PARTICIPATORY MEDIA FOR EDUCATION

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Introduction

ABSTRACT
Introduction to our research on Participatory Media for Education.
ABSTRACT

Participatory media for education is an emerging space that looks to capitalize on the social, participatory and active nature of various Web 2.0 tools to facilitate social learning, construction of knowledge and student-centered learning environments. Research in this area is still emerging and is typically focused on a single tool in a single context. Early adoption of the Social Media Classroom (SMC), a suite of social media tools, in four courses provided us with a unique opportunity to observe patterns of usage of the site and embedded participatory media tools across various courses, instructors and students. Our main research goals were to observe student and instructor usage across courses, identify and analyze usage patterns, expectations, motivations and social constraints, as well as to inform future research questions and directions. Our work moves away from the typical ‘single tool in a single context’ research approach, which often attempts to demonstrate effectiveness and generalize to a one-size-fits-all suggestion. Instead, we examine the organic and emergent trends, issues and complexities to start to inform a richer understanding of the space. In general, our observations demonstrate the promise of participatory media for education, while highlighting various complexities and issues. We also make a call for a move away from the common tool-first focus where educators adopt a tool and then try to find uses for it, to a learning-activity which first identifies the underlying learning activities and goals and then aligns various technologies to support the activity or goal. This approach can make participatory media for education more approachable, more straightforward to integrate and potentially easier to evaluate. Other findings and conclusions include differences in usage patterns across courses and a multitude of potential influences driving the difference in use, including instructor influence, student motivations, course attributes and social norm. Additionally, we discuss an observed potential for self-directed student use and learning. Finally, we summarize implications for future research projects to support this emerging and promising area.
Background

ABSTRACT

A review of the background theory and existing research on participatory media for education.
PARTICIPATORY MEDIA

Participatory media refers to media tools that support social interaction, participation and communication (Rheingold, a). Often also referred to as “social media” or “Web 2.0”, participatory media employs web-based technologies to allow users to contribute content and interact with the content and each other. These technologies are characterized by user participation, rich user experiences, openness, low barrier to entry and network effects, in that the more that use it, the more value the tool has (O’Reilly, 2005). Common participatory tools in today’s web world are blogs, wikis, forums, social bookmarking, social networking and synchronous chat.

With the rise of participatory media in the Web 2.0 world and the subsequent proliferation of participation, sharing and networking, many have begun exploring how the embedded principles of Web 2.0, such as openness and network effects, as discussed above, can be applied to traditional education axioms like learner engagement, interaction in learning, and learner ownership and management of learning (Mason & Rennie, 2008). As Owen et al. (2006) write, “educational agendas are shifting to address ideas about how we can create personalized and collaborative knowledge spaces, where learners can access people and knowledge in ways that encourage creative and reflective learning practices that extend beyond the boundaries of the school and the limits of formal education” (p. 4). While many of these tools and their application to education are relatively new, the ideas and assumptions behind these efforts are not new and many are, in fact, foundational educational theories and works.

EDUCATIONAL ROOTS

Constructivism

One such foundational perspective is Constructivism (Piaget, 1926). Constructivism is rooted in the belief that learning and knowledge occurs through ‘mental construction’, or through fitting new experiences and ideas into existing knowledge. Piaget, the father of Constructivism, was considered a ‘cognitive constructivist’ and emphasized the role of a learner’s interaction with the environment and surroundings as critical to their understanding of the world and cognitive capacity.

Social Constructivism, which grew out of Constructivism, claims that we learn the most through social and communal activities and that meaning is shaped and knowledge is constructed through interaction with peers and reflection (Higgs and McCarthy, 2005). In his well-known theories of social learning and the Zone of Proximal Development, Vygotsky, a Social Constructivist, claims that students are only able to achieve a certain level of learning by themselves, but can learn and accomplish more by working with or observing a capable peer (Rogoff, 1990).

More recent adaptations of Constructivism further emphasize the social processes of learning, and claim that learning is more effective when it occurs through interpersonal channels and in cooperative environments. These constructivists believe learning is cooperative, collaborative and conversational, providing students with opportunities to interact with each other to clarify and share ideas, to seek assistance, to negotiate problems and discuss solutions (Miers 2004).
“Effective learning is conversational in nature, and that it necessitates a social dimension, including communication, dialogue and shared activity” (McLoughlin & Lee, 2007).

Other models have grown of the Constructivist model, such as knowledge-creation (Paavola & Hakkarainen, 2005), knowledge building (Bereiter, 2002), and expansive learning (Engeström 1987, 1999). These models see students as producers and consumers of knowledge who engage in learning through interaction with the instruction as well as fellow students by contributing to their community’s general body of knowledge.

**Constructionism**

Another key underlying perspective, Papert’s Constructionism, had its roots in Constructivism as well (Papert, 1980). With Constructionism, Papert challenged traditional teaching methods and made a call for integrating computers and technology into the classroom. Constructionism asserts that by manipulating and controlling computers, learners can develop a deeper connection with abstract ideas such as geometry and calculus. With less emphasis on a “right or wrong” approach, learners construct their learning through iteration and exploration. To Papert, this necessarily means that textbooks and formal lecture plans play less of a role, and the students themselves drive or construct how learning takes place. Another key part of Constructionism is social learning. Papert writes that learning happens especially well when we interact with peers, observe someone else or collaboratively build a solution. While some debate his focus on programming and anecdotal research, his underlying visions paved the way for a greater focus on technology and student-centered, social learning approaches we see today.

**Student-Centered Approach**

Another relevant and related movement in education has been to shift paradigms from a teacher-centered model to a more student-centered approach. This approach, also often referred to as ‘active learning’ or ‘student-centered learning’, focuses on the students and attempts to map the curriculum to their interests and needs. Whereas in teacher-centered models, the instructor possesses all of the content to be learned and delivers knowledge to students, student-centered learning strives for a more flexible and adaptive approach (Mason & Rennie). In the student-centered approach, “learners are not only at the center of the environment; they are integral to it. Universal outcomes, activities, and assessments often cannot be established a-priori, but must be derived through the efforts of individuals” (Hannfin & Land, 1997, p.187). Relating it back to the previous perspectives of Constructionism and Constructivism, Siemens (2004) coined student-centered learning as “connectivism”, where learning is viewed as the building of connections within communities and the active creation of meaning and understanding through participation.

There are several well-researched underlying tenets that support the student-centered model (adapted from Hannafin & Land):

- Understanding evolves continuously
- Individuals must assume greater responsibility for their learning than in traditional environments
- Students make, or can be guided to make, effective choices
A student-centered model supports an environment that allows learners to construct their understanding, test and revise their own theories, actively control their learning and connect deeply with concepts. Many have empirically demonstrated that when it is properly employed, student-centered models can lead to higher retention, deeper understanding and increased motivation to learning than in other educational models (McKeachie, 1994; Bonwell & Eison, 1991; cited in Felder & Brent, 1996). However, the ‘properly employed’ qualification, which is often difficult to measure for many contexts, is a key reason that student-centered learning is still debated today. Further, additional barriers such as instructor lack of skill with or knowledge about how to integrate the new approach, the potential sense of loss of control from both instructors and learners and disconnect in instructor or learner roles or identities also may limit the shift to student-centered learning (Bonwell & Eisen, 1991). However, the promise of student-centered learning remains an alluring topic for educators and researchers, many focusing on how to lower or reduce the barriers to the shift. Hannafin & Land (1997) point to technology as a potential solution. By acting as a capable peer, enabling testing and revising of hypotheses and understanding, supporting active control of learning and potentially providing more avenues for guidance, technology can overcome many of the barriers and facilitate a balanced and integrated student-centered model.

**Summary**

There is a significant amount of expertise and literature around the benefits of student-centered, social environments where students can construct a deeper understanding and connection to learning. Many are looking to technology, specifically participatory media, as one way to help foster such learning environments.

**PARTICIPATORY MEDIA FOR EDUCATION**

Pulling from Piaget, Papert, Vygotsky and the student-centered movement, the use of participatory media tools in education is typically geared towards creating a more student-centered, adaptive environment where learners can contribute to the course material, formulate and express their own insights and opinions, construct their own understanding of material by connecting concepts to personal experience or current events and learn from one another in collaborative environments.

Thus, the ideas behind participatory media for education are far from new. Even with this underlying foundation, it is still unclear exactly how to use these tools effectively for education. Many are trying – all of the major Learning Management System providers offer social media tools in some capacity. But even when the social media tools are available, most instructors rarely use them. One study demonstrated that 95% of LMS usage involved a set of five core content management and broadcast communication tools, such as a syllabus, announcements and assessments, which fit the teacher-centered paradigm and merely replicated the traditional course model online; whereas tools that encourage participation, collaboration and a more student-centered paradigm (Wiki, Discussion Boards/Forums) were not used.
much at all (Hanson & Robson, 2004). Use of participatory tools currently occurs in the long-tail of teaching and learning and is often unsupported and isolated (Severance, 2009).

One reason why participatory media may not be widely used in education could be the fact that incorporating the tools often requires a shift in educational paradigms, toward a more student-centered paradigm. As previously discussed, there are a number of barriers to this shift, including the adjustment to a more open and flexible learning environment for instructors who are used to controlling the course content and flow. Another reason adoption of participatory media for education has been slow may be the uncertainty of which tool or suite of tools to use and how to use them. Selecting a tool to use can often be overwhelming, since “participatory media” encompasses such a broad space with an array of tools that enable difference user experiences and affordances. Also, the existing set of best practices and information about how to use the tools is mostly based on observations of success stories outside of the classroom, ‘gut feel’ or single-tool-in-single-context research. The research itself is still emerging with little consistency in understanding of general application or effectiveness. To demonstrate the existing landscape, we will briefly review of the literature for each of five key participatory media tools.

EXISTING RESEARCH LANDSCAPE

Again, the existing research landscape is heavily tool-focused, with inconclusive findings across studies due their context-specific nature. Some researchers attempt to prove the effectiveness of certain tools in certain environments, and often make bold general claims about the value of social media tools. Using a framework similar to the one used by Mason & Rennie (2008), including general details, benefits and limitations of each tool, we summarize the current literature on each tool below.

Blogs

General

A blog, or a “web log” is a web tool that typically supports a particular individual’s opinions, thoughts and prose. Blogs are often compared to offline journals or diaries, although with one important distinction – blogs are typically published on the Web where others, often the general public, can view them. A blog is thus typically one-to-many medium of expression and record. Blogging software is widespread and often free, making blogs an easy and approachable way to give individuals ‘a voice’ or a platform through which to share their ideas and thoughts. Many refer to a blog as a ‘soap-box’ for a particular individual to express themselves.

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1 The word “blog” is often also used as a verb, meaning to post content on a blog.
Existing Research

Due to the low barrier to entry and writing-for-an-audience nature of blogs, many instructors have been exploring ways to use them in the classroom. Much of this attention has occurred, not surprisingly, within the blogosphere itself ([a], [b], [c] as examples). Empirical, academic research on blogs for education is less plentiful, still emerging and has exhibited inconclusive findings.

Benefits

Existing research has found that blogs can:

- Give students more time to reflect and articulate ideas, so could lead to more effective debate discussions and collaboration than face-to-face (Koschmann, 1996)
- Facilitate students’ unique voices by empowering them to assert their ideas and opinions and encouraging them to think critically (Oravec, 2002, cited in Williams & Jacobs, 2004)
- Foster reflection (Ferdig & Trammel, 2004)
- Facilitate deeper, richer understanding due to hyperlinks, contextual information and revisiting concepts (Ferdig & Trammel, 2004)
- Provide opportunities for students to express different opinions, thus stimulating ‘cognitive conflict’ and discussion (Herring et al., 2004)

Limitations

Other studies have shown that blogs:

- Do not have the same benefits or adoption for all students: the effects of blogs can differ based on learning style (Saeed, 2008), student familiarity and preferences (Flierl & Fowler, 2007), and student willingness to accept the tool (Raajj & Schepers, 2008)
- Often require significant administrative “interventions” to stimulate usage (Tri-Dang et al., 2008)
- Are typically public, which can intimidate students and discourage use (Mason & Rennie, 2008)
- Must be kept active and maintained; lack of consistent attention or flow may lead to less use or value (Mason & Rennie, 2008)
- Require a high level of student and instructor motivation to participate (Mason & Rennie, 2008)

In an atypical study, Williams and Jacobs (2004) observed the use of a blog in two courses at the Brisbane Graduate School of Business at Queensland University of Technology and in addition to tracking usage, also surveyed students.
Background

Their main findings were that students generally favored the blog and felt it was helpful to their learning. Also of interest is that two-thirds of respondents said that they would have continued to blog regardless of being graded. This study starts to move away from contextually-based effectiveness measures and delves into the underlying perceptions and motivations, something we would like to see more of and in fact, was a main goal in our research, as discussed below.

Summary

Existing research points to the potential of blogs for reflection and student opinion in some cases, but also reports lack of use or value in other cases and cautions that significant infrastructure and support may be needed. These conflicting findings likely mirror the differences across learning environments where the studies were conducted, but this is rarely discussed. While a few newer studies touch upon individual preferences and learning styles, there also seems to be a general lack of attention to differences in use and perceptions across students and instructors, and across courses.

Forums

General

Forums\(^2\) are tools that support many-to-many asynchronous discussions. Typically one user starts a conversation by posting a forum topic and then others respond via replies or comments. These discussions can be either flat, where the replies are presented linearly in reverse chronological order, or threaded, where replies are presented in a hierarchy based on the parent post (Mason & Rennie, 2008, p.91). Forums and blogs are similar in that they both provide a venue for students to express opinions and insights. However, whereas blogs put the individual in the foreground, forums are typically shared community spaces with multiple participants as the foreground (Duffy, 2006).

Existing Research

The concept of discussion as a learning technique has been around in education for some time. McKeachie et al. (1986) demonstrated that classroom discussion could contribute to higher retention of material, increase in student motivation and development of higher level thinking skills. Thus, forums, which initially emerged even before the Web itself to provide a means of discussing topics or issues with a wider online community, were thought to be obvious early tools for the classroom. This was evidenced by the fact that discussion boards were default features in the early iterations of the first online Learning Management Systems. However, despite the seemingly natural fit and years of experience, there is still ongoing work to determine how to use forums effectively for learning.

Benefits

Existing research has demonstrated that forums can:

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\(^2\) Forums are also referred to as web forums, discussion boards, threaded discussion boards or bulletin boards (Mason & Rennie, 2008, p.90)
• Provide 24/7 availability (Mason & Rennie, 2008)

• Level the playing field for more students to contribute (versus face-to-face); for example, some students may be more comfortable participating in a discussion online than in the classroom (Mason & Rennie, 2008). Also, forums can reduce the dominant student effect, which sometimes characterizes face-to-face classroom sessions (Groves & Pugh, 2010)

• Facilitate deeper discussions on issues or concepts, which can foster social construction of knowledge (Mason & Rennie, 2008)

• Lead to more student satisfaction and higher student outcomes (Jung et al., 2002; Kentler & Willis Flurry, 2005). Although it should be noted that since these studies compared grades and participation rates, their findings could also be explained by the better students participating more as part of their quest for a good grade.

• Build community and encourage professional identity formation (Duemer et al., 2002)

Limitations

On the other hand, the literature cautions that forums:

• Do not lead to much usage beyond the minimum level required to qualify for the assignment marks (Palmer et al., 2008)

• Are asynchronous, so they require a great deal of motivation for students to participate and weigh in when there is no assurance of response (Mason & Rennie, 2008)

• Are typically text-only, which can be overwhelming and lengthy to read or catch-up, and typically presented as a threaded interface, which often becomes unwieldy (Mason & Rennie, 2008)

• Require a course mediator to continually pay close attention in order to coordinate learners’ activities. Monitoring a forum is time consuming given that it is impossible to know in advance when new messages are going to be posted (Gerosa et al., 2010).

Summary

Forums have been around for some time, and while existing literature points to their capacity for discussion and debate, and even in some cases, higher student outcomes than those that do not use forums, these findings are not consistent and many point to user experience issues that may limit the quantity and quality of the discussions. Again, these studies are typically context-bound and very little work has explored the differences in usage and perceived value across students, instructors and courses.
Background

Chat

General

Chat is a tool that provides lightweight, synchronous communication between two people or a group of people. Messages are typically text-based and short in length, fostering conversation. For these reasons, chat is often more like telephoning than emailing (Mason and Rennie, 2008, p102).

Existing Research

The immediacy of feedback and informality of the channel, and thus the low barrier to entry, has attracted many to chat as an educational tool. Much of the research with chat has been in the languages discipline, perhaps because conversation is so critical to learning a language and achieving fluency.

Benefits

Chat has been show to:

- Lead to better student outcomes in ESL because it allowed students to use the language to express their own ideas and have conversations with peers (Yaun, 2003). They found that peers would correct each other’s grammar and spelling along the way as well, providing a high-quality, student-driven platform for learning the language.

- Foster deeper understanding of the material and more student engagement in an English course (Cameron, 2006)

- Lower the disadvantage for ESL students (Cameron, 2006). However, Cameron qualifies these results with an acknowledgement that the course was designed to support these discussions, including small, assessable tasks, easy and approachable chat software and a small group environment to ensure that students did not need to be assertive to take part.

- Encourage more instant communication (Jeong, 2007)

- Expand the student comfort zone (Jeong, 2007)

- Provide more flexible office hours (Jeong, 2007)

3 Chat is also referred to as chatrooms, instant messaging, IM or IRC, the latter of which refers to a particular technology that supports synchronous communication online.
• Lower the barrier to entry since chat can be more informal and intimate than email or even face-to-face and logs can serve as reminders of discussions that can be revisited later (Mason & Rennie, 2008)

Limitations

The same qualities of chat that are often considered benefits, such as immediacy of feedback and low barrier to entry, can also be its biggest limitations. Chat can:

• Have overlapping messages and discussions, which can undermine language and communication skills development (Jenks, 2009)

• Lead to miscommunication due to lack of cues (Jeong, 2007)

• Create issues with privacy or security (Jeong, 2007)

• Encourage students to expect that the instructor be available at all times and experience frustration and decreased satisfaction when those expectations were not met. (Jeong, 2007)

• Often be disruptive for students and instructors, especially when there are several conversations going on at once. Typically perceived as an informal medium that sometimes translates as lower quality, and can encourage poor grammar, gossip and non-educational use (Jeong, 2007; Mason & Rennie, 2008)

Summary

The research on chat highlights the limitations of context-specific studies in that those features and qualities of chat that are benefits in some contexts, can be major limitations in others.

Wiki

General

A wiki\textsuperscript{4} is a type of web page designed to allow its content to be created and edited by anyone who has access to it. They can be accessed with a web browser where changes can be archived and recovered easily. A wiki can provide tools to allow only members to edit a page’s content or it can be completely open. Consequently, wikis offer a low technical barrier to entry, and even novice users can contribute to building an online community. The most obvious example of a wiki is the online collaborative encyclopedia Wikipedia; however most wikis serve much smaller, more specific communities or knowledge management goals.

\textsuperscript{4} The term wiki comes from the Hawaiian phrase “wiki-wiki” which means ‘quick’, highlighting the ease of use of this web tool.
Existing Research

Wikis found their way quickly into the education field because of their support for collaborative work, and research has followed more slowly.

Benefits

Studies have shown that wikis can:

- Allow users to engage in dialog and share information among participants in group projects and construct their knowledge through the collaborative environment (Boulos et al., 2006)

- Facilitate computer-supported collaborative and cooperative learning (Augar, Raitman, & Zhou, 2004)

- Foster benefits typically aligned with cooperative learning such as positive interdependence of group members, individual accountability, face-to-face interaction, and appropriate use of collaborative skills (Parker and Chao, 2007; Schaffert, Bischof, et al., 2006)

- Serve as a knowledge platform for a community of practice where members of the community can share their knowledge with the group, put up interesting pieces of information, work together, discuss issues, etc. (Schaffert, Bischof, et al., 2006)

- Facilitate collaborative document and resource building (Duffy & Bruns, 2006). They found that the ability to interact with an evolving document over time allowed teachers and students to see the evolution of a written task and building crucial collaboration skills for the workplace.

