagogies are encouraged in many institutions through policies – regarding course design and assessment – and dominant practice. While some instructors have left behind the “sage on the stage” model of teaching and have incorporated more group discussion and problem-based experiential group learning into their curricula, the dominant paradigm in educational practice is still behavioral.

Connectivism is a more recent pedagogical theory that is heavily influenced by both social constructivism and the growth of participatory technologies. Developed by George Siemens in 2005, connectivism reflects the assumption that no one isolated individual can know enough to make good decisions in their life and work, so being able to rapidly find and evaluate the abundant knowledge that is out there is more important than what one currently knows. Given the “shrinking half-life of knowledge,” Siemens argues that technologies and network-building are critical to learning in the twenty-first century (Siemens, 2005a). Individuals learn from the diverse knowledge contained within the individuals in their network and

also contribute their own knowledge to a collective understanding. Therefore, both network-building and critical thinking about the information they get from their network are key to learning.

## **6. Features of Pedagogy 2.0**

Pedagogy 2.0 is a learning ecology that unlocks the benefits of participatory technologies. Whether online or in a face-to-face classroom, the focus is on creating a learning community within the class where every member contributes to and negotiates a collective understanding of the topic. In essence, “the community is the curriculum” (Dabbagh and Kitsantas, 2011, p. 2) more than any lectures or learning materials. The “sage on the stage” model is replaced by classroom discussion. Instead of writing a paper and turning it in to their professor for expert opinion, student writing will be discussed with their peers, allowing everyone to learn from each other and forcing people to defend their own ideas. Students won’t simply be asked to regurgitate what they’ve learned, but will be asked to personally reflect on it and apply it through problem-based experiential learning. Reflective, experiential and dialogical learning will continually reinforce and challenge what students are learning.

In the 2.0 classroom, students have a large measure of control over their own learning. While the instructor might develop learning outcomes for the class, the curriculum will be largely driven by student feedback, as every class will have different needs and preferences. Students have the freedom to select the technologies that best meet their needs and connect with information that is

meaningful to them. The autonomy of the learner is still offset by some measure of control from the instructor. The instructor is responsible for creating a positive learning environment for everyone, which sometimes means exerting control to prevent problems and other times hanging back to allow the free flow of ideas between students. Since exposure to a diversity of ideas is so critical to learning, the instructor will also need to step in and introduce divergent viewpoints when he or she sees students only seeking out ideas that confirm their beliefs. The role of instructor is more complex in this environment, because they need to constantly adjust their approach based on the changing needs of the class. In many ways, they are more like a moderator in an online community than a traditional instructor.

Pedagogy 2.0 lets go of the idea of the classroom as a walled garden that contains everything students need to learn about a topic. Critical inquiry and independent network-building are encouraged so that students can build skills that will serve them long after the class is over. While there might be classroom readings, students will be asked to seek out other writings and ideas on each topic. To some extent, they will be able to personalize their learning, reading articles that are meaningful to them and connecting with other experts and communities outside of the classroom. If online, the classroom itself may be open to contributions from others, creating a dialogue that better matches what they will find in a personal learning environment.

## **7. Potential limitations of pedagogy 2.0**

There have been criticisms of the use of participatory technologies and pedagogy 2.0 and the literature is full of case studies that describe failed experiments with participatory technologies in the classroom. Whether the problems elaborated below are endemic to the approach or simply speak to the need for careful facilitation on the part of the instructor is debatable. Nevertheless they are concerns that any instructor attempting to create a learning community facilitated by participatory technologies should be cognizant of.

Some advocates of pedagogy 2.0 argue that the classroom should be totally open to the Web, allowing people outside of the class to participate in the dialogue. This brings up privacy issues, not the least of which is the Family Educational Rights and Privacy Act (FERPA) that protects student educational records. While some aspects of the classroom can be open and still be FERPA-compliant (though this requires great care on the part of the instructor), some students may not feel comfortable sharing their reflections in such an open environment and may censor themselves more as a consequence. Instructors will need to balance their desire for an open classroom with their desire for open dialogue within that classroom.

