The 6th IEEE International Conference on Wireless, Mobile, and Ubiquitous Technologies in Education

Collaboration with Mobile Media

Shifting from 'participation' to 'co-creation'

Sarah Lewis, Roy Pea, Joseph Rosen
School of Education
Stanford University
Palo Alto, USA
sarahl@stanford.edu

Abstract— **While social mobile sites such as Twitter and Facebook have opened new possibilities for human interaction, these applications have barely begun to tap the wellspring of potential for collaborative learning with social media. Although many applications encourage people to be persistently aware of what friends and acquaintances do or care about, rarely do they foster a persistent sense of "doing" or "caring" together. We propose that social mobile applications that support distributed learning communities would benefit from a shift in framing, away from the popular "participation" model of mobile media to a "co-creation" model. We describe a mobile media application in development, "Mobltz", designed to support collaboration via mobile media co-creation.**

Keywords-mobile learning; social media; mobile media; computer supported collaborative learning (CSCL); digital storeytelling, media sharing

I. INTRODUCTION

By definition, the most notable difference between mobile media and other digital media is the point of its production and consumption. The ability of today's smart phones to capture, send, view and submit audio, video and images to other mobile users or web applications from anywhere means that, for the first time, one's social media networks are persistent across time and place. It is not surprising, therefore, that most applications harnessing mobile media have focused on the ability to show others what one is doing or seeing and to comment on each others' posts (e.g. Twitter, Twitpic, Facebook Mobile, etc.). The result is an expanded sense of continuous mutual observation of one another's lives, and a greater sense of "knowing" each other across distances. As one high school media design student explained: "You don't really get to know people from the big events in their lives. You really get to know them from the everyday little things. The little things add up." By observing and commenting, people have gained a greater sense of participation in each other's social worlds.

Yet while they may foster an increasing sense of "knowing" each other's worlds, the participatory features of most web 2.0 applications offer sparse, flat possibilities for interaction among these worlds, and little possibility for the melding of or co-creation of worlds. For the most part, participants can see and hear each other online, yet remain individuated and atomized in their productions of the imagery they share. This situation presents an odd atmosphere for learning. Imagine a physical classroom in which students could show their work, comment, vote and poll the room, but could not creatively brainstorm together, offer alternate interpretations of visions expressed, or develop a shared sense of context and future possibilities through discovering and building things together. That image is "old school" – more analogous to a room of students seated at individual desks taking turns raising hands than it is to the dynamic knowledge and sense-making collaborative spaces we strive for in today's classrooms. Posting, commenting on posts, voting, and repeated opinion or experience polling, while 'participatory' in a confined sense, does not sufficiently support the development of shared goals and experiences that make a community truly come alive in its learning.

Breaking through this atomized framework of participation will be key to harnessing the potential of social mobile media to support learning and collective knowledge creation. The power of mobile media for learning lies not in its ability to offer individual expression anytime anywhere so much as in its yet to be realized potential to foster collaboration, on a scale and in tighter time cycles than ever seen before. How can we harness these opportunities for learning?

Decades of educational research indicates that collaboration presents powerful dynamics for learning, and that collaborative knowledge building communities support learning at individual as well as group and institutional levels [1,19]. By together questioning texts and situations, conceptualizing problems, designing solutions, building artifacts, redesigning and re-conceptualizing, people generate public knowledge that in turn provides conceptual and relational support for further interaction and learning [20]. This is a dynamic emergent process that cannot be pre-constructed, as the interaction itself is an element of the knowledge embodied in the community. We hope that shifting the framing of online interaction from participation in pre-established frameworks to co-creation of frameworks will enable new possibilities for people to launch dynamic, generative learning communities to foster public knowledge. Examples of such generative communities include those organized around such diverse activities as political mobilizations, scientific inquiry, or public health. Below we

978-0-7695-3992-8/10 $26.00 © 2010 IEEE
DOI 10.1109/WMUTE.2010.52

describe the design approach and resulting features of a mobile media application to support such interactions.

II. DESIGNING FOR GENERATIVE LEARNING COMMUNITIES

We approached the design of a collaborative social mobile media application with several learning features in mind. Firstly, our application would support people in creating media together despite the fact that they may be in very different contexts. Prior research has demonstrated the power of images, text and sound for conveying context and enhancing collaboration [10,12,15]. A collaborative mobile application should enable people to build media pieces or tell stories together no matter where they are, without leaving their immediate context.

Secondly, the application should support not only the co-creation of media, but also the co-creation of meaning. Anthropological research had shown that face-to-face communication is rife with references to objects, symbols, texts and images among which attention is constantly shifting and within which joint understanding is constructed and reality is both conveyed and created [8,9]. Features that foster joint attention toward symbols in activity as well as interactions that provide opportunities for conversational repair and appropriation of meanings, can support conceptual learning by encouraging the aligning of perspectives and conceptual developments [11,13,14]. Early work on desktop multimedia and learning has demonstrated the value of such highly interactive multimedia conversational environments [4,15,17] for learning.