- Help students create a conceptual framework that will enable them to quickly develop their understanding further, thus facilitating reflective learning (Chen et al, 2005)

- Effectively stimulate writing and support writing assignments (Lamb, 2004). He observed that as a low cost and effective communication and collaboration tool, a wiki can promote closer reading, revision and tracking, ease students into writing for a wider audience and encourage the writing process rather than writing as a product.

Limitations

In the same vein, studies have shown that wikis can:

- Require a certain level of computer skills (Ebner, 2008)

- Be open to vandalism and destructive activities due to their open nature (Ebner, 2008)

- Require somewhat significant organization and maintenance by users to ensure pages are findable and extensible (Watson & Chelsea, 2008; Mason & Rennie, 2008). This organizing structure is generally lacking which makes it difficult for users to search or browse for information (Ebner, 2008).
Background

• Have a limited assurance of accuracy (Denning, 2005)

• Be highly volatile. Contributions and corrections may be negated by future revisions (Denning, 2005)

• Have bias and lack of appropriateness in coverage (Denning, 2005). Unmonitored environment can lead to “a very low level of content or no contextual relevance” (Mason & Rennie, 2008).

• Teach improper attribution due to the collaborative nature of writing and lack of clarity around ownership and accountability in some cases (Denning, 2005)

Summary

While some research shows that wikis can be used to encourage wider participation, deep understanding and group collaboration, other studies caution that wikis are highly contextual and can lead to issues in accuracy, access and appropriateness.

Social Bookmarking

General

Social bookmark web services were designed to allow users to save or “bookmark” web resources (URLs) and organize them with keywords or “tags”. These services lead to easy sharing and distribution of resources, where users collect and annotate their resources in an open, online environment (Kamel & Bolous, 2007). This service has many advantages over bookmarking locally or within a browser. First, resources can be accessed from any computer. Second, the bookmarks are often shared with a larger community so that each user is not confined only to resource they can find, but can discover relevant resources through other users. Also, the ability to tag resources makes social bookmarking valuable as a community based tool. Emergent tag taxonomies, or ‘folksonomies’ can make it easier to find resources from a user’s own collection, as well as the larger community collection. Additional metadata, such as the popularity of a resource based on how many people have bookmarked it, can be used to organize and categorize resources in new ways. Finally, some services suggest tags and notes from other users for previously tagged resources, allowing users to learn from other taggers (Alexander, 2006).

Existing Research

While reference and citation management tools have been used for years in education and academia, social bookmarking is fairly new to the classroom. The potential for supporting student research and course-specific resource repositories that are dynamic and responsive to student interests and current events make social bookmarking a tool of interest for many educators, however existing research is inconclusive on its value.

Benefits

Social bookmarking can:
• Provide personal information management for resources that might be lost to time or scattered across different machines (Alexander, 2006)

• Foster discovery relevant resources or other people with similar interests and a broader scope for student and group research (Alexander, 2006)

• Foster development of “communities of practice” in that it provides a common location for community-generated links, encourages learning from others and promotes collaboration, potentially reveals relationships between information and people that might have been missed in a more controlled environment, permits collective generation of community-valued artifacts and allows community members with similar interests or research goals to find one another (Evans & Powell, 2007)

Limitations

However, other studies have demonstrated that social bookmarking:

• Cannot handle resources that are “buried” in the LMS, library-licensed or otherwise restricted or protected (Churchill et al., 2009). In essence, the concept of web resource can be too limiting for everyday use by teachers and students.

• Often lacks a controlled vocabulary which can lead to a ‘messy’ learning environment, and this can occur for many reasons such as lack of standards for structure of tags, spelling mistakes, polysemy or synonymy (Brown & Duguid, 2008)

• Involves personalized schemas and tags which can limit the collective value (Mason & Rennie, 2008)

• Is often open to contribution from all without moderation, leading to little assurance that the resources are valuable, relevant and appropriate (Churchill et al., 2009)

Summary

Again, despite the benefits and promise of social bookmarking for certain learning contexts, some research also points to less successful implementations in others. In this case, the inconsistency of use of social bookmarking may come from the nature of the tool and not necessarily just from contextual differences.

Summary of Existing Research

This research review is not meant to be comprehensive, but instead to demonstrate the potential for participatory media for education, and the inconclusiveness of the existing research. Clearly, these tools can have compelling positive effects on learning and the learner experience, but results tend to be highly contextual and as demonstrated above, when used in other contexts, results can sometimes show negative usage or effects. Further, the current set of ‘best practices’ or instructional material is also heavily reliant on these studies of a single tool in a particular environment, or based solely on
usage of the tool outside of the classroom and a ‘gut feel’ that it should also be applicable in a classroom, both of which are limited in value and applicability. The inconsistency of findings is not surprising since every classroom is nuanced and a different combination of course structures, instructor styles and student needs. For this reason, it is difficult to make general statements about effectiveness or list best practices. However, much of the existing work tries to do just this, often declaring direct implications for general future use from the findings within a single context, while ignoring the many complexities and social forces in play such as instructor and student expectations, perceptions and motivations.

**OUR RESEARCH**

Given the emerging nature of the space and the complexity of each learning environment, we feel that research should focus less on defining a single approach or proving effectiveness in a single context, but instead on improving our understanding of usage patterns and perceptions across courses and contexts. Identifying and analyzing these trends can help us start to unravel the issues around where these tools are successful and where they are not, both from a usage perspective (Did students use the tool?), but perhaps more importantly, from the perspectives of the instructors and students themselves (Why did they use it? What did they think of the value added? What do they expect in future courses?). Furthermore, instead of an environment where a single tool is used, observing instructor and student choice in an environment with a suite of participatory media tools can capture the interplay between tools, usage tendencies and social norms that emerge. And finally, instead of a tool-first focus like most of the tool-specific research cited, we feel that identifying the underlying instructor and student goals first and then later applying various technologies towards meeting those goals could lower the barrier to entry, provide more general guidance to the use of these tools and empower students and instructors to create learning environments that fit their needs.

Our research looks at four courses using the Social Media Classroom (SMC) as the dedicated course site. The SMC is an open course suite of participatory media tools developed by Howard Rheingold, which is built around five embedded participatory media tools - a blog, wiki, forum, chat and social bookmarking tool. Early adoption of this system provided us with the unique opportunity to observe the usage across different courses and contexts, and analyze student and instructor usage patterns, perceptions, expectations and motivations.

**RESOURCES**


Background


Wang, SK., Hua, HY. (2008). Reflections on Using Blogs to Expand In-class Discussion, TechTrends, 52(3).


Education blogs:
[c] http://educationpolicyblog.blogspot.com/
The Social Media Classroom and Rheingold’s Approach

ABSTRACT
A brief background on the Social Media Classroom and how Howard Rheingold uses it.
THE SOCIAL MEDIA CLASSROOM

The Social Media Classroom (SMC) is an open and freely accessible course site solution with embedded social media tools to support teaching and learning, and expand the course experience (http://www.socialmediaclassroom.org). The site was developed by Howard Rheingold, an educator, technology evangelist and well-known writer and critic “on the cultural, social and political implications of modern communication media” (Howard Rheingold, 2010). His seminal book, *The Virtual Community*, about his experience on the WELL, was published well before modern technologies like Facebook, MySpace, or the Web itself had anyone else talking about online communities and positioned him as a leading expert in the emerging space (Rheingold, 1993). As a visiting instructor at University California – Berkeley and Stanford University, his recent focus has shifted to the value of participatory media and new literacies in education. He has taught a particular course on using digital media many times, using an array of tools such as Wordpress, Delicious and a separate wiki platform. Over time, he found that students had a difficult time managing various accounts, user interfaces and experiences across the standalone tools. This recognition was one of the drivers behind his proposal to "create an online social media classroom” with embedded tools and a more consistent and streamlined experience for students. Further, in order to help other teachers and faculty also use the site, he planned to create “detailed syllabi for teaching participatory media theory and practice, and a series of instructional videos detailing how and why to use social media to learn". The idea for a social media classroom and supporting materials won a grant through the Digital Media and Learning Competition in 2007 (http://www.dmlcompetition.net/). With that grant, Rheingold commissioned a small team of developers and instructional designers to develop the first stage of his proposal, the course site with embedded social media tools. Thus the Social Media Classroom was born. The site was formally released to the public in May 2009.
The Social Media Classroom (SMC) has two key features that position it as a powerful and potentially significant education solution for educators and researchers:

1. **Openness** - open source, freely accessible and open educational content and resources

2. **Embedded social media tools** - tools built directly into the course environment to empower social construction of knowledge and a student-centered learning environment

**Openness / Open Education:**

The SMC is a lightweight, open, freely available solution. It is built as a set of modules on top of Drupal, an open source content management system (http://www.drupal.org) and is released as a complete package, including a database template. One can download the package from the Social Media Classroom website (http://www.socialmediaclassroom.com) and install it on a local server, or request a hosted instance for a more turnkey solution. The Drupal core enables a flexible and extensible system for those using non-hosted versions. This sets the stage for a lower barrier to entry than many of the larger Learning Management Systems, which require significant supporting infrastructures and in many cases, large financial commitments. Instead, the SMC can provide a solution that is easily accessible without needing institutional buy-in, heavy technical overhead or large paychecks.

In addition to the lower barrier to entry and open source core, the SMC further supports the ideal of the open access movement, that knowledge and knowledge-sharing (education) should be open and easily accessible by all who seek it. The SMC fosters this movement in that it is a publicly available resource. Also, as indicated in Rheingold’s original proposal, his goal for this effort is to not only provide a course site solution, but also use it as a platform to research social media and develop a core set of tutorials, instructional videos and community-built best practices that are openly available.

**Social Media For Education:**

The other key feature of the SMC is the embedded social media tools. The SMC is delivered with five social media tools integrated into the course site: a wiki, blog, forum, chat and social bookmarking. Rheingold intentionally chose these five tools to fit different goals for his course. In fact, he aligns each tool with specific learning activities and objectives, as indicated below (Rheingold, 2007).

1. **Blogs** “afford the expression of individual voice, the emergence of a market for intelligent information-filtering and knowledge-dissemination and public interactions in the form of comments.”

2. **Forums** “afford many-to-many, multimedia, asynchronous discussions among small or large groups, regardless of distance, over extended periods.”

3. **Wikis** “enable collaborative document and knowledge creation as well as web-building as a learning method.”

4. **Chat** “adds synchronous online text channels that can be tuned and cultivated for specific purposes.”
5. **Social Bookmarking** “makes possible simple, bottom-up, collective knowledge-gathering.”

The SMC attempts to capture the possible benefits of each social media tool, as well as the potential value of using them in tandem, by integrating them directly into the course experience. In the SMC, the tools for social learning are right in line with course material to capitalize on the social interaction and encourage collaboration and social learning to occur. The idea is that this can foster a dynamic learning environment that can adjust itself to student’s interests, provide appropriate context to the material and keep students engaged.

**Rheingold’s Course**

As previously mentioned, Rheingold teaches a course on digital social media, and built the SMC specifically to serve the needs and requirements that had been refined and well-tuned over his multiple experiences teaching the course.

Regarding the development of the tools and the course, Rheingold writes that “working closely with students about the new modes of learning that these new media afford, the way the class [was] taught began to change. Much of the pedagogy that emerged involved letting go of ‘teaching’ and learning to be the ‘chief learner’ of a collaborative learning community” (Rheingold, 2009).

Again, Rheingold is an evangelist and his use of the SMC and embedded tools is progressive and fine-tuned for his course, with heavy scaffolding and many techniques refined over the years to encourage student participation. The course is, after all, about digital media, so the connection with the tool use is obvious and explicit. Additionally, he sets expectations upfront that student use is required and is very clear about the type of use expected within each tool.

Course assignments are built into the SMC participatory media tools and the students’ grades are directly tied to their participation through the site. He also actively participates through the site through his own posts and comments, and employs a wide range of pedagogical approaches such as dedicated content owners and collective incentives to encourage and drive use. His comprehensive and consistent approach, as well as his committed participation, is reflected in the usage – a quick view into one instance of the course demonstrated very heavy and consistent use across all of the tools, except for chat which Rheingold has recently removed and instead uses a Twitter micro-blogging feed in class on top of the SMC use.

Rheingold states that he feels like the course with the SMC is now ‘very successful’, based on of his informal assessments of student engagement, as well as more formal measurements of student contribution and evaluation. However, he is still constantly innovating, adding in mind mapping, presentation and video tools over the course of just one instance.

As discussed above, the SMC is free and open and can thus provide a lighter-weight, more accessible course site solution for instructors looking to incorporate participatory media into their classroom. However, most instructors adopting the

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1 A mind map is a diagram used to represent the relationships between concepts, typically focused around a central concept or idea (Buzan & Buzan, 1996).
SMC will not be teaching about digital social media directly, will be first-time or early SMC users that will not have had a chance to refine the use and directives around the tools or may want to see how the tools are used without having to significantly change their teaching style or the course content. Therefore, it is important to observe the usage in these more common and organic instances, to get a better understanding of the usage patterns, perceptions and needs of instructors and students.

ADDITIONAL USAGE TO DATE

Rheingold released the SMC for public use in May 2009. While the total number of local installs is not known, there are currently over fifty (59 as of April 2010) hosted installations, and the SMC has been employed in four courses at the University of California – Berkeley, three of which are School of Information courses. This early adoption gave us the unique opportunity to observe the patterns of use of the site and the embedded tools across different types of courses, with first-time instructors at the helm. Again, Rheingold is one example of an instructor that is very familiar with the tools, has a direct connection between the tools and course content, is willing and able to take risks and refine usage of these tools and in fact, actively innovates as he goes. His usage is not likely to be replicated by most adopters of the system since they will have different goals, experiences and pedagogical approaches. Observing how the SMC is used in a wider array of classrooms with different teaching styles, course structures and needs is critical to understanding how social media is adopted and used, and how to potentially guide future adopters and users.

SMC Adaptation

One thing to note is that the adopters from UC Berkeley adapted the SMC to meet their needs by developing the Syllabus Engine. This new feature gives the SMC more interconnectivity between tools and content types by pulling all of the relevant content into a dedicated page for each lecture or session. The instructor for Course 1 and 2, along with Author 1 and another student\(^2\), were responsible for designing and implementing the additional functionality:

The Syllabus Engine consists of three key elements, Lecture Tags, Lecture Pages and a Dynamic Syllabus:

**Lecture Tags:** We developed a simple controlled vocabulary called Lecture Tags, and consisted of tags such as “L1”, “L2”, through “L30” which was the last lecture. Students used the Lecture Tags to add metadata to the social content they created, including blog posts, forum replies and social bookmarks. Students were instructed to tag their social content with the appropriate lecture tag, in addition to their other tags, and adoption was quick and universal, all student contributions were tagged with at least one Lecture Tag.

\(^2\) We would like to acknowledge and thank Hyunwoo Park, a fellow graduate candidate at the UC Berkeley School of Information, who assisted with the SMC installation and documentation for the first two instances. For more documentation on the install and set-up process, see the Appendix.
Lecture Pages: We then created a dedicated page for each lecture, the Lecture Page, which, in addition to the instructor synopsis, readings, lecture slides and other instructor-provided material, also included the relevant blog posts, forum topics and social bookmarks, or student-provided content pulled in. This created a dedicated location for all of relevant content for each particular topic. The appropriate Lecture Tag determined relevant social content and allowed us to identify and pull content from across social media tools dynamically.

Dynamic Syllabus: Rheingold uses the SMC wiki for the agenda for each session, but the initial I School instructor needed a more robust syllabus that pulled in all of the instructor-provided content in a dynamic and robust way. We therefore created a dynamic syllabus generator that pulled in the appropriate information from the Lecture Pages, as well as other sources such as Assignments. It should be noted that the Dynamic Syllabus is powerful and appropriate for courses in which the syllabus is set and finalized upfront. For Course 3 and 4, the dynamic syllabus was abandoned due to the need for more flexibility with lecture topics and dates and instead we just hand built the syllabus. Both courses still used the Lecture Tags and Lecture Pages.
Syllabus:

RESOURCES


Howard Rheingold and the Social Media Classroom


Our Research & Methods

ABSTRACT

A summary of our research goals and objectives, as well as an overview of our methods of analysis and observation.
RESEARCH SPACE

The emerging interest and innovation around participatory media for education is grounded in ideals of social learning, construction of knowledge, personal responsibility for learning and student-centered paradigms. Current research is often focused on demonstrating effectiveness or “success”, which typically requires a very context-specific approach. However, many still try to formulate general best practices from this myopic perspective. Also, many of the educators on the forefront of this movement, such as Rheingold, are often more able to take risks, invest a great deal of effort and refine approaches to find what works for them. But to truly understand the space, we need a better understanding of how participatory media is used and received beyond a single controlled or fine-tuned context, and more “out in the wild”. Identifying common trends or patterns of use could inform future research questions, and eventually, better, more generalized guidance and best practice around the adoption and use of the tools.

The Social Media Classroom is one of many systems available to educators to incorporate participatory media into their learning environments and start to make the shift to a more student-centered approach. Early adoption at UC Berkeley provided us with the unique opportunity to observe use across different courses and get insight into instructor and student perceptions, reactions and motivations.

We were closely involved with the four courses and were able to survey and interview students and faculty to get a more in-depth view into observed trends. This report combines different methods of analysis and observation across these varying courses. Our goal was not to measure or prove effectiveness or make absolute statements or predictions about usage or success. Nor is it to imply a linear continuum of student or instructor use, where ‘more’ equals ‘better’. Given the complexity and nuanced nature of each individual course, it is not sufficient at this stage, or perhaps ever, to try to identify a single, pre-defined way to use these tools. Instead, our work observes the usage patterns across these different courses and tries to understand the complexities and underlying goals, perceptions and motivations to inform future research questions and adoption.

RESEARCH GOALS

• Observe Student/Instructor Usage Across Courses

• Identify and Analyze Usage Patterns, Expectations, Motivations and Social Constraints

• Inform Future Research

OBSERVED COURSES

We observed the use of the Social Media Classroom in four UC Berkeley graduate courses, including three I School courses and one Public Health department course. This was a total of approximately 150 students (although there is some overlap across the various courses, so it is approximately 110 unique students). We have anonymized the courses and instructor/student names to protect their privacy.
The courses observed to date:

**Course 1**: Graduate level core course, theory and abstract concepts, midterm and final exam, 40 students

**Course 2**: Graduate level core course, business and applied concepts, final project, 40 students

**Course 3**: Graduate level core course, theory and abstract concepts course, final paper, 37 students (same students as Course 1)

**Course 4**: One section of a graduate level core course, applied concepts, multiple instructors, 30 students

**SOCIAL MEDIA CLASSROOM**

All courses used the Social Media Classroom as the dedicated course platform and the student experience of adding or consuming content was very similar across all the courses. The only key difference was that based on experience with the SMC in the first two courses, in which chat was not used at all, chat was disabled for Course 3 and 4.

**APPROACHES**

*Literature Review*

We reviewed the existing research and literature on participatory media for education to get a solid understanding of the space. See the Background section and Bibliography for more details on the review.

*Observation of use*

For all four courses, we were able to closely observe usage during the semester. This allowed us to experience questions, issues, requests and adaptations in real-time and also gave us an opportunity to observe changes in behavior over time. We noted these observations as the courses proceeded.

*Quantification of usage patterns*

To understand usage patterns and trends, as well as to compare across courses objectively, we quantified the usage using site content, revisions and user accounts. This involved counting various activities and content types including number of blog entries, forum replies and social bookmarks. Because the wiki involves collaborative editing and resource building, in addition to number of pages, we also counted the number of revisions to each page. And finally, we used individual user pages, which are a feature of the SMC that details the total of each user's contributions, to count individual participation patterns.

For the latter, we used a rudimentary equation to calculate participation and compare across courses: 2 points for each initial content addition (blog entry, bookmark, wiki page, forum) and 1 point for each comment. Wiki revisions were too difficult to capture on an individual basis so those are not represented in the individual numbers.
Methods

Surveys

We administered surveys to students in all four courses, which targeted familiarity with various tools, perceptions of their educational value, as well as overall expectations regarding technology in the classroom. In Courses 1, 2 and 4, students were surveyed both pre- and post-semester, to get a sense of familiarities and expectations before the experience with the SMC and after the semester of using the tools within the SMC. Because the same students were in Course 1 and 3, some of pre-semester data is also relevant for Course 3. Additionally, Course 3 students were surveyed post-semester as well.