While many instructors have embraced participatory technologies precisely because those tools are widely used by the current generation of students, they must remain cognizant of the fact that most students are not using these tools for academic work. Some students may not want to engage with participatory technologies because they see them as tools designed for their personal lives. Many may see forced participation as decreasing rather than increasing autonomy (Barnes and Tynan, 2007). Also, not all students today are immersed in

participatory technologies and education must be provided for those who have never engaged with these tools before. Some technologies may have a learning curve so steep that they take time away from learning (Ruth and Houghton, 2009). There needs to be a recognition that students are coming into the classroom with very different competencies, technological literacies and expectations.

The existence of blogs or wikis in the classroom does not automatically lead to vibrant dialogue. If students do not feel comfortable or motivated to share their reflections freely, the learning community will wither. Some studies have described blogging initiatives in the classroom that led to “haphazard contributions... minimal communication between students... and poor quality reflection” (Kerawalla et al., 2009). In their study of student blogging in the classroom, Kerawalla, et al. found that while all students participated in blogging, some chose not to engage with the course community, using their blogs primarily for taking notes. If the stage is not set properly to encourage – rather than force – students to participate in the learning community, the dialogue so critical to pedagogy 2.0 will never arise.

A related consideration for the 2.0 classroom is the fact that students are largely accustomed to a hierarchical and lecture-based learning experience where learning materials are provided for them. It can take time and effort for students to acclimate to such a flat, fluid and free learning environment. It is especially difficult for students to adapt to participation in collaborative writing where they are not credited for their individual work. Lin & Kelsey's (2009) case study on the use of wikis in a course showed that students brought their own preconceived notions about authority and the need for credit to the wiki environment. Students did not



use the class wiki collaboratively at first, but instead created their contributions in their word processor and pasted them into the wiki. They were also uncomfortable with the idea of editing the work of others and it took time for students to become friendly enough with their classmates to truly work collaboratively. It may be necessary to build a strong sense of community and social presence within the classroom before students actually feel comfortable engaging in collaborative writing. Ruth and Houghton (2009) found that students had to learn to work collaboratively and that this had to be built into the learning outcomes of the course.

Just because the faculty member is no longer a “sage on the stage” does not necessarily mean that there will be an end to status hierarchies in the classroom. Student assumptions about the role of instructor will still dominate their thoughts and actions within the course. Dohn (2009) found that when an instructor responded to a topic, students felt that their opinion was the final word and trumped all previous contributions. This status issue is especially heightened when the instructor has a central role in evaluating work and assigning grades. One ethnographic study of classroom blogging found that many students attempted to make what they wrote conform to instructor expectations (Hemmi et al., 2009). Even in the absence of traditional classroom hierarchies, other hierarchies may take their place. Hughes (2009) argues that hierarchies even exist in communities of peers. Sub-groups of like-minded learners may form in the classroom, which frequently leads to domination of discussions and the alienation of those outside of the sub-group. Such social dynamics will make inclusive discussion in the classroom

almost impossible. This points to the critical role of the instructor as facilitator in identifying and breaking down such hierarchies.

## **8. Information literacy and pedagogy 2.0**

It is clear from exploring these challenges that instructors are not the only ones who need to adapt to a new approach to teaching and learning. Students will also have to develop new literacies to be successful in the 2.0 classroom and in the 2.0 world. As ideas about authority and knowledge have changed, so should notions about information literacy. Just like pedagogies, conceptualizations of information literacy have always been influenced by the information environment in which they are situated (Špiranec & Zorica, 2010). The skills required for an individual to successfully find, evaluate and use information are different from what they were just a decade ago when the ACRL Information Literacy Competency Standards for Higher Education were developed, and students need to be prepared for a world that requires continuous informal learning. Therefore, our ideas about what it means to be information literate and what we teach regarding information literacy must change to match the current social, educational, and technological environment.