Stemming from these foundations, we decided that media pieces should not be static; they should be open to negotiation and retellings as contending meanings come into play and as contexts change and as new ideas come to light. To promote flexibility, the co-creation process should not be bounded by time; people should be able to access media produced earlier and be able to easily integrate it into the flow of social life. This would serve as a means of re-establishing context and props for joint attention, enhancing the typically verbal-only rendering of the act of saying "remember when…"

Thirdly, we decided the application must not only support the co-construction of a media artifact and its meaning, but also support the co-construction of context itself. Collaborative generative learning expands both community and knowledge. The application should have broad reach beyond its online boundaries. We asked ourselves what kind of learning would be enabled if people, empowered with a basic mobile phone, could exchange ideas supported by rich media. What if people, all over the world, from wherever they are, could create digital media together? What if they could debate meaning, offer multiple interpretations, tell stories and retell stories? What if they could broadcast these media globally?

III. MOBLTZ – SOCIAL MOBILE MEDIA FOR INFORMAL LEARNING

Mobltz is a social mobile media environment designed to support informal learning through the co-construction of media. Intended as both a media-based conversation tool and a mobile digital story telling environment, it facilitates the collaborative embroidering of images, audio, video and text to form a narrative or express an idea. The core environment has four differentiating features. It's lean and simple—all interactions can take place from a mobile device. It supports referential interaction in sharing of images, video and sound in the context of multimedia conversations. It does not privilege narrative "stories" over more casual, fractured or emergent interactions; shreds of stories and ideas live alongside long narratives, and anyone can remix and retell any story. Finally, it supports publication and broadcast of these conversations in an ongoing, media "snowball" that grows online over time in any web-based environment.

The lean Mobltz design emerged in response to the plethora of heavy media sites that required desktop browsers to access much of their functionality. Many web sites allow upload of media from a mobile phone, but none facilitated constructing, sharing and viewing multimedia pieces from a basic mobile. This prohibited true collaboration with those who primarily access the Internet from mobile networks, and blocked realization of true mobile media interaction "in the field." Mobltz is designed to be fully accessible from any browser, mobile or not. The experience scales with more sophisticated equipment: if phones support the playing of browser-based or downloaded video, the user views a full video experience. If the browser is simple and non-video enabled, a viewer sees a frame-by-frame animation representing the video components. This is of generational importance: while smart phones such as the Apple iPhone make up an increasing percentage of the adult market share in the USA, simple internet- enabled camera phones continue to make up the majority of youth-owned devices. With this in mind, the interface is minimalist to foster quick, lightweight, pervasive interaction rather than a heavy media production experience.

Figure 1. Mobltz community page displays recent submissions

IV. LEARNING WITH MULTIMEDIA CONVERSATIONS

While mobile blogs have been a great way for individuals to tell a story over time, they are difficult places to have conversations. Most individual blogs permit commenting with text, but not with media. Collaborative blogs facilitate group submission of media, yet due to their linear format over time, they do not support in-depth conversations about the media contributed. The linear format pushes older media to the bottom, frequently never to be seen or referenced again. Prior submissions are difficult to bring back into conversational life. Communication is atomized and linear, privileging a present over the past, sacrificing the common reference points that can serve to reactivate collective memory and enduring community experience.

Mobltz was developed so that any media item can be visually referenced from the archive and brought back into conversational life at any time. Through search of keywords, users find media submitted from members of their self-identified "community," from themselves, or from everyone who is a member of Mobltz. They can select any media item to stitch together (making a moblt), and can edit the order and text of that media item (see Fig. 2). Text is displayed beneath the visual media component, whether video or still imagery. Audio is laid down beneath the media that appears before it in the Mobltz editor. The editor has a default timer based on the number of text characters associated with a media element, but this auto-timing can be overridden in the editor by the user if longer /shorter durations are desired. The result is a multimedia piece made from collective media submissions, the URL for which can be "flicked" to any user or new contact via SMS or email.

Figure 2. Embeddable player and editor

These features combine to allow users to convey context, opinion, point of view, or a sense of place or situation in a given discussion. For example, in a pilot study of people discussing environmental issues between the US and East Africa, users reposted media elements to make references to clarify questions, make further points, or draw comparisons. When compared to the content of conversations with the same group over a mobile blog, the collaborative platform facilitated more turn-taking interaction and common referencing. The effect was that of pointing, with deictic words like "this" appearing under recycled images and video, orienting the viewer to the visual referent as it appears. Such visual pointing coordinates resources to enable people to work and learn together in disparate settings [5-9,11,13,14,16].