Interviews

To get a deeper sense of perceptions and motivations, we interviewed students and instructors from all four courses. We conducted a total of 10 student interviews and 5 instructor interviews, which ranged from 20-45 minutes each.

Contextual Inquiry

We also observed several students while using the SMC in a course. We used the contextual inquiry method to observe their typical experience/use. Because this was during class, we did not interject with questions, but noted behaviors to come back to in after class interviews. We observed a total of 4 students.

LIMITATIONS

These methods have some acknowledged limitations such as inconsistency in approaches and data collection across all courses due to access or time constraints. Similarly, the courses are not a representative sample of courses since we were confined to those courses that were early adopters at UC Berkeley. However, despite the limitations, we were able to observe trends and compare across the courses on many levels, as well as connect various usage patterns and trends with reported perceptions and motivations.
Findings: Usage Patterns

ABSTRACT

A review of how students and instructors used the SMC.
GENERAL

Early adoption of the Social Media Classroom at UC Berkeley gave us a unique opportunity to observe the usage of participatory media tools across different classes, instructors and students. Our observations and interviews gave us two types of data – what people did on the site and how people felt about or interpreted what they (or others) did. This section discusses the observations from the former – what people did, or how they used the site.

STUDENT

Course Comparisons

Each course used the SMC and participatory tools differently, as indicated below. One thing to note is that our study does not consider higher usage as necessarily indicative of more success or “better” use of the SMC since the usage was different within each course. Instead, we are trying to understand the differences between the courses and the factors that influence the use.

<table>
<thead>
<tr>
<th>Course</th>
<th>#Students</th>
<th>Course Length (weeks)</th>
<th>#Blog Entries</th>
<th>#Wiki pages, revisions</th>
<th>#Forum posts, replies</th>
<th>#Chat messages</th>
<th>#Social Bookmarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40</td>
<td>15</td>
<td>204 (13.6 per wk, 5.1 per student)</td>
<td>2 pages, 0 revisions</td>
<td>24 posts, 52 replies (2.17 per post)</td>
<td>3</td>
<td>115</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>15</td>
<td>16 (1.07 per wk, 0.375 per student)</td>
<td>60 pages, 360 revisions</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>37*</td>
<td>15</td>
<td>67 (4.5 per week, 1.8 per student)</td>
<td>2 pages, 2 revisions</td>
<td>0</td>
<td>NA**</td>
<td>43</td>
</tr>
<tr>
<td>4</td>
<td>52</td>
<td>15</td>
<td>43</td>
<td>7 pages, 45 revisions</td>
<td>106 posts, 368 replies (3.47 per post)</td>
<td>NA**</td>
<td>36</td>
</tr>
</tbody>
</table>

* Same students as Course 1

** The Chat tool was disabled for this course.
Tool Tendencies

As apparent in the numbers above, usage in all of the courses was mostly focused within a single tool, and that particular tool differed across courses as well.

<table>
<thead>
<tr>
<th>Course</th>
<th>Focused Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blog</td>
</tr>
<tr>
<td>2</td>
<td>Wiki</td>
</tr>
<tr>
<td>3</td>
<td>Blog</td>
</tr>
<tr>
<td>4</td>
<td>Forum</td>
</tr>
</tbody>
</table>

Individual Use Patterns

Within each course usage significantly varied as well, with users ranging from high usage, with several posts per week, to very minimal usage of one or two posts the entire semester. As outlined in the Methods, for Course 1, we developed an arbitrary system to compare individual usage, basically 2 points per original post, 1 point per comment they made and ½ point per comment from another student on one of their posts. This is a rough rubric but can serve as an adequate way to compare individual usage across courses.

This chart demonstrates the individual usage across courses. Course 3 had a long tail of use, with only a few students with high use and large number with scores between 1 and 10. Course 1 and 4 were very similar in usage across the
students, with around half below the 15-20 mark and the other half ranging from 20-60+. Course 2 is an approximation of a consistent rate of use across students. This is a limitation due to the data we were able to collect - we expect there was more variation among students in wiki page revisions, but we feel it is accurate to represent it as more consistent than the other courses.

**Course 1 and Course 3**

Course 1 and 3 had the same students, Course 1 in the Fall semester, and Course 3 in the following Spring semester.

Plotting Course 1 and Course 3 scores for each student, there appears to be a relationship. Running a Pearson’s Correlation, we see a fairly strong positive correlation between scores, r(34)=0.709, p<.001. Said another way, the scores had 50.3% of their variance in common. So it appears that participation rate for one course was related to participation in the other course; on average, those that participated more in Course 1, also participated more in Course 3. This points to a possible student effect in which a student’s own propensity for participation may have been one influencing factor of use. Additionally, experience in Course 1 could have influenced the individual use in Course 3. More analysis is needed to further understand the relationship.

**Learning Activities**

As previously mentioned, most discussions around the various participatory media tools often align certain learning activities with specific tools. We define a learning activity as the underlying skill or learning objective that students achieve through their use of the tool, and from the instructor perspective, learning activities are the objectives or goals
that instructors have for the student use of the tools. Our review of the literature and our own observations demonstrated that often educators or instructors will adopt the tool first and then try to figure out how to use it, whereas starting first with the desired learning activities, instructors may find it easier to select tools and integrate them, as well as evaluate their use. More discussion on this in the Discussion and Conclusions section.

While the list of potential learning activities is boundless and may change based on the particular course, a review of the literature and research highlighted a set common and fairly ubiquitous learning activities, outlined below.

**Description of Learning Activities**

- **Participation** – active engagement and contribution to the course, through discussions and content creation.
- **Reflection** – insight and thoughts about material just learned helping to achieve meta-cognition, where the student develops an understanding and awareness of his/her learning process.
- **Synthesis** – connecting ideas and topics to form a broader understanding.
- **Critical Writing** – formulating opinions and critiques and being able to effectively communicate and support through writing.
- **Contextual Understanding** - similar to Synthesis but instead of just connecting concepts from within the class, this entails understanding each concept or topic in the broader contextual space. So this may involve connecting ideas to material learning in other courses, personal experience or current events and news content.
- **Collaborative Resource Building** – collaboratively authoring a resource.
- **Assistance** – asking for and receiving support within the class.
- **Community building** – developing a sense of community and comfortability with classmates.
- **Research** – finding quality resources and references.
- **Classification/Organization** – effectively categorizing content and resources (typically through tags).
- **Debate/Discussion** – critical ownership of ideas and opinions by defending or opposing in debate or discussion with peers.
- **Information Filtering** – evaluating information influx to determine quality resources.
- **Accountability** – being responsible and accountable for information shared with others.
- **Technical Capability** – being familiar with tools and how to operate them effectively.

*The last three are typically grouped under the broader learning activity referred to as “21st Century Literacies” or “21st Century Skills”.

**Learning Activity Tool Alignment / Usage**

As discussed in the Background section, current literature in the space typically assigns particular learning activities to particular tools. For example, blogs are typically prescribed for reflection and individual expression, where as forums are for discussion. Again pulling from the various research articles, popular press and other sources (Mason & Rennie, 2008; Rheingold), the common learning activities associated with each tool are indicated below in gray and marked with “C”.

In our observations, students did in fact exhibit the commonly assigned learning activities in many of the tools. However, they also used each tool for a wide range of learning activities, extending past those commonly assigned to each tool. The learning activities observed from our research are indicated below in red and marked with “O”.

<table>
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<th>Description of Learning Activities</th>
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</tr>
<tr>
<td>Technical Capability</td>
<td>being familiar with tools and how to operate them effectively.</td>
</tr>
</tbody>
</table>
### Description of Observed Learning Activity Usage

**Participation** – All of the tools, except chat, were used as a way to participate in the course. Many of the courses had a participation grade and usage of the site was one way to ‘accumulate’ participation. Several students commented that they felt more comfortable participating through the course site than by talking in class.
Reflection – We observed reflection behavior across all the tools, except for chat:

- Blog: Despite trends in blog entries, such as "in the news" stories, reflection was always a main player. With the new stories, most tied them back to readings or lectures with their own interpretations. And there were many entries that were simply thoughts about something said in class or personal anecdotes that were related. Comments in blogs also demonstrated reflection in that students would comment like "Now it is clear why this is so important. Thanks for this post."
- Wiki: In Course 2, the wiki represented a point to reflect on learning through assignments and dedicated recap spaces.
- Forum: Some forum discussions included reflective material where students attempted to explain a concept or an opinion based on their own interpretation. In Course 4, students posted questions from readings to capture their own understandings and challenge classmates to think critically about the material.
- Social Bookmarking: Descriptions of some social bookmarks were used not only to describe the resource, but also to explain why the student thought it was relevant to the material and their own understanding of it.

Synthesis – All of the tools, except chat, were again used for synthesis of concepts and material.

- Blog: Many students used the blog to express connections they found between material in the course and other courses, within the course itself or with real world examples or experiences.
- Wiki: The wiki was typically used to tie concepts together or build resources that pulled concepts and material from multiple sources and students. The wiki for Course 2 was primarily used to tie everything together through a series of assignments building up to a final project.
- Forums: The discussions on the forums were typically not directly tied to one particular concept, but instead required a synthesis of multiple concepts from within the course and beyond. In Course 1, the previous year’s exam questions were posted and students wrote answers, which required connecting concepts from throughout the entire semester. Additionally, in Course 4, students answered questions posed by other students around the readings and material to connect concepts.
- Social Bookmarking: Descriptions of some social bookmarks were used not only to describe the resource, but also to tie it back to multiple lecture or indicate how it connected concepts or ideas for them.

Critical Writing – One benefit of online tools is that to express ideas, writing is required. Students used the blog, wiki and forum to express their own opinions or critiques of material and concepts.

- Blog: Many blog entries were well-formulated, professional, well-written pieces which students clearly put a lot of thought and work into. Students commented about the ‘level’ of the blog entries in several classes. Further, many posts critically analyzed the material from the class or relevant outside material.
- Wiki: In Course 2, the wiki was used to build full reports as part of the final project.
- Forums: Critical writing is inherent in forums given that to debate or discuss a topic, some level of argument support is typically necessary. Students demonstrated this through their discussions of concepts. Also, again, in Course 1, students constructed well-formulated exam answers, which often asked them to critique certain concepts.
**Contextual Information** – Providing context around various concepts is often needed to help students relate to or connect with the material. Examples of contextual information we observed were new stories, historical examples and personal experiences.

- **Blog:** Many entries included news stories or web resources that the students found relevant to the course, or in some cases, specific lectures or topics. In all courses, students could tag their posts with the appropriate lecture tags and then visit each lecture page and see all the recent, contextual examples that were relevant to this particular topic, a feature that was very highly rated among the students. (for more, see the Appendix)

- **Forums:** Forum discussions often included outside references such as videos, articles or experiences. In Course 4, students cited news articles and reports that answered key questions about the material they were reading in the course.

- **Social Bookmarking:** This tool is all about adding more resources to the course repository and students and instructors used this tool to add relevant news stories, articles, websites or videos. Again, students also tagged their bookmarks with the relevant lecture tag to pull the contextual information all into one view for each topic/lecture. (for more, see Appendix)

**Assistance** - Forums were used in all courses as a way to ask questions to the TAs, around assignments or topics. These were typically very short threads with one question and a reply from the TA.

- **Wiki:** In Course 2, students commented that looking over other students’ project wiki pages helped them understand various parts of their project or get new ideas.

- **Forums:** The forums were often used as a channel for student questions so that the entire class could see the answers from the instructor, TAs or other students.

**Collaborative Resource building** - Typically wikis are the tool-of-choice to support the collaborative development of resources. Thus it is no surprise that we observed this learning activity in wikis, however, we also observed it in forums for one particular class.

- **Wiki:** The wiki was clearly conducive to collaborative resource building in Course 2, where complete final projects were iteratively built through the wiki.

- **Forums:** Course 1 used the forums to build answers to sample exam questions together and the TAs weighed in and gave feedback on the answers.

**Community-building** - Personalities and personal interests became very evident through various entries and comments in the blog, wiki and forums in several courses.

- **Blog:** Course 1 developed banter and following in the blog as evidenced by the comments and interactions. Some students commented that they started to learn personalities through blogging style, or that they eventually “knew their audience” when deciding what or how to post.

- **Wiki:** The wiki supported collaborative resource building and project collaboration for many courses, which can help students get to know one another and learn each other’s skills and capacities.

**Research** – Finding resources outside of class that were relevant or supported various concepts was demonstrated through the blog, wiki and social bookmarking in courses.
Findings: Usage Patterns

- Blog: Many blog entries were focused around various concepts “in the news” and students were asked to do some light research to find relevant material, and then post the link and their own insights about the piece. This was a main usage type in Courses 1 and 3.
- Wiki: The wiki was used for projects in several courses and often included literature reviews or reference tracking pages.
- Social Bookmark: Students added resources that they found to be relevant to particular issues or topics. In Course 3, some students added bookmarks relevant to their own research paper to store resources and demonstrate their idea.

Organization/Categorization – We observed organization and categorization skills across all the tools except for chat through tags. All of the courses had a controlled vocabulary of lecture tags (“L1”, “L2”, etc.) in addition to free-form tags. Students used the lecture tags to indicate the lecture/topics that each post, reply or bookmark was relevant to. Then they could go to each dedicated lecture/topic page to view all of the information that was relevant, including not only instructor-provided material, but also student-generated social content.

Debate/Discussion – Forums are typically the go-to tools for debate and discussion. We observed forums used for this type of learning activity, but also saw some of it occurring in the blog as well.
- Blog: In Course 1 and 3, the comments were used to more deeply discuss concepts or opinions from posts.
- Forums: Some discussion occurred in Course 1, but it was limited to a few initial posts and only involved a few replies. In Course 4, there was a significant amount of discussion around the course readings.

21st Century Skills – Beyond just learning how to use the tools, students exhibited accountability and information filtering across all the tools, except for chat. Several students commented that this was their first experience with a number of these tools, and a few asked TAs to review the first few blog entries to see “if this is what a blog is supposed to be like”. Likewise, selecting the news article or entry to post required the students to filter incoming information, select they felt was relevant, express how it was relevant and post it for the rest of the class to consume (often in line with instructor-added material), thus taking accountability for the appropriateness and relevancy of the information.

INSTRUCTOR

Course Design (Assignments/Participation)

What assignments did instructors give using a particular tool

<table>
<thead>
<tr>
<th>Course</th>
<th>Blog</th>
<th>Wiki</th>
<th>Forum</th>
<th>Social Bookmarks</th>
<th>Chat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Find news article relevant to one of the course topics, post and • Posted sample midterm and final questions (non-graded)</td>
<td>• Posted sample midterm and final questions (non-graded)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Description of assignments

**Blog**
- Find a reasonably recent "In the News" story (published since 1 January 2008). Then determine which lecture topics your story best fits under. Post the URL to the Blog/Social Bookmarks section of the site with the appropriate lecture tag(s), such as "L1", "L2", etc. Also other tags to categorize your post. Write a brief blog entry about your story, summarizing it and highlighting its relevance to the course.

**Wiki**
- Collaborate with your team on final project using the Wiki. First, write a description of your project, the problem space, the domain, and concept. Post the project concept on your group’s project page on the wiki. Later, post

### Findings: Usage Patterns

<table>
<thead>
<tr>
<th></th>
<th>tag to blog, along with a brief review of the resource and how it relates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>• Incremental project assignments were posted through the wiki.</td>
</tr>
<tr>
<td>3</td>
<td>• Similar news story assignment as Course 1 but they were not required to post it, just encouraged to share it on the SMC in some way. They could choose any tool to do so. NA – The Chat tool was disabled for this course.</td>
</tr>
<tr>
<td>4</td>
<td>• Find news article relevant to one of the course topics, post and tag to blog, along with a brief review of the resource and how it relates</td>
</tr>
</tbody>
</table>
Findings: Usage Patterns

other stages of your projects (ethnography, requirements and use cases, blueprints, prototyping, final presentation and report).

• Students will prepare an updated entry for a Wikipedia topic. Collaborate with a team to write a Wikipedia article. First, sign up for a topic and post drafts to the course wiki. Each group will review a Wikipedia (or other appropriate website) article and identify up to 10 topics relevant to our course, which would benefit from expansion. Each of these groups is responsible for preparing an entry, submitting a draft for review, and after incorporation of those comments submitting the final entry to the website.

Forum

• Students will respond to sample midterm and final exam questions on the forum [not graded].

• Students post responses to forum topics based on weekly reading. Post two questions about the readings in the appropriate Forum topic by midnight the day before class. This allows the presenters to review the questions and tailor the discussion to meet the needs of the class. Bring a hardcopy of two questions to class.

Social Bookmark

• Very similar to blog assignment above. However, students were not asked to write a brief entry summarizing the resource and highlighting its relevance to the course.

Grading/Expectations

How did instructors factor participation/use of these tools into grading? What were their expectations for use?

<table>
<thead>
<tr>
<th>Course</th>
<th>Blog</th>
<th>Wiki</th>
<th>Forum</th>
<th>Social Bookmarks</th>
<th>Chat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Assignment: “In the news”, 1 of 8 assignments worth a total of 35% of grade (4.4%)</td>
<td>• Participation in Class and Online 15%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>• Participation in Class and Online 15%</td>
<td></td>
<td>• Team Project 60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Participation was 10% of the class, but SMC usage was not required for this, simply encouraged as one way to participate.</td>
<td></td>
<td></td>
<td></td>
<td>NA – Chat was disabled for this course</td>
</tr>
</tbody>
</table>
### Findings: Usage Patterns

<table>
<thead>
<tr>
<th>Course</th>
<th>Blog</th>
<th>Wiki</th>
<th>Forum</th>
<th>Social Bookmarks</th>
<th>Chat</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>• Blog assignment 10%</td>
<td>• Wikipedia Entry 10%</td>
<td>• Class participation 25%</td>
<td>NA – Chat was disabled for this course</td>
<td></td>
</tr>
</tbody>
</table>

### Individual Contribution/Usage

How did instructors contribute/use the following tools

<table>
<thead>
<tr>
<th>Course</th>
<th>Blog</th>
<th>Wiki</th>
<th>Forum</th>
<th>Social Bookmarks</th>
<th>Chat</th>
</tr>
</thead>
</table>
| 1      | • Mention in class during instruction, as further illustration or example  
• Comment with a response  
• Contribute with own post |                           |       |                  | • Contribute with own post |
| 2      |                                           |                           |       |                  | • Contribute with own post |
| 3      | • Mention in class during instruction, as further illustration or example  
• Comment with a response |                           |       |                  | • Mention in class during instruction, as further illustration or example |
| 4      | • Mention in class during instruction, as further illustration or example  
• Comment with a response | • Mention in class during instruction, as further illustration or example  
• Mention in class during instruction, as further illustration or example |       |                  |                           |

### Description of Instructor Contribution and Usage

*Mention in class during instruction, as further illustration or example:* An instructor refers to a post or content from students during class time in order to demonstrate a concept. The instructor may say, ”Student A wrote a really good blog post about this the other day,” or “Student B shared a great article about this in the New York Times.” Sometimes this led to the student sharing about their post, or a small discussion about the contribution. This was the most common way
Findings: Usage Patterns

instructors used the system. While Course 1 and 2 were taught by the same instructor, Course 1 saw a great deal more of this kind of contribution, while in Course 2, there was little mention of student contributions in relation to content. In Course 3, the instructor contributed the most in this way. This kind of usage varied in Course 4 among the four instructors and was perhaps the lowest of the four courses.

Comment with a response. Instructors used the comment of the SMC to respond to student contributions. Instructors contributed with comments like, “Great point. Thanks for bringing this up” or “You may want to check out this resource” and link to a relevant source. Instructors also pointed out a connection to course material the student may have missed, or praise the student for making a non-obvious connection. Instructors also answered student questions or challenge students to go deeper in a particular line of thinking. The instructor for Course 1 also contributed in this way. Students in Course 2 received project feedback via email from the instructor and TAs. The other instructors also added a few comments over the course of the semester.