Librarians have been moving from a pedagogical focus on teaching information tools to teaching transferrable information skills for well over a decade, and this shift is a critical one in a world where change is the only constant. Focusing on teaching students how to use tools that will likely not exist (at least in their current form) within five years does not make students more information literate in

the long-term. Siemens' connectivism communicates a vision of the skills that students will need for life-long learning and critical inquiry. Students will need to develop the social and technical skills necessary to connect with information sources – both human and technological – in order to access new information (Siemens, 2005b). The ability to build a personal learning network is critical and the social skills necessary to do so are not currently included in the ACRL's information literacy standards. The ACRL standards see inquiry as being a primarily solitary act (Association of College and Research Libraries, 2000), but some librarians have argued that information literacy in the 2.0 world needs to be seen as “sociotechnical practice” (Tuominen et al., 2005). There needs to be a recognition in the information literacy standards that students are not only using print materials – and their digital surrogates – as valuable knowledge sources.

In a world where the nature of authority has come into question (Chang et al., 2008), students will need to evaluate information in more nuanced ways than they are currently being taught at most colleges and universities. Information literacy needs to be increasingly focused on teaching evaluative skills to students; skills that go well beyond determining whether or not something is peer-reviewed. Scholarly information today is produced across many media and socially, sometimes without clear authorship. Given the changing nature of knowledge-production and authority, information literacy “should have its focus on the critical understanding of the social origins of information and their importance in different practices” (Špiranec and Zorica, 2010). While one of the outcomes in Standard 3 of the ACRL standards does suggest some evaluation of the context in which information is produced, this will

likely be the primary way individuals will evaluate information in the future. In addition, students will need to be exposed to a variety of information media and learn to make decisions about when and why they might want to access information from specific types of sources. They will also need to develop the ability to investigate and understand the context in which those information sources were produced.

The creation of knowledge in the ACRL standards appears to be a rather individual endeavor, but pedagogy 2.0 sees knowledge creation as something that happens in a collaborative environment. Information literacy will have to address knowledge creation through dialogue and negotiation of meaning (Ravenscroft, 2011). Using information ethically and legally also becomes more complex in environment full of microcontent (blog posts, tweets, etc.), which are licensed in myriad ways, sometimes allowing for reuse and remixing.

Those teaching information literacy will also need to focus on developing in students the dispositions needed to be a successful consumer and producer of knowledge. Students will need to be self-directed and critical information seekers, which requires a particular mindset in addition to specific skills. Such dispositional information literacy skills are not in the ACRL standards, but are included in the *AASL's Standards for the 21st-Century Learner*. While the development of a "critical stance", "confidence and self-direction", "creativity" and the ability to "collaborate with others" certainly need to be developed in a K-12 curriculum, they are also core skills that need to be taught and emphasized in higher education as well (American Association of School Librarians, 2007, p. 4). It's important for librarians to

consider how we can help students develop the attitudes that will make them critical and effective information seekers through learning activities.

Pedagogy 2.0 should not only impact what we teach with regard to information literacy, but also *how* we teach. Since the majority of library instruction happens within disciplinary classes, librarians are somewhat more limited in what they can do than instructors who work with students for an entire term. Still, pedagogy 2.0 provides valuable advice for how to encourage and assess student learning, whether in a single class session or over the course of a semester. Letting go of hierarchical models of education is an important first step. Librarians still offering lecture-based information literacy instruction need to explore ways to make their instruction more engaging and student-centered through collaborative, problem-based learning. The library literature is replete with case studies suggesting creative active techniques for enhancing student learning. The librarian should become a facilitator; not telling students what it's important for them to know, but creating an environment in which students can learn and have their ideas challenged.

Lecturing should be replaced by dialogue in the classroom and instructors should provide more questions for students to discuss than concrete answers. Students should be able to explore the answers to questions without feeling like there is only one right answer, since there is no one correct approach to research. Students should be given opportunities to work in groups to develop a collective understanding of information literacy and wrestle with specific information issues collaboratively. This sort of inquiry-based learning helps students to develop core

skills and dispositions while they are learning how to find, evaluate and use information.

While many librarians like to plan out their instruction sessions prior to the start of class, this practice does not ensure that what they teach is meeting the specific needs of the students. Librarians often come into an instruction session not knowing where their students already are in terms of information literacy skill and prior research experience. Therefore, it's important that instruction either start with formative assessment – which can happen prior to class – or an informal discussion about where students are and what they feel they need to learn. Therefore, curriculum and pedagogy will flow from the specific needs of the students rather than the priorities of the librarian.