The effect of recurring media in the Mobltz environment is analogous to gifts and photo albums that people maintain on display in homes and other built environments [21]. The artifacts we surround ourselves with maintain a sense of past and connection to each other, serving as focal objects for eliciting joint experience. In this sense they're a part of the context that "weaves us together" [3] rather than a context that merely "surrounds" us. Media artifacts in Mobltz get recycled as ongoing jokes referencing past experiences, as references to topics of shared interest, as clarifications, redefinitions, and lenses for refocusing. Shared images become referential tools for achieving "common ground," a shared perspective that helps us make sense of novel experiences and cultural categories [2,15]. It's our hope that through shared referencing, users from disparate contexts will not only be able to communicate to solve clearly defined problems together, but will also be able to elicit shared frameworks that can help them uncover joint problems and collective solutions that have yet to be revealed.

V. OWNERSHIP, COLLABORATION, AND REMIX

While the Mobltz platform supports the development of stories as coherent collaborative narratives, it also supports the continual negotiation of meaning as such stories evolve. When participants upload media, that media is associated with their user name, in effect providing them limited "ownership" rights. Only the person who uploaded can delete or edit original text for a media element. However, when participants stitch together media elements (forming narratives—or moblts) to make a story, they become owners of that story, and can delete or add elements, and edit all associated text. Participants in ongoing media-enabled conversations can remix, mashup and add to one another's works. If the originator of a media element opts to delete that element from Mobltz, every instance of that element disappears from any moblt containing it. Moblts thus evolve over time; they are participatory, but anyone has the right to deny participation at any time. Like artifacts emerging from co-located interaction, the elements and meanings of these artifacts are continually brokered and negotiated. In this way, moblts serve as representations of community conversation and interaction.

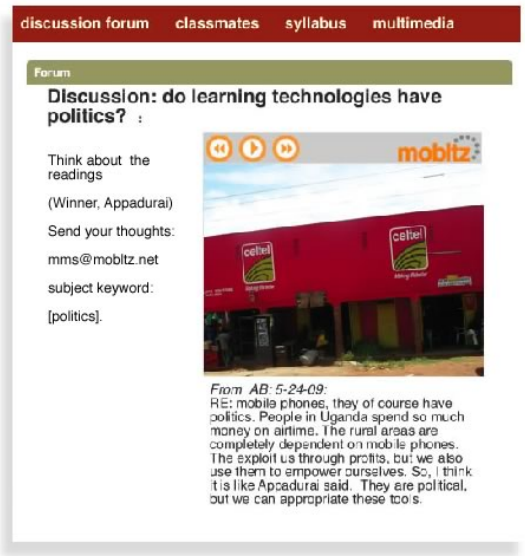

Figure 3. Moblt player broadcasting media within a course web site.

Moblts can be recombined with other moblts or media elements to tell a new story or make a new point or elicit a new experience for the collaborator. The fragmented, emergent nature of the experience contrasts with the stable media production environments of most tools. This may seem to challenge previously published recommendations of multimedia learning environments, that include goal driven collaboration, sharing, and meaning negotiation [17]. In many contexts, however, unstructured interaction can be advantageous. Fluidity can facilitate meaning-making across and within shifting cultures and contexts. This meaning making becomes an achievement represented by the accumulation of evolving media artifacts constructed in a collaborative interaction. While goal oriented interaction offers fuel for participation, sometimes communities need to interact fluidly to find the commonalities that underlie establishment of a goal. In the case of the international environmental conversations referenced earlier, uncovering commonalities of experiences, frameworks and imaginations was a necessary precursor to evolving a shared goal.

VI. GLOBAL MEDIA SNOWBALL

Finally, Mobltz provides functionalities to broadcast conversations or ideas globally, calling on anyone anywhere to contribute and participate via media submissions. While any moblt can be embedded in any web site (see Figure 3), when a user "opens" a moblt to public participation, that moblt will continue to accept submissions and grow over time. This launches a massive media snowball—a set of media relationships to grow over social networks. Media sent via MMS or email appears automatically in the embedded moblt. For example, environmentalists could publish a "soil erosion" moblt to which anyone could submit images, video or audio related to soil erosion. The result would be an evolving multimedia collection that endured and grew, fueling a rich online conversation on erosion. A community organization doing AIDS prevention research plans to publish a moblt comprised of testimonies about what people were going to do to stop AIDS on international AIDS awareness day. This moblt will grow—offering evidence of reach for their stop AIDS campaign.

VII. FUTURE WORK

We are currently organizing three levels of studies using Mobltz. In all studies we are interested in the types of interactions that media-based conversations enable. In pursuit of this we will conduct a discourse analysis of media artifacts. We are also interested in the patterns of social media networks that evolve. We will use social network analysis methods to map the growth and patterns of interaction of both media and social networks over time. Three cases of use are proposed: A pilot study in which 6 friendship parings of youth participate in mobile media conversations about "teen life" over a two week period; a study of transnational collaboration as people from four countries prepare to participate in a multimedia workshop investigating environmental conflict in two communities in East Africa; and the use of the "media snowball" tool in a large high school news web site.

We are hopeful that this research, inspired by visions of collaborative multimedia learning communities developed over the past several decades, will encourage designers to move towards increasingly dynamic collaborative creative social mobile learning applications.

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