Contribute with own post. Some instructors used the SMC to post their own contributions. Some of their contributions were a way to model their expectations of use. Also, instructors posted material that came up in class but was not included in their lecture or their slides. For example, creating a social bookmark “Here’s that journal article I mentioned in class.” The most used tools for this kind of contribution were Blogs and Social Bookmarks. The instructor for course 1 and 2 was the only instructor to use the SMC in this way. Instructors did not use the Forums of the Wiki to post their own contributions.

REFERENCES


Findings: Perceptions, Motivations and Expectations

ABSTRACT
A review of instructor and student feedback about the tools and usage.
GENERAL

As detailed in the last section, early adoption of the Social Media Classroom at UC Berkeley and Stanford University gave us a unique opportunity to observe the usage of participatory media tools across different classes, instructors and students. Our observations and interviews gave us two types of data – what people did on the site and how people felt about or interpreted what they (or others) did. This section discusses the latter, how people perceived the usage of the site. Because the student and instructor insights and opinions were such an important part of this study, we felt it valuable to include many of the quotes in this section as well.

STUDENT

Familiarity

We surveyed students from three of the courses, Course 1, 2 and 4 on their familiarity with the social media tools before the experience with it in the classroom. We did not do a pre-semester survey students in Course 3 since they already experienced the SMC in Course 1.

Familiarity was measured on a scale from 1-5 with 1 being “Not Familiar At All” and 5 being “Very Familiar”.

Course 1 and 2 were administered the same survey at the beginning of the semester, and because the same student were also in Course 3, those results cover the students from Course 1, 2 and 3. In general, students we very familiar with the tools (falling between “Somewhat Familiar” and “Very Familiar”), with the only expectation being social bookmarking in Course 4, which fell between “Not Very Familiar” and “Neutral”.

<table>
<thead>
<tr>
<th>Familiarity</th>
<th>Course 1, 2 and 3</th>
<th>Course 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blog</td>
<td>4.9111</td>
<td>4.562</td>
</tr>
<tr>
<td>Wiki</td>
<td>4.8</td>
<td>4</td>
</tr>
<tr>
<td>Forum</td>
<td>4.778</td>
<td>4.344</td>
</tr>
<tr>
<td>Chat</td>
<td>5</td>
<td>4.875</td>
</tr>
<tr>
<td>Social Bookmarking</td>
<td>3.956</td>
<td>2.5</td>
</tr>
</tbody>
</table>

We also asked students to rate how often they used each tool in their own lives to get an understanding beyond simply knowing of tool, and how more into the personal use. Scores were again fairly high, with Course 4 trending lower across the board, except for chat, which was similar to the Course 1 score.
Findings: Perceptions, Expectations and Motivations

<table>
<thead>
<tr>
<th>Personal Use</th>
<th>Course 1, 2 and 3</th>
<th>Course 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blog</td>
<td>3.867</td>
<td>2.906</td>
</tr>
<tr>
<td>Wiki</td>
<td>4.222</td>
<td>3.438</td>
</tr>
<tr>
<td>Forum</td>
<td>4.156</td>
<td>3.313</td>
</tr>
<tr>
<td>Chat</td>
<td>4.733</td>
<td>4.562</td>
</tr>
<tr>
<td>Social Bookmarking</td>
<td>3.956</td>
<td>3.045</td>
</tr>
</tbody>
</table>

Thus, most students were highly familiar with the tools before the use of the SMC. In fact, many in the interviews commented that social media was a big part of their larger personal learning environment. However, for a few students, this was their first experience with various tools in general. Regardless, many commented that they were new to these tools within the education environment.

"Previous to school, I blogged for work sort of thing but it felt like a job. It wasn't necessarily fun - I mean sometimes there were things that were interesting but I still had to do it a rigorous way, like 3 a week sort of thing and very much something I needed to do."

"A lot of the general knowledge I have and information I look for tends to be in a social media sort of environment."

"This was my first time blogging so I was slow to start, but once I figured out it was just about capturing my thoughts, it was easy and fun."

"I used a fair amount of social media, but never in a learning perspective."

"Coming to [school] in September, this past year, is the first time I have had it incorporated into a learning environment because that's pretty new and I have been out of school a number of years."

**Thoughts on Grading/Motivation**

Much of the research and literature on participatory media for education to date typically focuses in on a particular context, with a high level of instructor guidance and scaffolding. We wanted to get a better understanding of how much the instructor, as well as grading or other directives, influenced student use, as well as uncover additional motivations that might be contributing.

In our student interviews from Course 1, a few students claimed that the potential for grading was the primary motivator behind their use. Some examples of student comments:

"Thought many posts were not intrinsically motivated, but posted because it's supposed to help getting a good grade."

"I posted more because I knew that participation was part of the grade."
"I think instructor directive was a huge part just because it was so uncertain that I knew I needed to do something but I had no idea how much that was. So yeah, I think that was a big motivator. And it's not that I didn't find other people's things interesting or valuable, it's just that my own participation and posting was more driven by the instructor."

However, a majority of the students interviewed said that while the initial use was influenced by the grading, there was a point where "it became a habit" or no longer was driven by the grades.

"Once the blogging became a habit, grading doesn't really matter."

"Since [the instructor] wasn't clear about how we needed to use it for grading, I used it the way that I wanted to."

"I personally didn't think about it that much because it wasn't something that I was personally having trouble with just naturally finding stuff to put there."

"[The initial sense of grading] primarily reminded me to blog but once it becomes a habit, no grading incentives needed. Good for getting people started though."

"Well obviously the initial directive was a motivating factor because that was part of my grade. But after that, I don't think that it had that much influence."

"Once that [initial] pressure was gone, I really relaxed into it."

Another interesting perspective that came out of the survey and interviews was that the initial grading potentially decreased the capacity for interaction and discussion because there were too many posts and it was too difficult to keep up with.

"In my view, using SMC as a graded course component decreased the signal-to-noise ratio because it forced people to post who otherwise would not have. The resulting number of posts drove down interactive participation (reading lots of blog posts means less time for thoughtfully engaging with a few good ones)."

"In [Course 1], at least at first, when we were all mandated to participate, in a sense that destroyed what conversation could have been because with 35 students posting several times - that's like 90+ posts - and you just don't have time to read or be engaged in any type of discussion there. So at first, there was just way too much volume."

However, of those who claimed that grading was not the main, consistent motivator, when asked if they thought they would have participated as much without the initial push or tie to grading, most students said essentially “probably not”. The initial directive and buy-in seemed to be an important part of adoption and subsequent use in Course 1.

"To be honest, I don't think I would have used it if [the instructor] left it open like that."

"[I]f there hadn't be this implied threat or that it would affect grade somehow, it might be hard to kickstart that especially when everyone has just gotten there and have this ton of reading and just getting re-immersed."

"Yeah, [the initial instructor directive] probably did contribute. I think given the way that a lot of my other classes are that have a similar learning environment, the question is, what gets you into the habit."

"I posted more content than if I had not been graded initially."
Findings: Perceptions, Expectations and Motivations

The initial directives around grading and assignments, as well as norms set by the early adopters, also seemed to color the subsequent use in some ways. Students felt that they had to write more formal and “put-together” thoughts and responses before posting.

“I always feel obligated to take a lot of time on the first 1 or 2 posts so the result is that the quality is high but the quantity is low.”

“I think part of it might be that I didn't feel totally free to post anything, since I knew [the instructor] etc. could be watching.”

“But early on there were blogs that were well written and interesting on their own even before you got to the link. So the early raising of the bar in quality and quantity sort of precipitated this general sense that everyone should be doing it and doing it this way.”

**Thoughts on Usage (their own conceptions of what they saw as usage)**

Other than the initial assignment in Course 1, only a few students had to “schedule time” to find things to post. Many said that it essentially became a habit or primed them to think differently about the material they experienced.

“It [got] me more in the mindset of how does this apply to daily life or current events or the world.”

“It was always something that I found first and was like, “I should blog about this”. Or a couple of times something would come up in class or reading that reminded me of something I heard or read about a long time ago that I had never thought about in that way.”

“As soon as I felt the external pressure to publish, then that was clearly just to fill a bucket. But at some point, when I had gotten enough in there that I didn't have that pressure anymore, then it actually became more useful because I was already in the habit of doing it and occasionally would be like, hey, its not a problem to post this and I don't have to come up with something erudite because I already have this record of having done it.”

In Course 1, despite the fact that the first assignment required a blog entry and a social bookmark (and was graded), subsequent use was heavily focused within the blog. When students were asked why they thought this occurred, many referenced the critical mass on the blog, as well as general familiarity with blogs from previous experience.

“I think the blog is the most visible thing so any contributions tend to go towards places where they will be appreciated and observed and become part of a conversation. Seems like there is a snowball effect - wherever people start using it, they just stick with it because everyone else is doing it.”

“I think probably because that's the tool people are most used to using for outside things like work or personal stuff.”

“There seemed to be a sense that everyone needed to do more than just post bookmarks, but I am not clear anymore if that was actually the case. Because at least early on there was explicit instructions around posting a bookmark and somewhere along the way it diverged into blogland. Clearly there were some people that blogged a lot and were really comfortable with it - that might be an interesting thing to look at - how these norms get formed.”

When asked why social bookmarking, forums and the wiki were not used as much as the blog (in Course 1), students exhibited some pre-existing perceptions of various tools that may have influenced use. For example, several said that forums seem ‘old’ or in one case ‘dusty’ and said that they rarely used forums in their daily life. Also, several commented
that wikis typically are difficult to use with the various types of mark-up languages and page linking features. One interesting piece of feedback was that many students avoided social bookmarking because there was not the capacity for comments on them. Instead, they often just posted the link in the blog.

**Social bookmarking:**

“I think that I rarely used the social bookmark...if I find something, why would I add a social bookmark? I clearly have at least a couple sentences to say about it so I would blog it. Just, it's a tiny bit more work but it seems worth more in the grand scheme of things.”

“I know I used the social bookmark a couple of times when I found an article and didn't have anything to say about it and felt like one sentence was not blog-worthy. So for those cases, I tucked it into the social bookmark, although whether or not people actually went in there, I don't know. I didn't really go in there at all.”

“With the bookmarks, you can't comment on them.”

“I think I used social bookmarks because it was simpler and I didn't have to write as much, but when I think about it, I didn't ever go to the social bookmarks to check them out.”

**Forum:**

“The forum is kind of like the basement with cobwebs - every now and then you might go down with a torch and see what's there. Honestly, I feel like people are moving away from forums in general as a discussion space.”

“The forum felt very formal to me in [Course 1] and they aren't things that I use in my daily life very much anyway.”

**Wiki:**

“And I guess I just never really saw the applicability of [the wiki] other than that yes, sure, it would have been really helpful if we all created great definitions of things. But I think to create something really useful, it would have taken a lot of curation of things and I didn't see that happening or I didn't see me doing that.”

“And with the wiki, I kind of agree because it's just a pain to figure out linking. That is annoying.”

**Thoughts on Cross-Course Differences**

As detailed in the previous section, the use across courses was quite different in most cases. All of the students interviewed are also using the site in Course 3 in the spring semester. And several of the students were also in Course 2.

We asked them their thoughts on the difference in usage:

**Course 1 vs. Course 2**

As a reminder, Course 1 had heavy blog usage, whereas Course 2 had heavy wiki usage. While both courses had the same instructor, the level of instructor interventions was higher in Course 1 than Course 2. Students commented that the lack of directives and type of content in the course were contributors to their lack of usage of many of the tools in Course 2
Findings: Perceptions, Expectations and Motivations

Course 1 vs. Course 3

Course 1 and 3 were both core courses and had the same group of students in both. So the same students experienced the SMC in Course 1, and then had it again in Course 3. In Course 1, the instructor initially said the usage was graded, whereas the instructor from Course 3 made it clear on the first day that usage was not graded. The course subjects were also different. The resulting usage patterns were similar and focused around the blog, but Course 1 had heavier blog usage than Course 3. When asked about why they thought that was so, students commented on the lack of grading and instructor intervention in Course 3, as well as the heavier reading, that limited their participation. Also, several students said that the no-laptop policy in the classroom in Course 3 contributed to a feeling of distance from the course site and material posted on it.

"In [Course 3], I don't think I have made a lot of use of the blog yet. I mean I have glanced through the other things people are talking about but haven't used it that much. I think what is happening is that I spend so much time reading for the course, that I don't have time for anything else. And it's a different style of reading. With [Course 1] readings, I could skim through them and get a sense of what talking about, but not with [Course 3]. At some point I have to be like, I cannot spend anymore time on this class. So that is kind of discouraging me from spending more time on the blog. Even though I think potentially there is more interesting stuff in the [Course 3] blog compared to the [Course 1] blog because the subjects are way more interesting but maybe if there were fewer readings I would be more active."

"[Course 3] is interesting in that way because there is a lot more discussion going on in terms of comments. That was unexpected and a pleasant surprise. There was the requirements to do one blog entry and you could argue that it has something to do with what preceded it, that people are more used to it. But at the same time, there is much more of an organic feel to it. You didn't have to..."
be forced to do it. You've got basically do this one blog entry and then never show up again if you don't feel like it, or if while you are on there, you know. Not sure what to tie that to - is it that we are all starting to view that as a norm in the classroom or still reflectively flinching from previous courses or maybe the content.”

“In [Course 3] I feel really divorced from the site and I don't know how much of that is the no laptops because I am realizing that I am not looking at it. I think its because when it pops in my head, I can't immediately go look at it. Or make a note to myself that oh I want to post this. I am not thinking that much about that environment when I am in that environment, like, the class.”

**Thoughts on Benefits/Value**

Students reported their thoughts on the benefits and value of the tools through surveys and interviews. As discussed in the Methods section, we surveyed students on their perceptions of the educational value of each tool in Courses 1, 2 and 4 at the beginning of the semester, then again after the experience with the SMC for a semester. Courses 1 and 2 were administered a combined pre-semester survey. Since the same students are in Course 1 and Course 3, that pre-semester survey serves as an indicator of the pre-existing perceptions of value across Course 1, 2 and 3.

Note: Students rated the perceived educational value on a scale of 1 to 5: 1=Not Valuable At All; 2=Not Very Valuable; 3=Neutral; 4=Somewhat Valuable; 5=Very Valuable. The numbers below represent where the averages fell on that scale.

<table>
<thead>
<tr>
<th>Perceived Educational Value</th>
<th>Course 1, 2 &amp; 3</th>
<th>Course 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>COURSE1 POST</td>
</tr>
<tr>
<td>Blog</td>
<td>3.889</td>
<td>3.526</td>
</tr>
<tr>
<td>Forums</td>
<td>4.156</td>
<td>3.316</td>
</tr>
<tr>
<td>Wiki</td>
<td>4.156</td>
<td>2.632</td>
</tr>
<tr>
<td>Chat</td>
<td>3.489</td>
<td>2.105</td>
</tr>
<tr>
<td>Social Bookmarking</td>
<td>3.884</td>
<td>3.526</td>
</tr>
</tbody>
</table>

One thing to note is that the ratings went down from the initial ratings across the board, but it should be noted that the PRE survey asked students to rate the education value in general, whereas the POST survey asked them to rate the value for that particular course experience. Students may have been more likely to rate a hypothetical situation higher than their actual experience.
Post-semester ratings also seem to follow the usage in the site, in that the blog in Course 1 had the heaviest use and had one of the highest ratings. In Course 2, which had high wiki usage and little to no usage across other tools, the wiki was rated the highest. And the same occurred for Course 3 and Course 4, where the predominant tool, the blog and forums respectively, were rated the highest in each course.

Looking at the ratings across courses highlights some of the experience-driven ratings. The blog in Course 1 and 3 was rated the highest across courses, whereas the wiki was most highly rated in Course 2. Again, the post-semester survey asked students to rate the educational value of the tools in that particular course, so these results are not surprising.

The post-semester interviews were generally positive in that the large majority of students felt that the use of the SMC, and the embedded social media tools, was beneficial to their experience in the course and their overall learning. Some mentioned that it took awhile to “get into it”, but that it eventually became a part of the course that added to the value of the overall course.

“Yes, definitely. It took me awhile to warm up to it - I thought of it as more work until I started reading it a lot and got comfortable with posting/commenting myself. But again, some of the stories were really like "Whoa!" to me and made me think."

“I think the more that I would go in there and read the posts and try to put in my own two cents, the more I liked it because there was some cool things that people were putting in there...things that I never even thought of or would have connected. I think that definitely enriched the experience for me. So I liked it.”
"In the end, it add a lot of value. The RSS feed really helped and I enjoyed reading and contributing (eventually). Once that pressure was gone, I really relaxed into it."

"Its difficult for me to even conceptualize [Course 1] without it b/c it was such a huge component in it. I am inclined to say that it enriched my experience in [Course 1]...it provided a richer context for the concepts that we were discussing."

**Expectations**

We got student thoughts on expectations of having participatory media tools in courses in two ways – through the pre-semester and post-semester surveys, and the student interviews.

### Surveys

<table>
<thead>
<tr>
<th>EXPECTATIONS</th>
<th>Course 1, 2 &amp; 3</th>
<th>Course 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td>Blog</td>
<td>48.9%</td>
<td>77.8%</td>
</tr>
<tr>
<td>Wiki</td>
<td>60%</td>
<td>22.2%</td>
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<tr>
<td>Forum</td>
<td>68.9%</td>
<td>44.4%</td>
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<tr>
<td>Chat</td>
<td>33.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Social Bookmarking</td>
<td>53.3%</td>
<td>55.6%</td>
</tr>
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</table>

*Note – only 7 students responded to the POST survey for Course 2 so these numbers are not necessarily representative of the full 40.

In Course 1, the expectations seemed to reflect the use in the class. The blog was heavily used in that course and expectations increased 28.9%, whereas for the wiki, which was used very little, expectations went down 37.8%. And chat, which had no use, expectations went from 33.3% to 0%. On the other hand Course 2 exhibited the same trends despite the fact that the wiki was the only tool used and the other tools had little to no usage. One thing to note on that survey is that only 7 students responded, so it is not representative of the full class, and it could be those 7 were also in Course 1 since there was some overlap. Course 3 expectations were very similar to Course 1, except for Forums, which were used somewhat in Course 1 but not at all in Course 3. In Course 4, expectations were fairly high in the pre-semester survey and most dropped in the post-semester survey. The forums were the most ‘expected’ tools in the post-semester, which reflects the usage that had occurred the course. See the Discussion/Conclusions section for more discussion.
Findings: Perceptions, Expectations and Motivations

Interviews

In the interviews, students from Course 1 provided more insight into how their experience with the SMC changed their expectations for similar types of systems or environments in future courses. Many students gave examples of classes where they felt this type of environment was “missing”.

“In general, it contributed to this general feeling that it was an expected part of class work.”

“It almost changes how I think about a course actually - in terms of a course being instructor-students versus a course being more interactive. And for the courses where there is not a social media component, I almost think about them differently. I don't wish that they had that component but it would change things. I expect that it would enrich things in some way but I don't know…”

“It did, it changed my expectations of knowing or expecting that there is a place to share stuff. That's expected now.”

“There were instances in other classes I was taking last fall and I was like…Oh if only this guy had a blog and there was a place for us to discuss questions and ideas we had outside of the class, the 2 hour limit. I really could see how desperately this class needed a set up like SMC so yeah, I definitely felt that.”

“I remember a class...there wasn't a class blog and every once and a while someone would find something applicable and send it out to the class mailing list. And I think once or twice I did find something that I was like 'oh, that's very applicable', but I am not one to send something out to a whole list unless I absolutely have to. And in that case, I probably would have but a quick blog post up.”

“I like the SMC - I think that it should be a standard across all the courses. This semester is a combination of Wordpress, bspace, and the SMC. And the SMC just seems like such a cleaner way to do it - I prefer it over the others. They seem clunky and I don't like the fact that it's just not standard - like where you know how to use it, where everything is going to be.”

Importance of Student-Centered Learning Environment

Students were asked how important it was to them and their educational experience to have a flexible and open learning environment that allowed them to contribute to the content and discussion. All students said it was very important, with some qualifications of ensuring the workload is balanced.

“I think it is extremely important.”