Students rarely reflect on their research process, which can result in the need to re-learn skills they used in their last assignment. By reflecting, students think about the process they went through – the tools they used and their search strategies – and consider whether it was effective. It opens up for students the possibility of other ways that they could approach research in the future and also helps them to remember what they did that worked for them. Reflective learning can be built into information literacy instruction, even a one-shot, through collaboration with the disciplinary instructor. Instructors can require students to write about their research process, perhaps in a blog, which offers the additional benefit of peer learning and dialogue through comments. With the use of student blogs, the librarian can also comment, providing encouragement and specific

suggestions for students who are struggling with their research. This allows the librarian to extend his or her instruction beyond the original session.

Participatory technologies can also be used to engage students, teach digital literacy, and illustrate information literacy concepts. Tools like wikis and blogs offer opportunities to discuss the changing nature of professional communication, knowledge-production and authority through technologies more familiar to students than a library database. In his article "Participation and Pedagogy: Connecting the Social Web to ACRL Learning Outcomes" Bobish (2011) suggests 2.0 tools and activities that can be used to illustrate each of the ACRL Learning Outcomes. His examples go well-beyond the sorts of uses Luo (2010) found in her study and include not only technology applications that illustrate concepts, but that create collaborative learning experiences. For example, Bobish suggests using tagging in a social bookmarking system to help students understand the various terms that could be used to describe a concept and learn how to brainstorm keywords for searching (Bobish, 2011, p. 58). Using technologies that patrons may already be familiar with to teach information literacy concepts enables students to focus more on the skills that they are learning than the tools that are illustrating the concept.

In undergraduate writing courses at Oregon State University, librarians Deitering and Gronemyer (2011) had students explore blogs by scholars in their subject area in order to better understand scholarly communication. Blogs could also be used to have students investigate the social origins of information and identify bias within writing. Students can engage with the peer review process

through reviewing the work of their classmates on blogs and wikis. This can help students develop the mindset necessary to engage critically with the literature of their discipline without necessarily needing to read dense scholarly articles in their first semester at college. These activities can generate an understanding of peer-review at a level far beyond simply checking a box in a database search interface. When the use of these participatory technologies is part of a larger shift in pedagogical approach, it can truly improve the learning experience and learning outcomes for students.

Assessment of student learning can also be informed by pedagogy 2.0. Students can demonstrate their learning in an open way that allows for collaborative assessment, rather than simply receiving feedback from the instructor. Instead of having students turn in a worksheet, or some other work product, the librarian can design an assignment that has students demonstrate their solution to a research-related problem in front of the class. Alternatively, students could share their work with the class using a blog or a wiki. In addition to providing teachable moments where the instructor can point out alternative approaches, students can also receive valuable feedback from their peers. This promotes assessment-as-learning since students get feedback they can apply in the future and peers can learn from the solutions of their classmates.

## **9. Conclusion**

Clearly, information literacy is a critical component of pedagogy 2.0. In discussing the elements of a modern pedagogical approach, Hovorka and Rees



(2009) state that “we must change the way in which knowledge is perceived: not as something that is reliable and changeless but as something that is an activity, a process of finding out.” This sort of critical and life-long inquiry is what information literacy has always been about, but changes in the information environment and corresponding approaches to teaching indicate that the way we teach information literacy is in need of an update. Pedagogy 2.0 reflects and takes advantage of these changes. It is an educational model not only about the use of participatory technologies, but also the corresponding flattening of hierarchy between student and instructor that is necessary to unlock the power of these technologies. Pedagogy 2.0 can provide useful guidance for librarians in updating their curriculum and teaching approach. Seeing ourselves as facilitators – exposing students to new ideas and creating a nurturing environment for learning – allows students to be more responsible for their own learning. Bringing students together to discuss ideas and solve problems collaboratively helps them to co-create an understanding of information literacy that is greater than what any one of them could have developed alone. Librarians must ensure that our students have the skills necessary to successfully navigate the information environment of tomorrow and, for many, that will require a major shift in our approach to teaching information literacy.

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