“So I really like knowing what other people are reading and thinking about in general - a big part of why I like Twitter. That is good for my in terms of making connections outside of class. I really like that - when it works, its great for me.”

“And in some cases, especially for classes where for whatever reason, the actual vocal discussion going on in the class is not something I am getting a lot out of either as a contributor or consumer - in some cases, it feels like it [participatory learning environment] is a healthy augmentation, or even replacement for what I am not getting in the classroom.”

“It actually matters a lot - in my personal calculations for what's important in grad school. I essentially had categories for faculty & instructors, and then equally important, the student body and who I am interacting with. As far as a specific course...my inclination is that yes, its valuable because it provides a
lot more context in which to experience the course work - building scaffolding for the explicit content for course."

“Well I think it's appropriate in some places and some classes and experiences. I think it definitely has value. I think in order for it to work, then you need to take away some of the required things in the course, some of the more structured things."

“I would actually say its pretty important, especially at [this program] since the background and interests of students here - its so interdisciplinary that its nice to have people bring in their different interests into the classroom.”

**Other Thoughts/Challenges**

Several other trends came up in the interviews:

Students commented that participation with these tools is work. Many students said that they would have participated more if there was some balance with the required work.

“My biggest frustration [was when it was positioned as] "oh its so fun" and I wanted be like, no its actually work. Staying on top of what people are posting and commenting and finding your own stuff. it's actually a lot of work so balancing that is important.”

“At some point I have to be like, I cannot spend anymore time on this class. So that is kind of discouraging me from spending more time on the blog.”

“I think in order for it to work, then you need to take away some of the required things in the course, some of the more structured things. Especially in [Course 1] - it was just such a time balance. It was like 'oh, I could go do the required reading or I could go read someone's blog post.'"

“Yeah, I think it would encourage more people to share other than the people used to engaging in long form blogging.”

Many students preferred lightweight personal posts as opposed to lengthy essays.

“And I think what I generally felt was that there were short snippets that were interesting to see how people related things to the real world, but reading long chunks of text by fellow students, I didn't feel like it was that valuable not because people don't have valuable things to contribute, but...in terms of prioritizing my learning time and energy.”

“Personally, that's the kind of stuff that I want to read. You are assigned enough reading with the academic type of writing. So if it's too long, to be honest with the time that I have, I am not going to sit there and read a 2 page blog. But I will read a little paragraph - those are the ones that I gravitate towards so that's how I like to use it.”

“Actually, I think it would have been really useful to use the blog for more of how these things play out in our work lives. I think that would have been great.”

“Just knowing that other people were having a hard time - how did they handle different parts of the project. Again, problems that people were running into would have been nice to talk or read about that on the blog.”

Students want to know that other people are reading and will get inventive to find out.

“I included some bit.ly links and images that were linked through bit.ly so that I could see how many people were clicking the links and looking at it. And it
was kind of depressing how many had actually read what I had written let alone clicked on any links so that was sort of a turn off because I felt like I was more talking to [the TA] and [the instructor] and maybe [a few of the really active students] instead of being engaged in a class-wide dialogue.”

INSTRUCTOR

Teaching Goals/Motivations for Adoption

During our interviews with instructors, we asked what their goals and motivations were for bringing the SMC into their class. We found that instructors had very different goals, in many different respects. However, one motivation that most instructors had in common was the desire to broaden the class discussion and continue it outside of class time.

The instructor for Course 1 and 2 had a number of reasons for adopting the SMC. First, it served one of the main goals of the class – to help students connect with abstract concepts and relate them to their worlds outside of class. Another goal was to help students who are less confident in speaking out in class participate and contribute to the class. The SMC also provided an additional way to facilitate and measure participation, and they also hoped, through student posts and content, that the SMC would increase the relevancy and currency of the course.

The instructor in Course 3 wanted to give students flexibility in the kinds of interaction they could experience in the class. The instructor had experimented with social media tools in the past, had experienced varied levels of success and did not want to pick a single tool again.

“I wanted to offer a large swath of options and let things evolve... The only true goal I ever had was to give people the opportunity to contribute in different ways and somehow to see where it went with the class and involve that in my lectures.” [Course 3]

The instructors for Course 4 had different ideas about why the system was adopted. One wanted students to be able to interact with each other and instructors in an equal environment where there could be many chances for interaction. Also, the instructor thought it was important to seem cutting edge. One instructor thought it would be an interesting opportunity, while another responded that they didn’t have any choice in the matter and that the decision was made for them.

“I thought that by having a flatter platform there would be more touch points other than when the instructors were in the classroom, so we could float projects and questions that could cut across time. Well we’re a university and if we’re cutting edge, we need to look at all possibilities.” [Course 4]

“We were just told is was going to happen. We had no goal at all. It seemed to be an opportunity.” [Course 4]

From our study of instructors using the SMC, we compiled a list of reasons why they brought the SMC into their class. It is helpful to understand incentives that may draw instructors into using such a system.

Instructor incentives for use:

- Give Feedback
Findings: Perceptions, Expectations and Motivations

- Broaden discussion
- Enrich discussion
- Build community
- Provide flexibility
- Discover new material for course

Give Feedback: Instructors used the SMC to give feedback to students on assignments, discussions or points brought up in class.

Broaden discussion: Instructors want to extend the opportunity to contribute to every student in the class. Restrictions of in-class-time often prevent this from being the case and many felt that the SMC was a way to overcome the time limits.

Enrich Discussion: Instructors wanted informed and vibrant student participation in class discussions. Instructors want students to engage with the course material and share their experience and point of view with the class. One instructor commented that nothing s/he had ever done had contributed more to making class discussions as rich as they were in the class.

"Nothing I've tried has helped to make class discussion as rewarding, as rich and as full of different ideas once we started including some avenue where we could discuss things outside of class that [students] could have mulled over. What I mean is, the SMC and the things that allow students to put something up, put the content out there and mull over it, means that they will be more prepared when they come to class for discussion." [Course 3]

Build Community: the SMC allows students to create profiles with images and bios. Instructors found this feature useful when learning the names and faces of their students. A few instructors mentioned that they wanted to be able to connect something a student said on the SMC with the face of that person in class. They liked being able to connect with students personally in class as a result of their online posts.

Provide Flexibility: To some instructors, the SMC was a great way to allow for flexibility in choosing which tools to use for assignments and activities in the class. Instead of requiring all students to use the same tool for all activities, the instructor can select certain tools and withhold others depending on the requirements of the activity.

Discover new material for course: Instructors wanted to use student participation with the SMC as a way to keep the material of their course fresh, as well as to have content that was relevant and interesting to the current students. Through their participation, students could add new content and insight into the course.

Thoughts on Student Participation/Grading

One decision the instructors were faced with was how to evaluate student participation using the SMC through grading. The instructors we interviewed had different views on what student participation in class meant in relation to using the SMC. All the instructors wanted students to be engaged and prepared, and to participate in class, and some instructors
saw the participatory media tools as a channel for such activity. All instructors had mixed feelings about making participation in the SMC graded.

In Course 1 and 2, the instructor thought that making the first assignment graded was a good way to ensure total class participation and get people familiar with the system. On the other hand, the instructor expressed concern about students who might struggle and put too much time and effort into their first post. The instructor noted that some students were not affected by this “raised bar” of assignments and posted regularly and casually – yet others would anguish and plan too much for their posts. The point, for this instructor, was to try to motivate students to be enthusiastic about the class and perhaps reward those motivated students. Yet, the instructor was hesitant to use the SMC as an “objective” measure of overall participation or enthusiasm.

“I think by saying your participation is graded, I've turned intrinsic motivation into extrinsic motivation. And that turns them off. If you really want to do well in this class, you have to get into it! And show that you got into it! And that will show that you really made the effort to get into this class. The point is, this is a more objective ways of counting participation - I can count your blog posts. But what am I counting here? Quality or quantity. Gee, I don't really care about your number of posts, what I care about is your impact was and your experience." [Course 1, 2]

The instructor for Course 3 did not want to require participation through the SMC.

“I didn't want to make it a required thing. I learned from the past that requiring people to blog forced people to struggle with the public private kinds of things. So my intention there was to tell people how exciting it was, how much I enjoyed looking at the stuff they wrote in [Course 1], and hope that they would take the time, if they felt like it in [Course 3].”

Additionally, the instructor for Course 3 considered face-to-face interaction the “gold standard” and encouraged students to raise issues in class. Yet, the instructor commented on a main challenge to this type participation. In class, the challenge of participation is to ensure each voice that wants to be heard is heard, when there is limited time and so much to lecture about as well.. This instructor saw participation in the SMC as a way to grapple with the issues of the class in another environment, since not everything can be discussed in class.

“I really mostly encourage face-to-face discussion in class... That being said...It’s very important for people to have an avenue to sit and talk and raise issues outside of class, and that makes things like the blog...and certainly social bookmarks, very very relevant for the class.” [Course 3]

However, the instructor for Course 3 also commented on an issue that arises from the SMC. In class, there is some guarantee that people will listen. However, with the SMC, even though everyone has the chance to ‘speak’, the challenge of participation is: will everyone listen?

Instructors in Course 4 saw SMC participation as a compliment to what is happening in class. Participation was mainly judged on in-class participation.

“We have an interactive format in the class already, so we don’t need a tool for that. If I were in a class where I couldn't get my voice heard, or a quiet person, this would be a way I could participate.”[Course 4]
Findings: Perceptions, Expectations and Motivations

**Thoughts on Own Use/Direction/Contribution**

The instructors brought up a number of factors that affected their own use of the SMC. Some talked about the difficulties that limited their use of the SMC, including not knowing exactly how using the SMC would affect their students and the class, while other instructors talked about the perceived positive effects their use of the SMC had on their class. All but one instructor we interviewed made some contribution to the SMC over the course of the semester.

Instructors talked about how they used the SMC, made their own posts and contributed to the content.

“I commented on blog posts. I made blog posts. I posted some stories, some from the WSJ... I think that's important because first of all, it lets them know that I read them... and I did more of that toward the beginning of the semester than the end of the semester, because you have to be credible.” [Course 1, 2]

“I didn't want to post comments on things that are already going on in class, because it was already going on in class. But one student who went to an international conference and gave her impressions of a talk at the conf. and I was also at that conf. and so I thought that was very appropriate. So I supported her comments and gave a bit more of mine and asked people what they think.” [Course 4]

”I've had one example where I've said something in class, where it wasn't entirely accurate and someone called me out on it on a blog post, by saying, well I looked this up and it seems like you may have meant this. But somebody else says it might be this other thing. I thought this was great. I actually then responded to the comment and even jokingly said, that'll teach me to say something off the cuff without looking it up first.” [Course 3]

“I made a concerted effort, especially in the beginning of the class, to read what people were doing and bring it up in the course of the lecture and to actually comment and respond myself. That was my goal, the only true goal I ever had was to give people the opportunity to contribute in diff ways and somehow to see where it went with the class and involve that in my lectures.” [Course 3]

”And so I went to one of my students who had written a lot, and I thought I was supposed to be answering them. So I answered one and apologized to him the next day and said I couldn't answer the rest, and he said I didn't expect you to.” [Course 4]

All the instructors agreed that using these tools is a lot of work and most instructors believed the success of SMC use in their course depended somehow on their participation. However, instructors cited the time commitment, technical skills, and motivation as for using the SMC as a barrier for adopting such a system.

“The obvious reason people don't do this is because it's a lot of work... It's tough for an assistant professor to say I'm going to invest in my teaching, which is not the most important thing you get evaluated for in tenure.” [Course 1, 2]

“We have too much to do. We work 7 days a week. We don't acknowledge weekends. So we just have so much going on that we just can't take time to explore.” [Course 4]

”[Other instructors] don't understand that they have a part to play or they don't want to bother. They get paid anyway because it's government work. I mean this is on the backbone of people who are extremely productive already.” [Course 4]

“Well the trouble is that the faculty are all over 55. There's an inherent problem.” [Course 4]
Findings: Perceptions, Expectations and Motivations

“I couldn’t open this thing for a long time. I finally opened it for the first time two weeks ago [8 weeks into the semester]. Because I tried to get in and tried to get in, and I just, my name wasn’t in there by mistake or something. I just couldn’t get in. Finally I went in and I found all these people putting in blogs. And so I went to one of my students who had written a lot, and I thought I was supposed to be answering them, so I answered one and apologized to him the next day and said I couldn’t answer the rest, and he said ‘I didn’t expect you to.’” [Course 4]

“It is an interesting idea, but we haven’t used it. I hate passwords, and I forget them and I write them.” [Course 4]

Instructors thought about a number of other factors that influenced their use of the SMC. One instructor thought about the implications of the way they communicate using the SMC, another mentioned how having multiple instructors in the same course made it difficult to have successful use of the system and one instructor credited use in his class with students’ familiarity with using the SMC in a previous course.

“There are certain times where things can come across as combative when you don’t want them to.” [Course 3]

“From the faculty standpoint, we just didn’t know how to use it properly. Because we have no single faculty that teaches more than 5 sessions of the class, the other faculty didn’t feel the need to invest because they feel like it’s more work.” [Course 4]

“I think that students really from the get-go, from week one, came in with a running knowledge of how the system had worked in their previous class, even though the content of my class is different from the previous classes, they were beginning to use the blogs in ways I could never get them to use blogs in previous years. Part of this is probably just due in part to the fact that they were using the same kinds of things in [Course 1] before me.” [Course 3]

**Thoughts on Effectiveness/Failures/Successes**

We also asked instructors to talk about the effectiveness of the SMC, as well as the perceived successes and failures, in their classes. Overall, the SMC had mixed reviews across instructors; some (Course 1 and Course 3) viewed the SMC as a success, and others (Course 2 and 4) viewed it as worthwhile experiment without much effect on the class at all.

Instructors were mixed on their views on the effectiveness of the tools of the SMC as well, with some saying that certain tools were very successful while others did not.

Some instructors talked about the positive effect of the SMC on their class. One instructor is using the material students generated in class using the SMC as content for a future book – crediting the blog as the source for much of the inspiration for the project. Another instructor reported higher levels of preparedness, enthusiasm and value of discussion in the course and credited the SMC.

“Why is this book project possible? Because of the SMC…in [a] sense the blog was instrumental in creating the vision of what the book could be.” [Course 1]

“It would be an understatement to say that I’m happier than I’ve ever been with the kinds of contribution and the amount of material we’re collecting in class. I think its going to be a huge benefit to me, even after the students are gone, there is so much material that they have created that is going to be useful, as I redesign the class going forward. People are bookmarking things that are
fantastic, and I'm going to be able to use that material. There's a huge benefit for me." [Course 3]

“Nothing I've tried has helped to make class discussion as rewarding, as rich and as full of different ideas as once we started including some avenue where we could discuss things outside of class that they could have mulled over. [Having] the SMC and the things that allow students to put content up and mull over it, means that [students] will be more prepared when they come to class for discussion.” [Course 3]

Other instructors were not as confident that there was an effect. Some thought that it was useful in that students were exposed to newer technology, and that even though it was more useful than the current LMS, it was a bother to learn. One instructor commented that there hasn’t been much of a difference between classes taught across the years, either with or without the SMC.

"Not a big difference. More than once, someone has brought it up in a question or comment." [Course 4]

“One idea was to use the technology to get the opportunity to have interactive discussions that included everyone in class so that you could get depth to what was being seen. A flat platform would have created an opportunity for the class to take on the prospect of doing in-depth discussion where they felt it was relevant for themselves and their knowledge base. I don't think we achieved that. From the faculty standpoint, we just didn't know how to use it properly. [Course 4]

Instructors were mixed on the value and effectiveness of the individual tools they used with the SMC. One instructor thought that social bookmarking was a great success story, another thought the blogs were very successful. For one instructor, the wiki didn’t work quite as expected, and for another, it was difficult to get students to use the forums.

"[The] big success story is seeing people socially bookmark things from the beginning of class. I never thought we would get students to do that level of connection between material. It's nice because it takes away form the temporal nature of these classes. It's just an enormous benefit." [Course 3]

"The whole goal of the forums [was] that people would collaboratively develop their thoughts about a topic. That also didn't work very well in [Course 1] except [when] I gave them my final exam questions and told them to answer the questions. We started seeding the forum with the questions that people could supposedly answer. But even there, the first person to answer the question and that was a good answer that was it!” [Course 1]

"I hoped with the forum, not just to have the section in the section but also to have some of the kind of interactions you have in the section, to have them online. But it did not happen. The forums were a bust. [Course 1, 2]

Some instructors made the connection between using the SMC and a change in pedagogical approach, moving away from a tool focus to a learning activity or problem-oriented focus.

"I think that problem-oriented, student-directed learning is a really important model for us to marry to this technology. Instructors have to figure out what it is they are after, in terms of the interaction around learning. And then use the tool to adapt. Adapt the tool to that purpose rather than having the tool driving the pedagogy." [Course 4]

When asked what needs to be done in order to prime the SMC so that students will use it, one instructor replied:
"Come up with tasks that are already oriented toward some pedagogical purpose... then give people the option, why don’t you post some of these ideas on the blog or the social bookmarks. Then people realize that there is no pressure, but that it's kind of fun to bring up these discussions." [Course 3]

Challenges

Instructors reported a number of challenges they faced while using the SMC. We have grouped those challenges into three categories: pedagogical, social and technical. Pedagogical challenges refer to the design and delivery of the course and the SMC. Social challenges deal with the interaction between users (instructors and students) and the system. Technical challenges refer to the ability to use and of the system and tools, usability, accessibility.

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<tr>
<th>Type</th>
<th>Instructor Challenges</th>
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<tr>
<td>Pedagogical</td>
<td>Grading vs. Encouragement</td>
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<td>Limiting parts of system to expose</td>
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<td>Giving timely feedback (in class v. online)</td>
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<td>Adopting the right teaching approach to suit course and system</td>
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<tr>
<td>Social</td>
<td>Too few early adopters, burden of cost of change is too great</td>
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<td></td>
<td>Giving clear directions for use</td>
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<td>Training TAs to support students</td>
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<td>Finding time to use the system</td>
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<td>Getting students to use tools in the way instructor wants</td>
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<td>Coordinating multiple instructors</td>
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<td>Switching costs between current LMS &amp; SMC</td>
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<td></td>
<td>Having everyone’s voice heard, listened to</td>
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<tr>
<td>Technical</td>
<td>Learning how to access and use the system</td>
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Pedagogical challenges:

Grading vs. Encouragement: Instructors struggled with the balance between requiring participation and counting it toward a student’s grade in the course, and encouraging students to use the system to be creative, and authentic by having a low threshold for contribution (no grades). One instructor was disheartened that students did not seem to be doing anything that was not required – they were not learning for learning’s sake.
Limiting parts of system to expose: Aligning tools to the course. Another challenge instructors faced was in making the decision on which parts of the system to expose. Many instructors appreciated the flexibility the SMC affords by integrating many tools, but instructors did not want to overwhelm students with too many options. However, since there are so many options in the SMC, deciding what to expose to students, without overwhelming them, was difficult for some instructors.

Giving timely feedback (in class v. online): Using the system is a lot of work, and most professors and assistant professors have a lot to do already. Instructors shared that they do not have time to explore the vast amounts of student-generated content on systems like the SMC, let alone give meaningful comments on student contributions.

Adopting the right teaching approach to suit course and system: Instructors talked about frustrations with getting the class to behave in certain ways such as engaging in vibrant discussions in class and online.

Social challenges:

Too few early adopters: One instructor remarked that it takes a strong presence from early adopters of technological systems in order for there to be widespread adoption. The instructor found that there were not enough of those kinds of students in the class for this to happen. Another instructor noticed that this did happen and pointed to a few power-user students that contributed a great deal without a great deal of effort, possibly linking this occurrence to the success of the system.

Giving clear directions for use: One instructor found that students use one of the tools in an undesirable way, simply summarizing the readings – almost a cheat sheet or notes for the readings, instead of contributing to the readings with outside thoughts or content. This instructor found after reflecting that s/he would give more clear instructions, setting clearer expectations for students to use the system and not assume that students will use the tool in the way the instructor hopes or expects.

Training TAs to support students: Teaching assistants have a great deal of contact with students and often help with course delivery and student interaction. One instructor noted that in courses where TAs were unfamiliar with the SMC, it was more difficult to get students to use the system. Busy instructors may try to use the TAs as a way to prime the system or promote use – yet without the proper training and familiarity, it is difficult.

Finding time to use the system: It is hard to invest in your teaching if that is not the most important thing you are getting evaluated for in terms of tenure. Instructors commented that there should be an incentive for using the system. Faculty have a lot to do already, they do not have time to explore and learn new systems.

Getting students to use tools in the way instructor wants: Instructors commented that one challenge was to get students to use particular tools in a particular way. For example, one instructor said, “I’d like students to use the forum to have discussions about the readings.” Another instructor wanted to know how to use the SM C to bring the
class closer together. Another wanted the students to challenge the instructor more, and thought the SMC could be a channel to do that, but was not sure how to encourage that kind of use.

*Coordinating multiple instructors:* Some might think that having multiple instructors in a course, such as in Course 4, could multiply the number of contributions from instructors in the SMC. This did not turn out to be the case. Since each instructor in Course 4 only taught 4-6 courses during the semester, some felt that they did not need to invest the time in coordinating their approach to the SMC with the other instructors.

*Switching costs between current LMS & SMC:* Burden of cost of change is too great. One instructor observed that the switching costs between the current LMS and the SMC were too high. Students had already learned how to navigate the current LMS, and are enrolled in courses that already use the current system. Learning how to use the SMC, having another login for another site for one of their classes was a challenge that some instructors thought would be a barrier.

*Having everyone’s voice heard/listened to:* One instructor said that the challenge to participation in class is getting everyone’s voice heard. Usually there is not enough time to have class-wide discussions where everyone participates and shares his/her understanding. The challenge to online participation is making sure everyone’s voice is listened to. Since social media and online education is built around asynchronous participation, it is less certain that everyone will view/notice/read contributions made to the SMC or other systems.

**Technical Challenges:**

*Learning how to use the system, Knowing how to use the system properly:* How do I login? What is my username? I forgot my password? Where are the new student contributions? A few instructors struggled a great deal with the technical challenge of using a system that is not email based.

**Future use**

We asked instructors if they would use the SMC again and what they would do differently if they were to use the SMC in another course. All the instructors responded that the SMC was at least as good as the LMS system they had been using, and the instructors for Course 1, 2 and 3 were planning on using it again in future courses. The instructors also discussed how they would use the SMC differently, the challenges they faced and how they would attempt to overcome them. The following list represents the changes instructors would make if they used the SMC again:

- Reference online contributions more in class
- Easier way for instructors to use and access the system
- Incentive for instructors to use the system, connecting student profiles/images with posts.
- Give better direction for use, model use sooner, train TAs
Findings: Perceptions, Expectations and Motivations

- Give students a place to look for help from each other on assignments using the forum

Reference online contributions more in class

Instructors wanted to give more time in class to reference the work students contributed by posting to the SMC. Yet, because of time constraints, instructors sometimes were not able to read posts before class and did not always have time to spend in class to discuss student posts. One instructor thought that this kind of feedback would help incentivize student use of the SMC.

“I tried to devote 15 minutes of each lecture to say let me look at the blog. I would make a point of using the things that showed up in the class lecture. First of all it says: I did read this stuff. I’m going to give you credit for figuring out a good thing, and I’ll give you some air time.” [Course 1, 2]

“People like to get feedback. [Students] put hard work into the class. If we give them the option, people realize its kind of fun to bring up these discussions, where something happened in lecture the other day. For example, the instructor said he really liked this idea, we never had a chance to talk about it, now I can bring it up here.” [Course 3]

Incentive for instructors to use the system, building the class social network

The instructors in Course 4 thought it would be helpful if students were able to connect names and faces from the SMC to names and faces in the class. They thought getting to know classmates might help incentivize student use as well.

“It would help if the students knew each others names by face. That’s one of the things that is needed. If they’re going to blog to each other and they go out of the classroom and they don’t know each other’s names necessarily, everybody in the classroom should have a label on their desk so you know, o that’s the person who said that. I think that is not a social media problem, but boy it ought to be used that way. Yes, if we had a photograph and a name under the photograph, it would greatly improve our classroom, and we’d be more likely.” [Course 4]

Further, several instructors talked about the extent to which tools like the SMC can bring the class together and build the class social network. While we mentioned above how one instructor thought the SMC would be much more useful for instructors (and increase instructor use) if they could begin to put names to faces, another instructor wondered how participation on the SMC could be like a class outing to a local pub, where instructors and students interact informally and get to know each other outside of the class environment.

“Last night [the class was] at the pub, and we had a very happy two hours. It was a great joy to both of us, meeting these very interesting people, and having beer and pizza. The social network is built on human behaviors and faces. You can’t get any alcohol in the social network. If we can get a drink coming out of the machine when we turn on, we’d enter the blog wouldn’t we?" [Course 4]

Give better direction for use, model use sooner, train TAs

For each instructor, this was their first time using the SMC, and they all mentioned that they didn’t know exactly what to expect or how it would play out in their class. In the future, some instructors said they would give more clear directions on how to use the system, as well as train their TAs to read and respond to student posts.

Give students a place to look for help from each other on assignments using the forum
Findings: Perceptions, Expectations and Motivations

Some instructors reflected on how they would use specific tools differently if they used the SMC again in another class. One instructor would like to try the SMC in a more technical skills class in addition to the more conceptual and theoretical class. The instructor thought that the forums might be of more importance in a technical skills class so that students could seek help about a particular problem or challenge. Another instructor thought about ways to use the wiki and blog in a better way by seeding topics and resources.
Discussion & Conclusions

ABSTRACT

A discussion of findings and our conclusions.
DISCUSSION

Key Assumptions Around Participatory Media for Education

As outlined in the Background section, the growing interest around participatory media for education is based on some key assumptions grounded in various theories, perspectives and general ‘gut feel’:

- Learners learn more when they can socially construct their understanding.
- Student-centered learning environments can facilitate deeper learning than more traditional teacher-centered approaches.
- Participatory media can be used to foster the student-centered and socially constructed learning.

Our observations of the early adopters of the SMC found support for each of these assumptions. Many students referenced particular blog entries or examples that helped them connect with the material in a deeper and lasting way. Instructors did as well, referencing specific entries and posts that further illustrated concepts made in class and actually added to their own general knowledge on the topic. Many instructors also discovered new examples from the student posts that they would be use in future instances of the course. Additionally, most students interviewed expressed the importance of having a flexible and participatory learning environment, as did the instructors, with many of them commenting on the value of a “flat” or non-hierarchical learning space. All of the students and instructors interviewed agreed that the SMC, with the embedded participatory media tools, successfully fostered a more student-centered environment than they typically have experienced. Further, the use of the participatory media tools was well received and perceived as adding to the intellectual value and learning experience in the class. Therefore, just by considering these key tenets of participatory media for education, our research supported the benefit and promise of the emerging approach. However, it also captured the complexity and nuanced nature, and highlighted considerations that must be acknowledged and researched further before we can have a solid understanding of participatory media for education.

Cross-Course Usage Differences

One such complexity highlighted in our research is that there is not a one-size-fits-all model for using participatory media for education. Each course had the same underlying system with the same tools prominently displayed and available, however usage across the courses differed significantly. In fact, in each course, usage was focused primarily through a single tool, and that tool differed across courses. In Course 1 and 3 it was the blog, Course 2 the wiki and Course 4 the forums. Further, the level of use was different across courses, although our study does not consider high usage as necessarily better than lower usage, since the usage was very different across courses. We also have no data to imply that higher usage is in any way connected to higher student outcomes. Instead, it is more important to better understand the different usage patterns in general, including level of use, as well as the factors influencing use, including instructor influence, student motivation, course attributes, social norms and student effects.
Instructor Influence

One explanation for the difference in use across courses could be instructor influence. As discussed with Rheingold’s course with the SMC, it is clear that the instructor can have a great deal of influence over student use of participatory media, but again, Rheingold used intentional and explicit pedagogical approaches refined over years of teaching the course to direct all use. However, our observations dealt with instructors using the SMC, and in some cases, these tools, for this first time in a course environment. Understanding what types of use emerge in environments with less explicit, consistent or intentional instructor interventions is critical to support the majority of adopters. Three main methods of instructor interventions\(^1\) were observed in varying levels across courses: directives, instructor participation in the system, and grading use.

Directives

One way instructors interacted with the SMC was through directives, which include instructions, modeling and scaffolding for students on how to use the tools. These directives can differ on a continuum of clarity and explicitness. As previously mentioned, Rheingold is highly directive in his digital social media course, clearly setting expectations of required use and explicitly defining the expected type of usage in each tool. And again, the usage in his course reflected just that – there was heavy and similar use within each tool.

Much of the research in the space of participatory media for education also focuses on environments with high instructor-guidance and scaffolding. However most instructors, especially those using participatory media or the SMC for the first time in their courses, most likely will not have developed such direct and imperative directives. In fact, a common barrier to entry to using these tools is the common assumption that instructors must significantly change the course or their own approach to incorporate these types of tools into the course. Of the instructors that had adopted the SMC, several commented on the difficulty of giving clear directives. One reason was because they were unsure of the balance between being overly prescriptive in a new environment touted as participatory and student-centered. Other instructors said that they were not sure what kind of direction to give. Several expressed concern about giving directives when they felt that they did not knowing how to use the tools “properly”. Another thing to note is that some instructors may intentionally not direct use, and instead leave it open to students to use the tools how they want to, as was the case in Course 3.

One way we observed instructors providing directives in several of the courses was through assignments. These assignments often guided use by prompting topics or content, requiring use of a certain tool or providing a controlled vocabulary for thinking about the types of appropriate posts. For example, Course 4 had an assignment that required students to post two questions from readings from each session to the forum. This assignment seemed to highly direct usage, with almost 400 forum posts, many of which were entitled “Discussion Questions”. In Course 2, assignments

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\(^1\) We are defining an ‘instructor intervention’ as a purposeful action taken or direction given by the instructor, ultimately to influence use of the social media tools.
required students to develop multiple stages of their final project through the wiki, which was reflected in the high wiki usage in that course.

Other assignments did not have as much of a direct, consistent effect on usage. In Course 1, the first assignment was an “In the News” assignment where students were asked to find a news story that related to one of several course topics and then post it as a social bookmark and a blog post where they also included a summary and their thoughts about the relevance. Interestingly, while students used both the blog and social bookmarks for the assignment as required, use of the social bookmarks quickly dropped off, while the blog maintained high usage. Many of the subsequent blog posts followed the same format of relating course topics to an outside source. Course 4 also had a similar initial assignment, and while students followed the instructions for the assignment, the subsequent usage of the blog and social bookmarks was very low. Course 3 had a similar assignment as well, although students were not required to post, but encouraged to share via the SMC in some capacity. Many students did so, with about half of those who posted using the blog and half using the social bookmarks. The course had subsequent blog use and some social bookmarking use beyond the assignment.

So clearly explicit instructor directives can influence use, but if those directives are not clear or consistent, or consist of one-time assignments, they may not lead to consistent and continual usage. In Course 4, the initial “In the News” assignment did not foster subsequent use, but the continuing requirement for forum participation did significantly. In Course 1, after the initial assignment, blog use was high and consistent, but social bookmarking was not. Thus, in our observations, we found examples where instructor directives led to high tool use, as well as examples where there was high tool use and perceived value even with a lack of clear instructor directives. Thus, it does not appear to be necessary for instructors to have to know exactly how to direct use or have it “all figured out” before adopting participatory media into the classroom. In fact, as we saw in some cases, not highly directing use and leaving it open to students can be a viable strategy as well.

Instructor Participation

Another instructor intervention observed with the SMC was instructor participation in the system. Instructor participation can consist of generating social content and posts, commenting on student contributions through the SMC and talking about the SMC and usage in class. For example, an instructor may reply to that student’s post on the SMC or contribute by posting new content. Or an instructor might simply bring up a contribution a student made on the SMC in class, and perhaps ask a follow-up question about the post.

As we have showed in the previous section on Rheingold’s course, Rheingold participates a great deal in many different ways including writing posts, commenting and even projecting the SMC pages and content on the wall within the classroom. And again, there was heavy student use of the tools throughout the system. In the courses we observed, instructor participation using the system was less frequent and consistent. Beyond philosophical or pedagogical reasons for this, instructors told us the biggest barrier to their participation was the time it takes to read through and make comments on student contributions, or to generate new content for the SMC. We talked with one instructor was initially
hesitant to use the tools because of time constraints, claiming that in a participatory environment, it was difficult to anticipate the level of extra reading or commitment required. Another instructor felt conflicted about commenting on one student’s post and not every other student’s post.

Several students commented that instructor participation was a motivator, specifically that having the instructor or TA comment on posts made it feel like they were reading or paying attention to student work. One student commented, “But to put it up there and not have the instructor read and respond to it is critical. If it’s going to exist, then the professor should be paying attention, interacting with it and responding to it, otherwise, don't put it out there.” Others, however, did not necessarily need instructor participation directly, just some indication that other people in general, including the other students, were reading their posts. One student commented, “I guess I just assumed that the instructors are too busy and are not reading it.” Another said, “For me, one of the benefits is instead of just submitting an assignment to [instructor] and you get feedback and its this very 1-to-1 relationship, posting on a blog or whatever in an environment where other students can look at it, it becomes this group experience, or at least potentially.”

So again, while the instructor certainly can influence use through participation, it does not seem to be a requirement in all cases, but having some indication that the posts and student work are being read, even if just by the student community, seems critical. This is an important area to understand more about since reducing the workload or perceived workload on instructors may lower the barrier to entry for these types of tools and learning environments.

Grading

The final instructor intervention observed was grading SMC usage, often as part of a participation grade for the course. Once again returning to Rheingold’s course, his entire course grading approach was based solely on participation within the SMC. Of the courses we observed, some were consistent in the message to students about how their participation in the SMC affected their grade (as well as participation grade), while other courses were not as consistent. Course 4 instructors were clear upfront that usage of the SMC as part of the participation grade, however the had to add additional assignments and requirements as the course progressed to encourage use. In the end, the ongoing requirement to post reading questions in the forum was the highest and most consistent use. Course 1 had several initial indications that usage was graded (grading the first assigned blog post directly, then followed by a message that participation grade was based on the usage of the SMC) and then not graded (students were then told that usage would not be graded). The Course 3 instructor encouraged use but emphasized that use of the SMC was not graded, and instead underscored overall participation in both class and through the SMC. Usage in both courses was similar, in that the blog was the main tool, but Course 1 had heavier consistent usage across the semester.

While the level of usage seems to be tied to grading or perception of grading, an interesting observation is that Course 3 still had student use and perceived value. Usage was lower than Course 1, where there was an initial sense that it was being graded, but students still used the SMC in Course 3, commented on posts and reported a valuable experience with the system. One student commented, “[Course 3] is interesting in that way because there is a lot more discussion going on in terms of comments [in the blog]” and claimed that it had a “much more organic feel” than the Course 1 blog.
Thus, in some cases, students can still be motivated to participate without direct grading or with a more vague sense of what qualifies as participation. In fact, one instructor commented that this kind of vagueness may even work to increase successful use of the system, since it lowers the participation threshold and gives students more freedom to create and contribute more often.

**Self-directed learning**

Another explanation for cross-course differences is an interesting and compelling trend that emerged from our observations of instructor interventions – or in some cases the lack of instructor interventions – which was the potential for self-directed tool use and learning. Much of the research in the space of participatory media for education focuses on environments with high instructor intervention. As previously mentioned, a common barrier to entry to using these tools is the common assumption that instructors must significantly change the way they teach in order to support and influence the use of these tools. Several instructors expressed concerns about adoption because of not knowing how to direct students or grade usage, or not having the time to actively keep up with the student contributions and participate themselves. However, our observations point to the potential for students to ‘take over’ tools and use them for their own value and self-directed learning.

When instructor interventions were fewer or less explicit, usage differed across tools. Even further, in some cases, such as Course 1 and 3, it appeared that students “took over” the tool and used it for self-directed learning activities. This was especially true in Course 1, where the instructor initially said participation on the site was graded, but then the blog usage continued despite the fact that the instructor changed his message and said that it was not graded. Some students commented that they were not clear so they continued to participate in case it was being graded, but many students indicated that at some point, the blog became “a habit” or “a way of thinking” and they used it for their own value. One student said that because of the inconsistent grading messages, “we used it the way we wanted to.”

Thus, while instructors can have a great deal of influence on the system, when the directives, participation or grading approach is inconsistent or not explicit and defined, instructor influence does not appear to be the whole story in all cases. Participatory media can afford students the opportunity for self-directed learning, as well as to participate in a community of learning.

That said, it appears that at least the initial push from instructors is necessary to kick-start the usage. In Course 3, which had the same students from Course 1, but no grading of usage or directives, the overall usage was lower than Course 1. Students still migrated to or “self-selected” the blog in Course 3, however, many students interviewed commented that they participated less and were less engaged with the SMC because there was not that initial instructor message.
So there seems to be some balance of initial directives, grading expectations and instructor participation that are in play here, but obviously this is a much more complicated set of issues to tease apart in further work. This is an important area for future research for all of us who are seeking creative ways of offering students new, empowering ways of learning, capitalizing on readily available tools and students’ own motivations.

**Course Influence**

In addition to the instructor influence and self-directed learning, another potential explanation for some of the variation in use across course could be the course itself. As previously mentioned, Rheingold’s course is about social media, so there is a natural fit with the embedded SMC tools. But the four we observed have topics and attributes not as closely tied to the tools from the outset. Course attributes such as course content, face time, required reading and other requirements could have an influence over use. For example, some students who were in both Course 1 (high blog usage) and Course 2 (high wiki usage and very little blog usage), attributed some of the usage difference to the variation in course topics and concept spaces. One student said “[Course 1] dealt with more abstract ideas than [Course 2], which was more of an applied course. So I felt like the concepts were more difficult to grasp in [Course 1] and lent themselves more to discussions and stories on the blog.” That said, one student said that because of the applied nature of Course 2, having blog entries about other students’ personal experiences would have been extremely helpful, but it was not used that way. That student postulated that the lack of blog use might have been because there was a final project in that course, and that it would have “been too much” to also keep up with the blog.

As previously mentioned, Course 1 and 3 were the same students and had similar patterns of usage in the SMC, with predominant use of the blog, although Course 3 usage was lower. We discussed the potential instructor influence as one explanation, but students also commented on other potential factors relating to the course itself. One student said that Course 3 had a “different style of reading” and “I spend so much time reading for the course that I [didn’t] have time for [the blog].” Another pointed to the no laptop policy within the classroom as a reason for feeling “divorced from the site”. However, one student commented on contributing more to Course 3 than Course 1 because, “I was more interested in [Course 3] topics.” So clearly, there is a balance of various course attributes contributing to the overall use.

Some instructors exhibited assumptions around effects of the type of course content on usage. For example, the instructor for Course 3 reported interest in using the SMC to teach another course that required students to learn more technical skills. Compared to Course 3, the instructor said this other course was “night and day” and predicted SMC use would be as well, saying, “I can’t imagine why people would use a blog in that class, really. But I can see how a forum would be a lot more useful, especially as people work through certain kinds of challenging problems.” The instructor predicted that tool usage would be potentially even more valuable, in this other, more technical, course.

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2 We are currently conducting a set of surveys of a wide range of learners to get a better understanding of motivations in situations where instructor directives are either inconsistent or missing.
Course effects were also evident in individual contributions patterns. Some courses have more “face time” than others, and that may influence use. For example, in addition to the lecture and SMC, Course 1 also had separate weekly discussion sections where a small subset of students could talk through concepts with a TA. One student in Course 1 said that he did not contribute to the SMC as much as some others because to him, “with 3 sessions a week, including the sections, it felt like there was enough interaction in real space that I didn't feel lack of informal or formal reinforcement of the concepts.”

Courses can vary on many attributes in addition to the content, course design or topic space itself, including whether it is elective or required. Rheingold’s course is elective and as mentioned before, he initially sets the expectation that usage of the SMC will be required and those that are not willing to participate are free to not take the course. This was not the case for several of the courses we observed, including Course 1 and 3, which were required core courses. While level of usage differed, many students pointed to the grading (or lack thereof) as a key influencing factor, whereas in Course 2, which was an elective course, students referred more to the content and assignment structure as a driving factor for their use. So there clearly can be interplay between different course attributes and other influencing factors.

**Social Influence**

Another possible explanation for the usage patterns observed across courses is a social influence. One would expect that social norms and other social factors could drive use, although this only came up a few times in the interviews and surveys. In Course 1, the first assignment was a blog and a social bookmark, but while social bookmarking use dropped off, the blog continued to have consistent use. When asked why they thought this occurred, several students referenced the critical mass nature of the blog – once there were a significant amount of posts there and once it was clear that other people were reading it, the ‘obvious choice’ was the blog. Also, when asked why the blog was not used in Course 2, several students pointed to the fact that “no one else was using it”. Additionally, students in Course 4 made similar statements about how the lack of perceived use of classmates and instructors influenced their own use.

Also, the fact that Course 3 had very similar usage patterns as Course 1, in that the blog was predominantly used, with the social bookmarking following, and with little to no usage in the wiki or forums, could also be explained by social factors. These were the same students in each course, so the social norms established in Course 1 may have directly influenced the use in Course 3. One student commented on the common norms across the two courses, and that it would be “interesting thing to look at how these norms get formed,” but little else was said about the norms.

The level or quality of use also appeared to have some social influence. Several students commented on initial posts in Course 1, which “set the bar high” and affected their own use. One student said, “The early raising of the bar in quality and quantity sort of precipitated this general sense that everyone should be doing it and doing it this way.”

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3 Course 4 was also a core course, however students could choose between many available sections, only one of which was using the SMC, so it is unclear how much students could ‘buy-in’ to the SMC
Each learning environment is also a social environment, so understanding the interplay between students and social norms is an important part of understanding the use. Clearly, more research is needed to investigate how these norms get formed, if and how they are transferred across courses and how they fit in with other influences such as instructor or course.

**Student Influence**

We also saw evidence of student effects in the usage across courses. In Course 1 and 3, the same students experienced the site, and there was a correlation between individual usage in both courses. This may be because of their experience in Course 1. Or it could be indicative of personal preference or learning style. Thus, it appears that individual propensity for participation or achievement, familiarity with tools or other personal preferences could have influenced use on the site. One student commented, “Blogging is something I do anyway so it’s just a natural form for me to kick around ideas.” More analysis is needed to understand the magnitude and impact of student effects, especially in tandem with other influencing factors we have discussed.

**Summary**

There are many potential explanations for the different usage trends we observed across the four courses. Clearly the instructor can have a lot of influence over use, but there are many more factors that could also have an effect, such as the student self-motivation, elements of the course itself, social norms, student preferences and potentially many more. To understand the use of participatory media for education to the extent that we could hope to advise or guide educators or claim “effectiveness”, we would have to have a much better understanding of all of the potential influencing factors and how they work in combination. We hope that future research will focus on identifying these attempting to get a deeper insight into these influencing factors.

**Learning Activities**

Difference in usage across courses reflects the nuance and uniqueness of each learning environment, including the particular students and instructors. So clearly, the idea that a certain tool, or group of tools can be prescribed to all learning environments in the same way, which is a common goal and generalization from much of the existing research, is simplified and unrealistic. Further, the idea that each tool itself can be assigned a certain set of learning activities, as is often done, is also limited. As discussed in the Findings-Usage section, we found that students used individual tools to accomplish a wide range of learning activities, even those often thought to be associated with a different tool. Some of this trend may be due to the evolution and convergence of participatory tools. Today, many blog platforms have the capacity for comments (threaded discussions), tagging and link-sharing, which starts to blur the lines between a blog and other tools such as forums and social bookmarking. It could also point to the tendency for students to adapt tools to their needs, which is a promising observation.

The learning activity observations deserve further discussion since we feel this is one of the most important takeaways to inform future work. Often the research and innovation focus is very tool-heavy, as was demonstrated in the review of the
research in the Background section. Many educators assign specific learning activities to certain tools, such as reflection for the blog. This can drive the types of use of the blog, or the tool, itself. However, we feel it is important to reverse the equation. Instead of focusing on the tools themselves and trying to figure out what we can get out of the tools, we should be leading with the learning activities and goals first, and then applying technologies to them. As demonstrated in our findings, each tool can support a wide range of learning activities, and several different tools can foster each learning activity. This is an important insight because the story then becomes less about particular tool effectiveness, which is difficult to isolate and generalize from due to the nuanced nature of every course context, but instead about the individual instructor’s and student’s goals. Most instructors might have difficulty choosing or integrating a new tool, but could relatively easily identify key goals for their course. Furthermore, some instructors may only have access to a particular tool based on the underlying course management system or platform. Switching the focus to lead with the instructor and student goals potentially lowers the barrier to entry in that instructors can easily relate to why they will use the tool, how to work with the resources available and potentially even how to evaluate the use. A useful initiative would be to develop a handbook of common goals and tool alignment from a pedagogical perspective. We hope to have initiated and informed that development by describing the learning activity usage we observed across the tools and across the courses.

**Individual Tool Perceptions and Preferences**

*Students*

Most students were highly familiar with most of the tools, with the least familiarity with social bookmarking across the courses. Further, most initially rated the tools high on general education value (average of 4.2 across all tools, which equates “Somewhat Valuable” on the 5-point scale. Interestingly, in the post-semester surveys, perceived educational value decreased across all the tools for the three courses surveyed, but consistently across the tools. The lower ratings could be due to the fact that the initial survey asked about their perceptions of the educational value of each tool in general, whereas the post-semester surveys asked about the value for that particular course experience. It could be that students rated more conservatively when focusing on a particular experience, or that hypothetical ratings were inflated. The most interesting ratings, then, are the ones that did not decrease as much, such as the blog and social bookmarking in Course 1 and 3 and the forums and social bookmarking in Course 4, which reflected the use in the course. Looking at the post-semester data only, across the board, ratings of educational value mapped to the usage experienced in the course; students rated the tool that was used the most in the course the highest. For example, in Course 1, the highest ratings were for the blog and social bookmarks, and in Course 2, the wiki was the highest rated.

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*We are actually planning to continue this work by developing a learning activity handbook as part of ongoing efforts through the Center for Next Generation Teaching and Learning*
The students interviewed reflected this as well. While most students said that the use of the SMC added to the intellectual make-up of the course and added value to their overall experience, they often referred to the particular tool that was most used (i.e. the blog in Course 1) in their comments and examples.

Another observation was that all participatory media tools are not necessarily perceived as equal. Chat was not used in any of the classes, and in fact, Course 3 and 4 disabled the tool due to the observed lack of use in Course 1 and 2. We expect that chat was not used because it was a recorded and monitored space (everyone, including the instructor could see the full transcript), as well as the fact that many students already have ways to accomplish synchronous communication through other chat tools, or lightweight communication tools such as Twitter or SMS. Additionally, outside of instructor assignments and interventions, such as in Course 1 and 4, the forums were not used. This may be because students were less comfortable with forum tools in general. One student commented that the threaded discussions were unwieldy, and another that forums were not something s/he used anymore on the Web. Students weighed in, “I think the forum is kind of like the basement with cobwebs - every now and then you might go down with a torch and see what’s there,” and “Honestly, I feel like people are moving away from forums in general as a discussion space.” It could be that tools are growing out of style, such as forums, or that within a tracked classroom environment, some tools are less well received than in their daily lives, such as chat.

The lecture pages in Course 1, which pulled in the relevant blog posts, forum topic replies and social bookmarks, were rated as the most valuable feature by the students (and instructor) since they could see the instructor-provided material alongside the recent, relevant social content that provided contextual support around often abstract concepts. The ability to tie everything together easily was a catalyst for more active participation, according to many of the students interviewed. Many also said the one-stop shop nature of the lecture pages helped immensely when studying for exams, which was evidenced by usage of the blog stories as examples on the final exam answers. For more on this feature, see the Appendix.

Instructors

Across the board, instructors were concerned about finding the right tool for the right job. One instructor talked about having problems with getting students to use the forums, and another one with the wiki. Even in courses with high levels of student participation, the instructor often expressed dissatisfaction with the way one tool was or was not being used. For example, one instructor said, “My students aren’t using the forum. I think it would be really great if they could use it. I’m thinking of ways to get them to use it.” Another instructor posted previous exam questions on the forum to try to stimulate usage. This line of thinking is common and heavily tool-centered, since instead of leading with a goal, because the tools came embedded in the SMC, instructors often tried to find ways to use the tool. One way to revise the above statement to be more learning activity-focused is the following:

“I want my students to be able to take a position on a controversial topic and argue it using examples from course material, outside sources, and other student contributions.”

As we saw with our observations, there are actually several tools that could be applied to reach this goal.
Although most of the existing participatory media for education research and best practices typically leads with a tool focus, this goal-first approach is actually common in typical instructor training courses, and is usually referred to as ‘backwards planning’. When creating lesson plans and unit plans, instructors are instructed to start with the desired outcome or what they want the student to be able to do at the end of the lesson/unit, and work their way backwards. Important questions instructors ask themselves are: what key steps do students need to take, and what skills do they need to acquire. So again, shifting the participatory media for education space to a goal or learning activity focus would fit a more typical line of instructor thinking and potentially make tool choice and application easier and less intimidating.

**Expectations**

In the interviews, most students expressed the importance of a student-centered and collaborative learning environment for their learning experience and goals. One student captured it by saying, “It actually matters a lot - in my personal calculations for what's important in grad school, I essentially had categories for faculty and instructors, and then equally important, the student body and who I am interacting with.”

We asked students to rate their expectations around the inclusion of each tool in a learning environment in the pre-semester and post-semester surveys. Changes in student expectations seemed to be influenced by recent direct experience with the SMC. For example, in Course 1, student expectations for a blog in future courses went from 48.9% to 77.8%, whereas expectations for forums, which were not used in the course, decreased from 68.9% to 44.4%. Course 3 also had similar post-semester expectations to Course 1, except for forums, which dropped further to 26.1%. This reflects the fact that whereas forums had some use in Course 1, there was no usage in Course 3. Many students in these courses commented that they now expected an outlet for their personal thoughts or expressions and many could point to courses they are now in where such tools are not included and missed. Expectations in Course 4 were lower across the board, but also reflected use in that the most ‘expected’ tool was the forums. Course 2 was an interesting case in that expectations mirrored the trends from Course 1 instead of its own usage patterns, but we expect this is due to the low number of respondents (only 7 out of 40), and due to the fact that there was student overlap between Course 1 and 2.

It is interesting that students reported fairly high expectations for student-centered environments with these types of tools, because several of the instructors interviewed revealed a different set of assumptions based on previous experiences. In fact, many adopted the SMC to break the common cycle of heavy focus on the instructor point-of-view and little student-to-student discussion. Another instructor reported the desire to be openly challenged by students but had had a hard time getting students to do so in class. This instructor said that one hope for the SMC was that it would foster this kind of interaction, where students challenged material the instructor presented to them.

Even after the adoption of the SMC, some instructors and students seemed to struggle with the shifting balance of control and responsibility for learning. For example, one instructor mentioned that students came in with expectations about what the role the instructor should have in the course and even felt some pressure to conform to those expectations. Instructors in Course 4 believed that students sometimes preferred material directly from the instructor rather than from the “community of students.” In their course, they reported that students were keen to ask instructors their thoughts,
preferring the authoritative viewpoints rather than having to shift through classmates’ own views. Likewise, several students we interviewed reported similar feelings in that they felt some initial stress at not necessarily knowing which of the student-generated content was “worthy” or accurate. One student commented that he just wanted to know what the instructor wanted him to know in order to get the good grade. These experiences are not uncommon, there has been research done in the area of student-centered learning that reports that initially learners may feel uncomfortable or uneasy with a new, more flexible learning environment. Felder and Brent (1996) comment on how students may initially feel stress around having more control, or some might initially feel cheated that they must take more responsibility for their learning despite the fact they are paying tuition, etc. Woods (1994) links learner experience with the typical grief experience. He found that in situations that require them to take more responsibility for their learning, learners can go through shock, denial, strong emotion, resistance and withdrawal, struggle and exploration, return of confidence and integration and success. And just as with grief, students can experience the stages at different rates and magnitudes. However, both studies caution that giving up in early stages would be a mistake – they urge that student-centered learning is valuable in the long run. Many students, including some of the same with the initial concerns, expressed the importance of a student-centered environment and their expectations that other classes would have similar outlets such as blogs or wikis through which they could participate. In fact, one student who explicitly said she started the course as a ‘very traditional’ student who expected to come in and just absorb what the instructor has to say, was one of the biggest proponents of the SMC by the end of the semester, saying “I wish the SMC was used in every course in this program.”

The disconnect between student-reported expectations and instructor- and student-experienced struggles with shifting to a more participatory model is an area to research further. The data seems to demonstrate that students expectations changed based on experiences with the SMC so some of those struggles could have occurred earlier in the semester and been reduced as students and instructors moved several stages of acclimation to the tools and environment, with many reaching the point where they not only accepted, but valued the participatory learning environment. Future research should attempt to better understand the stages and struggles, as well as what elements of usage and experience can help students to accept and value the system.

**User Roles**

*Types of Student Users*

Often students are referred to as ‘users’ of participatory media tools, which may miss the fact that they are first and foremost learners. There is a large body of research on different learning styles and types of learners, so it is surprising that classroom tools are often presented as a solution for the full set of learners. There is very minimal research around participatory media and different learning styles, but there is a growing interest. Huang et al. (2008) and Saeed at al. (2009) both found correlations between preferences for and usage of various “Web 2.0 applications” and learning styles. We also observed different levels of individual usage, which could possibly be explained by differences in learning styles or previous experience. More work in this area is needed.
We did, however, see several types of users that emerged across courses and could potentially inform this future research:

- Producer, Tool-savvy, jumps right in, sets the initial bar for other learners – this type of learner is typically already experienced in and comfortable with the tool or type of participation. Based on our observations and student interviews, this learner is potentially critical to get usage started, especially in situations where the instructor directives are not explicit, but could be intimidating to other learners if the bar is set too high.

- Achievement-focused – this type of learner will do just enough to get the good grade or meet assignment requirements, but nothing more. This type of learner needs directives and will not typically participate in situations with low instructor influence. Often this learner also benefits through lurking (see below).

- Consumers/Lurkers ⁵ – several students commented that they were more consumers than producers. When there is a critical mass of usage, such as with the Course 1 blog, lurking can actually be a beneficial behavior for many learners who learn from reading others’ contributions. The key, of course, is to have enough active producers to add content; otherwise with too many lurkers, the usage will plateau.

It is important to recognize that students will have different learning styles and needs, and those will be reflected through use of and reaction to participatory tools in the learning environment. For example, some instructors measuring usage may only account for the producers, but may miss the consumption and reading behavior that could be equally as valuable for some students. Early, tool-savvy adopters may set the bar too high for a majority of students to keep up with. Or lack of grading or instructor-driven incentives may limit motivation in some students. Clearly there is also a balance between producers and consumers needed as well. Further research is needed to better understand these types of students and users and how to cultivate the right balance to foster valuable experiences.

**Instructor Roles**

As mentioned above, the instructor can have a great deal of influence on the way participatory media is used in a classroom environment. Also previously discussed, many researchers and education technologists align participatory media for education with particular pedagogical approaches, particularly a student-centered approach. However, based on our interviews and observations of instructor usage of the SMC, we saw a range of pedagogical approaches.

The instructor roles that we observed were:

- Lead learner, facilitator – Community-based learning, develops a community of learners, acts as lead learner or facilitator. For example, “Here are the issues, here is what others are saying about it, let’s talk about it. I’m interested in hearing what you have to say. We will learn from each other.”

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⁵ Lurking is a typical research term for free-riding in a social media environment. Lurkers consume more than they produce content in these participatory environments.
• Arbitrator – Facilitates student participation and input, but makes final decisions and has authoritative voice in class discussions. Students refer to instructor for final say. For example, “You all are having an interesting discussion and bringing up good points. Here’s where you are right and here’s where you are wrong.”

• Expert – students refer to instructor for experience and expertise in area. Instructor shares knowledge from vast experience/expertise in the area. “I have knowledge and it is your job to learn it.”

One thing all instructors agreed on was the desire for students to engage with the material and show their interest and enthusiasm in the material through their participation in the SMC. That said, not all instructor use was student-centered in nature.

Many instructors did approach their courses with a more student-centered approach. Assignments like the ones given in Course 1, 3 and 4, where students were asked to find relevant content such as new articles, categorize it according to one of the topics of the course, and post on the SMC in some capacity, required that instructors move away from their role as the expert in the course. Students and instructors became learners as the class discovered new applications of the issues of the course.

Some instructors adopted an expert role when using the SMC. For example, several instructors often referred to the course content as “canon” compared to the student-generated content. Further, in Course 1, the initial blog entries were graded which maintained an expert-student dichotomy. Also, one instructor talked about feeling like s/he had to ‘answer’ student posts, and was surprised when a student commented that they did not expect an answer. It was difficult for this instructor to imagine student participation in the course without the instructor evaluating or weighing in on the student’s contribution.

Some instructors adopted the arbitrator role at time when using the SMC. For example, in Course 2, students were assigned a semester-long group project and they were expected to collaborate and complete group assignments using the wiki tool. The instructor and the class TAs divided up the groups among themselves in order to give each project more attention and guidance. While the students were the experts in their project, knowing more about the needs and requirements, the instructor and TAs guided projects by commenting and providing more feedback.

Thus, we observed that an instructor often plays many roles during a course. There are times when it is appropriate for the instructor to act as the expert, especially when clarifying an issue or giving necessary background information. Therefore, when we speak about a student-centered or instructor-centered approach, it is a simplistic categorization since most instructors play many roles at different times, but we are referring to the main pedagogical approach or focus. Just as there is a place in the face-to-face classroom for each of these roles, there may be a place for them as well in the online learning environment. The matter is complicated further when the type of course, the needs and expectations of students are taken into consideration.

So in summary, adoption of the SMC did not eliminate pedagogical approaches other than the student-centered approach. Simple adoption does not directly translate into an open and flexible learning environment. Instructors must
be strategic when making decisions about their role using the SMC, and perhaps at times be willing relax their control and allow the course to adapt to the student interests and needs revealed through the participation.

**Challenges and Takeaways**

*Students*

One of the key challenges that students reported was a balancing of workload. Many students felt that they would have participated more if the required workload was cut back to make room for the participatory media usage. Several commented that some courses felt as though the tools were tacked on after-the-fact, when there was already a fully built out course with readings, assignments and additional work which made it difficult to keep up on both ends. One said explicitly that at times it came down to, “I could go do the required reading or I could go read someone’s blog post.” Because students often use social media tools in their daily lives ‘for fun’, through tools like Facebook, Twitter and Wikipedia, many instructors may approach the use of these tools in the classroom as ‘fun’ as well, but our observations and interviews demonstrated that students feel that this is work and would be more inclined to participate actively if the tools were balanced with the required course work.

Another challenge was the format and length of posts. For Course 1, many students felt that posts needed to be well-constructed and written pieces of a high standard of quality and this discouraged some students from posting more. The interesting aspect is that the instructor did not ever comment on format, length or quality. Some students pointed towards the early initial posts by students as “setting the bar high.” Several students commented on their preference for more lightweight and personal posts. They reported that they would rather read about someone’s own personal experience or insights instead of a lengthy summary of a news article. Many also spoke of times when they had a short, brief idea they wanted to share and some felt conflicted as to whether it was appropriate, whereas a few said they just went ahead and posted and were delighted when others seemed to follow suit.

*Instructors*

In the previous section, we discussed the challenges instructors faced while using the SMC, and categorized them as three kinds: social, technical and pedagogical. Of these three, the social challenges were most prevalent among the instructors we interviewed. These challenges deal with interaction of users (instructors and students) and the SMC such as having too few early adopters, the burden of cost of changing systems, finding time to use the system, getting students to use tools in the way instructor wanted them to and coordinating multiple instructors. Instructors also had pedagogical challenges, such as knowing how to direct or evaluate student use, as well as how to determine the appropriate mix of lecture, section, and participatory media emphasis to have in a course. Many reported a valuable experience with the system despite not having ‘all the answers.’ Having these social or pedagogical challenges did not prevent them from using or attempting to use the SMC. However, instructors that had technical challenges either ignored the system or depended on others to run it.
For all of the instructors, this was their first experience using the SMC, and for many it was the first experience using participatory media in the classroom at all. All instructors saw their experience as a learning process and reflected on ways to change their teaching to improve their class. Several instructors talked about wanting more capacity for building the course social network. All instructors said they would use the SMC or participatory tools in some capacity again, although they reported multiple ways they would change or adapt their use the next time. One instructor thought the SMC would be much more useful for instructors (and increase instructor use) if they could use it to begin to put names to faces. Another instructor wanted to be able to use the SMC to foster an environment “like a class outing to a local pub”, where instructors and students could interact informally and get to know each other. Further, instructors commented on devoting more time in class to discussing online posts, looking at posts right before class to reference them during class time, training TAs to use the system to support use and giving more directions for use.

As we have detailed in this section, none of the changes or adaptations listed above necessarily mean more or “better” use. Clearly, the learning environment for each class was unique, and instructors addressed those needs and reflected upon their experiences differently. A key issue here is that it is difficult for instructors to measure or evaluate the success of the system. One future approach is to identify the key learning activities and objectives upfront so that the SMC usage is easier for instructors to evaluate. Regardless, based on the student and instructor feedback in this study, there were some valuable aspects of the adoption. There was a perceived benefit of the system from most instructors and students even without having “all the answers” upfront. Further, we hope that our research starts to inform the space, specifically around what questions that should be investigated further in the future research.

**Other Complexities and Limitations**

We have outlined a number of issues and observations above that demonstrate the complexity of using participatory media in an education environment, and there are many more that we recognized but were not able to directly unravel from the data we were working with.

One such complexity, and a limitation of this study, is the potential differences across different levels of courses or schools themselves. Our research was limited to the early adopters of the SMC, which were focused in Northern California at UC Berkeley. Of these courses, three were in the School of Information where there could be more approachable attitude toward technology, and all four were graduate level courses. More work is required to observe usage across more levels such as lower and upper undergraduate course, and across institutions such as private, public and community colleges.

Finally, because our research was based around early adoption of the SMC, our findings and conclusions are based on the five tools that the system ships with: blogs, wikis, forums, chat and social bookmarking. There are many other social media tools that we do not comment directly on, such as video, microblogging, virtual worlds or social networking, but we expect that some of the same trends would emerge with these tools as well. Obviously more research is required.
CONCLUSIONS

Participatory media for education can add value to the course experience from both student and instructor perspectives, leading to social learning, construction of knowledge, meta-cognition and community development. But unlike common perceptions, participatory media for education is not a “one-tool-fits-all” or even “one-use-of-that-tool-fits-all” across different courses, or students within courses. A learning environment is a complex socio-technical system and usage of participatory tools will across environments will differ based on a variety of influencing factors, including the instructor’s directives, participation and grading, as well as student self-motivations, course attributes and social norms. More research is needed to understand these factors, as well as the interplay and weighting between them.

Further, this nuanced nature of each learning environment requires that instructors and even students to have flexibility in choosing tools or using a tool in various ways to meet their needs. To make that choice less difficult, more approachable and potentially easier to then integrate into each unique course, educators and researchers should lead with the underlying learning activity or goal to be achieved and then look for ways to apply technology to support the activity or goal. Whereas the typical tool-first focus, which leads with the technology and then tries to find uses for it, often leads to issues with determining how to integrate into the course, or evaluate student work or tool effectiveness, a learning-activity approach is aligned with typical teaching training and can help instructors to more easily incorporate participatory tools into their teaching and learning environment. More, as our work indicates, each tool can support a wide range of learning activities. The choice of tool is perhaps less relevant, but instead we suggest the focus should be on how it is used to meet the defined goals. More research should be done in this area, with the ultimate goal a handbook of various learning activities, with aligned technologies and pedagogical techniques or strategy suggestions across each.

We also found that in situations with fewer or less explicit instructor interventions, it appears in some cases, students can ‘take over’ use of the tool(s) and self-direct learning. This is an important finding since currently many instructors may avoid adopting participatory tools because they assume that it will require significant time and attention investment on their part, and thus miss an opportunity to provide a more student-centered environment for students to construct their understanding. However, based on our observations, in some cases, there can still be high use and perceived value from students with low input from instructors. We need a better understanding of student motivations to understand why in some situations, at some points, students can self-direct learning through participatory tools. Unraveling this phenomenon could help educators achieve flexible and adaptive environments and give students more control over their learning without as much burden on the instructor.

Further, it is important to understand that students and instructors play different roles in the learning environment and the use of the tools. Different types of learners may react to the tools differently and may influence the adoption or use of the tools of other learners. Instructors must take all of these different types of learners into account when thinking about how to integrate or evaluate these tools. Further, instructors may play a wide range of roles, beyond student-centered, to support the different needs of the students and the course.
Our work points to the complexity of participatory media for education, as well as the great promise. We are committed to expanding the understanding of the space and hope many researchers and educators will as well.

REFERENCES


Implications

ABSTRACT
Implications of our research and future work.
PARTICIPATORY MEDIA FOR EDUCATION

Our observations and findings add to the emerging space of research, but instead of trying to find a one-size-fits-all approach, or demonstrating effectiveness within a tight context, our work calls for an investigation of general trends and issues across different learning environments and different users, to move towards a richer understanding of the space. We feel that this is an important and valuable direction for future research.

We also feel that the call for a focus on learning activities could advance the progress and help educators better choose and integrate these tools into the learning environment.

Our research also generated more questions than answers, but again, we feel that this is necessary to start to understand the complexities and social requirements involved. These are excellent and important questions for future research.

Research Questions / Implications for Future Research:

• Observation of more courses, interviews with more students and instructors

• Learning activity identification and tool alignment – outline of various learning activities, tool alignments and usage suggestions

• Interplay and weighting of varying influences on use: instructor, student self-motivation, course attributes, social norms and student effects

• Further exploration of student motivations in situations where instructor influence is low. At what point, in what situations, do students ‘take over’ and self-direct learning?

• Usage patterns and perceptions across different course/institution structures – core/elective, theory/applied, graduate/undergrad, public/private/community-college

• Social issues (privacy, copyright, etc.)

• Other participatory tools – video, mind maps, etc.

• How do these different channels of participation (in class, in section, online) substitute for and complement each other?

BIGGER PICTURE: NEXT GENERATION TEACHING AND LEARNING

As we worked on this project over the Fall semester of 2009, it became very clear that there was a significant amount of emerging interest in participatory media for education to support student-centered learning. We also recognized that most of the innovation in the space was coming solely from industry. While there was some work going on in academia, it was often isolated and unconnected. Given the focus on the intersection of people and technology, and academic and industry, it was clear that the I School was uniquely positioned to take leadership. Thus, we created the Center for Next Generation Teaching and Learning (NGTL) to promote the development of emerging tools and methods that drive the
next generation of teachers and learners toward student-centered education. The Center serves as a focus point for research, development and educational activities that span the academic and industry sides of education technology.

The Center already highlights relevant student work, including our own work outlined in this report, and recently hosted the first annual Symposium on NGTL on April 17th to get leaders from both academia and industry together to discuss trends, issues and insights around next generation teaching and learning. Participants and speakers from a number of channels within academia, industry, standards bodies and educational institutions converged for one day to facilitate discussion and innovation. Our ultimate goal was to foster future collaboration and partnerships to help support the changing education space.

The Symposium was a major success, and led to great discussion, innovation and future partnerships. We had overwhelmingly positive feedback from attendees and look forward to the ‘11 Symposium.

Finally, the Center for NGTL has hired us to continue to drive the momentum forward and position the i School as a leader in this space, as well as to capitalize on the wealth of resources and energy here and at other iSchools to impact education.
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ABSTRACT

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Education blogs:

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Syllabus Engine
SMC Syllabus Engine Storyboard

Make your Social Media Classroom (SMC) more robust and course material more student-centered with the Syllabus Engine and associated Lecture and Reading Pages.

The Syllabus Engine is a new SMC feature that involves dedicated pages for each lecture and reading, and a controlled vocabulary and a set of php logic blocks to pull relevant social media content into each Lecture/Reading Page.

Instead of constraining all the valuable social interaction and learning within each tool, tagged social content is pulled inline with course material provided by the instructor, allowing students to add to the course content and discover context and connections in a relevant and accessible way.

We’ll walk you through the set up process first, and then watch how it works in action...
The student experience will begin with the Lecture List or Syllabus.

Students can click on a lecture in the List to View the Lecture Page or a reading to view the Reading Page. Let’s look at a Lecture Page.
SMC Syllabus Engine Storyboard : STUDENT EXPERIENCE

This is a Lecture Page.

You can see that on any given Lecture Page, in addition to material added by the instructor (synopsis, Lecture notes), the readings are also pulled in, as well as relevant blog entries, forum discussions and social bookmarks. This creates a dynamic and adaptive learning environment in which students can contribute to the course material and provide context for each other.

We have been using this SMC instance for this entire semester, so there is already a wealth of content that has been added by students.
We can look at some of the content that is pulled into the Lecture Page by clicking the link. These represent student-created social content that is pulled directly into the Lecture Page because they tagged it with the appropriate Lecture tag (vocabulary).
SMC Syllabus Engine Storyboard: STUDENT EXPERIENCE

When the student creates the content, s/he adds the appropriate Lecture Tag (“L1”, “L2”, etc.) along with the other content. See the Social Bookmark (Link) being created below.
The same thing is possible on the Reading Pages as well. The Reading Page gives students a more granular look into each lecture by grouping information specific to a particular reading. Below is an example of a Blog entry tagged with a Reading tag in addition to several Lecture tags. This will pull this blog entry into each specified Lecture Page and Reading Page, AND the Lecture Page that that particular reading belongs to. Said another way, tagging with a Reading tag pulls the content into both that particular Reading Page, as well as it’s Lecture Page.
Thus each Lecture Page becomes a one-stop shop for each lecture topic, and the Reading Page supplies a more granular look into the material. In addition to the content provided by the instructor (synopsis, lecture notes, readings, etc), the students are empowered to add relevant content. This creates a student-centered learning environment that can adapt to student interests and enable them to learn from each other.

Now let’s see how to set this up ---&gt;
Basic Requirements:
- An installation of the Social Media Classroom
- Administrator access to the SMC
- Database access (this is not required for set-up but recommended for any potential troubleshooting
- Clean URLs installed and configured
- Syllabus Engine documentation - provided with this tutorial, including php code

Set-up At-A-Glance:
Below is a comprehensive view of the steps required to set up the Syllabus Engine functionality. We will walk through each step in detail in the subsequent pages.

1. **Create Content Types** - create Lecture and Reading content types to hold Lecture Pages and Reading Pages.
2. **Create Vocabularies** - create vocabulary fields for Lecture Pages and Reading Pages. This vocabulary will be the metadata used to recognize relevant content and pull it into the appropriate pages.
3. **Create Content** - build out the Lectures and Readings by creating a Lecture or Reading content for each one. This step can be skipped and done later, but it is recommended that you build out at least some of your content so that you can view the results of each step.
4. **Create, Configure and Place Blocks** - blocks are a Drupal core component. They offer a way to pull data from elsewhere into a Drupal page, typically using php code. You will create a block for each of the content types - Readings, Forum topics, Blog entries and Social Bookmarks.
5. **Add Views** - create a list of the Lectures so that you can easily navigate to the Lecture Pages and associated Reading Pages. Optional: You can also create a Syllabus view that shows all lectures and readings in a clickable list providing a comprehensive view of the course.
SMC Syllabus Engine Storyboard : SETUP

The initial set up has several steps, but the good news is that once you go through it once, your site will be equipped to dynamically manage new content as students add it.

1

Create Content Types

First, create new content types: Lecture and Reading

This will allow your site to have a dedicated page for each lecture and reading, with all associated social media content.
SMC Syllabus Engine Storyboard: SETUP

Then we need to create vocabularies for each new content type, Lecture and Reading. For Lecture, the vocabulary will be L1, L2, L3, etc., and for Reading, it will be L1R1, L1R2, etc.* These vocabularies will be the metadata that enables the SMC to recognize relevant content and pull it into the appropriate Lecture or Reading page.

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Create Vocabs

Also ensure that there are vocabularies for Blog entries, Forum topics and Social Bookmarks. If there are not, simply create one without specifying terms. This will allow students to tag each type of content with the appropriate Lecture or Reading tag.

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*It is up to you if you want to limit these vocabularies to a specific set of terms/tags. We have left it open to free text and informed students on how to tag content, but we could have specified all of the possible terms and the students would simply choose from a dropdown list.
SMC Syllabus Engine Storyboard : SETUP

Although you can do this step later, it is easiest if you create the content during the set-up process so that you can test to see if your set-up is working correctly. You will Create Content for each Lecture and each Reading. Remember to tag them appropriately!

Add Content:

Lectures

We have the Lecture Page set-up working with clean URLs to make it streamlined and easy to administer. So you will need to unclick “Automatic Alias” and set each URL to be as follows:

For Lecture 2: lecture/2

For Reading 2 of Lecture 2: reading/L2R2

Note: once you save the content, “Automatic Alias” will be rechecked with the URL you provided as you see above.

*If you do not have clean URLs on your system, you may need to alter the php code.
SMC Syllabus Engine Storyboard: SETUP

Although you can do this step later, it is easiest if you create the content during the set-up process so that you can test to see if your set-up is working correctly. You will Create Content for each Lecture and each Reading. Remember to tag them appropriately!

3.2

Add Content:

Readings

Note URL

For Reading 6 of Lecture 2: reading/L2R6

If you do not have clean URLs on your system, you may need to alter the php code.
SMC Syllabus Engine Storyboard : SETUP

Now we will create the blocks where each type of content will be displayed. The blocks will use php to recognize the taxonomy designations and pull the relevant material into the page.

If you are unfamiliar with php - don’t worry! You can simply copy and paste the code from the documentation included with this tutorial.

4.1 Create Blocks

First we Add a Block - but it is important to simply name it and save it without pasting the code yet. This is because we need to be able to limit the pages that this will show up in, otherwise the SMC will try to put it on every page, even when the page architecture doesn’t support it. This is bad. You will get a Drupal White Screen of Death over much of your site.

Because much of the code was redundant for each block, we created a block called relevant_function that includes all of the core code. We also created blocks called: relevant_blog, relevant_forum, relevant_userlink and relevant_reading.
SMC Syllabus Engine Storyboard : SETUP

Once each block is created, we can find it in the list and configure it. First configure `relevant_function` since each of the other blocks will simply call that function.

Configure Blocks :

`relevant_function`

Configure it by adding the php code, making sure to set the Input format to “Php Code”...

...and limiting the page specific visibility settings.
SMC Syllabus Engine Storyboard: SETUP

Now configure the other blocks.

4.3

Configure Blocks:

relevant_blog
relevant_forum
relevant_userlink
relevant_reading

Don’t forget to limit the pages.
SMC Syllabus Engine Storyboard: SETUP

Once blocks are all configured, now place the blocks, starting with the **relevant_function**. This will set what part of the page the blocks appear on and in what order.

Start with **relevant_function**. This is set to appear on the right side at -10 just to get it out of the way - there is no display portion to this.

Then setup the other blocks accordingly.
At this point, we are basically done. The additional step is to create a list of the lectures so that students have an easy way to access each lecture page (you can also do this for Readings as well). We can do this by creating a simple view and call it lectures.

5.1 Add View(s): Lecture List

First, add a view. We want it to be a page with a list view. Then we will set the fields to display, in this case, just the node title. Then we set the filters to only include every content type of Lecture. Give it a URL path and we are done.
SMC Syllabus Engine Storyboard : SETUP

Lecture List View:

The Lecture List is a simple view and navigation scheme. If you are satisfied with this, then congratulations - your set-up is complete! You also have the option of adding another view, the Syllabus view, to create a richer list of lectures with readings pulled in. If you would like to have the additional view, continue on.
SMC Syllabus Engine Storyboard : SETUP

This view is OPTIONAL. It is a richer view into the course material, including both Lectures and Readings to form a comprehensive list. This view is a little more complicated, because it also involves a block as well. First, repeat the same process as before to create a view, this time calling it syllabus.

5.2.1 Add View(s):
Syllabus (view)

Set the View to show an invalid or empty filter since this is required for the view, but all of the content will come from the block.

Now let's create the block...
SMC Syllabus Engine Storyboard : SETUP

Now we will create the block that will hold the logic to pull in the Lectures and appropriate Readings. This requires that your Readings are tagged L1R1, L1R2, etc. If you have used a different vocabulary for Readings, you will need to alter the php code (see documentation for the sample code).

5.2.2

Add View(s):

Syllabus (block)

Remember to limit the pages the block shows up on so that you don’t crash your SMC. For this block, use the URL you specified previously in the Syllabus View.

Now your syllabus is set up - you can view it at /syllabus or the URL you specified.
SMC Syllabus Engine Storyboard : SETUP

Syllabus View:

i202 Fall 2009 School of Information, UC Berkeley

Home

Syllabus  View  Edit  Clone  Export  Dev load  Dev queries  Dev items

Information Organization and Retrieval
INFO 202
MW 9:00-10:30, South Hall 202

L1. INTRODUCTION (8/26)
- L1R1. Vannevar Bush, "As We May Think," The Atlantic Monthly, July 1945
- L1R4. Ramana Rao, "From IR to Search and Beyond," ACM Queue, May 2004

L2. ISSUES AND CONTEXTS (8/31)
- L2R1. Adam Cohen, "The Lord Justice Has Ruled: Pringles are Potato Chips," NY Times (June 1 2009)
- L2R2. Felicity Barringer, "With Billions at Stake, Trying to Expand the Meaning of 'Renewable Energy',' NY Times (May 23, 2009)
- L2R3. Nicholas Kulkil, "High Court in Germany Puts Names that Balloon," NY Times (May 6, 2009)

A1: 202 in the News (due 9/9)

L3. ORGANIZATION (AND,OR,VS) RETRIEVAL (9/2)
- L3R2. David Weinberger, Everything is Miscellaneous, Preface and Chapter 1
- L3R3. Martin Hease, Search User Interfaces, Chapter 3, "Models of the Information Seeking Process" (sections 3.0-3.3)

L4. XML (9/6)

A2: Getting Started with XML and XML Editors (due 9/16)

L5. CONCEPTS & CATEGORIES (9/14)
- L5R1. George Lakoff, Women, Fire, and Dangerous Things, Chapters 1 and 2 (pages 5-67)

Your Syllabus Engine is complete!
SMC Syllabus Engine Storyboard : SETUP COMPLETE!

Your Syllabus Engine set-up is complete! You can now view your Lecture list and/or Syllabus and navigate to each Lecture and Reading Page.

Note: there most likely will not be any social media content on your Lecture Page or Reading Page yet. Students will add that the content and tag it appropriately throughout the course, but you may want to seed the site with some initial content to get it started.
Interview Questions
**Student Interview Questions**

Describe your personal learning environment.

How much are these types of tools (blogs, wikis, SBs, forums, chat) part of it?

Were you more of a producer or consumer of information on the SMC?

How much did the instructor’s directives influence your use?

How much do you think the assignment "In the news" influenced your learning?

Compare Course 1 and Course 3 so far.

How much does a Student-centered environment matter to you?

If you had to list a few underlying learning activities that the SMC supported, what would they be?

Has using the SMC changed your expectations of other classes?

**Teacher Interview Questions**

What was your goal in bringing in the SMC?

Which tools did you use and what were you goals for using them?

What learning outcome did you want to see with students using the SMC? What were some examples of that happening?

What did you see/hear from students about the use of the SMC/blog?

What did you do to support SMC use in your class?

What effect do you think it had on your class, on your students? Can you compare classes that used it to those that did not?

Can you compare it to earlier versions of the class (without SMC)?

Did you notice a difference in the way students interacted with you or with each other?

How do you feel it went with classes that did have it and that didn’t have it.

How do you feel it went each semester?

How would you define successful use of the SMC? What are some examples of successful use?

What do you wish you could have done differently?

What was difficult about the course blog [or tool], the SMC?