Fostering a Culture of Reflection Among Constructionist Learners

Digital Storytelling as a Tool for Reflective Practice

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Abstract

Too often, learners in constructionist environments stop after the first two steps of the design process: imagining what is possible and then realizing their vision. But without reflection—that is, taking a step back from their work to get a deeper understanding of how and why they do what they do—learners miss out on many important opportunities to improve their creations, discover new things, and share their ideas with others. I propose to develop new strategies to foster a culture of reflection among young people engaged in a constructionist learning environment; I will do this by developing a new set of tools, activities, and contexts to promote the creation of short digital video pieces produced by and for these youth. Learners will construct digital videos of their own "learning stories" in the context of workshops. Through analysis of the resulting stories and interviews with workshop participants, I plan to devise strategies for spreading the use of digital storytelling for reflective practice to other constructionist environments. This analysis will also inform the iterative redesign of new software tools, activities, and contexts for creating, editing, and sharing digital video stories to support the development of a culture of reflection among constructionist learners.

Introduction

Marta has been coming to the Computer Clubhouse for years. She spends hours lavishing her expertise in a piece of photo-editing software to churn out piles of self-portraits. When I ask her about her intent in an image in which she seems to rise from the water, flanked by the words "Girl Power", she shrugs me off. "I dunno," she says. The meaning of her piece is clear, certainly, but her apparent disinterest dashes my hopes of a rich conversation on gender issues. Later, for an interview with a graphic design firm, she prepares her portfolio. Rather than just produce a slide show, she opts to make a digital story. After considering different angles, Marta frames her work with a personal narrative describing her family's immigration from Mexico and how she reflects her heritage in her collages. She describes her experience as one of the few Mexicans in her school, and one of the few girls at her Clubhouse. As she moves her images and soundtrack in the timeline of her video to match her spoken text, a clear meaning emerges.

This scenario presents a fictional account in the tradition of the "learning stories" that Seymour Papert uses to illustrate his constructionist learning theories (1993). Like many social scientists, Papert tells these stories about the people he is observing (or about himself), but the subjects he follows do not tell their stories to us themselves. This denies the subjects of these narratives the opportunity to craft their own stories. In this scenario, Marta creates meaning by taking a step back from her oeuvre of design work, looking for a narrative thread to follow. In building stories, people articulate their thoughts to make them more compelling and inviting to others. Similarly, through reflective practice — that is, making a habit of taking a close look at their own work and their motivation and relationship to it — people clarify their ideas and come to better understand what they have learned (Schön, 1983). Reflection allows people to assimilate tacit knowledge and tackle future challenges (Raelin, 2001). It also enhances an individual's learning experience and fosters communication and collaboration within communities of learners. Students learn flexibly, make sense of information, adapt knowledge, and realize where understanding fails. Students are "active and intentional" in examining their own thinking and work, and thus make learning visible (Lin et al, 1999; Rinaldi and Gardner, 2001).

Reflection as a part of constructionism is not new: the theory fully supports having learners reflect on their work. Constructionists suggest we build things in part to externalize our thinking to have an "object to think with" (Papert, 1980). Reflection is often missing in *practice* in

constructionist learning communities. Fostering a rich culture of reflection may allow constructionism to more fully live up to its potential. One reason that reflection may be an overlooked step of the design process is that reflective activity has often been artificial, external to the actual work of a learner: for example, pop-up questions or consultation with experts (Lin et al, 2001). How might reflection be introduced in a way that "fits" in a constructionist learning community where learners pursue projects based on their own interests? This project prefers an approach to reflection that is in itself constructionist, asking learners to build stories about how and why they do what they do. What roles can storytelling and reflection play in the design process, especially as they help designers share not just their projects, but also their *thinking* about their projects, with one another?

Approach

The particular constructionist learning environment I choose to highlight is the Computer Clubhouse, an international network of after-school centers offering youth from underserved communities access both to technology and to adult mentors who support the pursuit of creative projects based on the members' own interests (Resnick, Rusk, and Cooke, 1998). In my work with the youth, I will ask members to construct digital video stories of, by, and for themselves. In these stories they reflect on their work, and they then benefit from being able to articulate more clearly about it. To begin to address how to instill a culture of reflection in the Clubhouse, I draw upon the research of MIT's Center for Reflective Community Practice (CRCP). It uses digital storytelling in its work with community practitioners, making the natural connection between story construction and reflection.

Digital storytelling can be an ambiguous term: CRCP adopted a form defined by the Center for Digital Storytelling in Berkeley, California; it integrates existing photographs, music, home video, and voice into brief (2–5 minute) digital video pieces (Lambert and Mullen). By stitching together these diverse elements in a software environment, creators of digital stories engage in a form of narrative *bricolage*— that is, they "construct theories by arranging and rearranging, by negotiating and renegotiating with a set of well-known materials." (Turkle and Papert, 1990). In this case, digital storytellers consider such aspects as voice, point of view, and narrative arc as

they place media objects in the video editing environment, and this complex negotiation is a form of theory-building and meaning-making. The form of digital storytelling offers a particularly well-suited medium for Clubhouse members to construct personal reflections; by *building* the stories, the process of reflection in this constructionist learning community will itself be constructionist. The finished stories serve as "objects to think with" and also mediate relationships with others in the community of learners. Similarly, the Reggio Emilia schools for toddlers in northern Italy privilege the documentation of the creative process, thereby inviting others to experience learning as the children have experienced it and implies the high value placed on community, memory, and narration. (Rinaldi and Gardner, 2001, p. 62)

Experimental Protocol

Workshop design. Over two to three weeks, eight to 12 youth (aged 10–18) will choose at least one project they created at the Computer Clubhouse and construct a short video documentary or "digital story" in which they explain their creative process and motivations in their work. In leading the youth in this effort, I will follow a fairly typical Clubhouse mentorship model of working one-on-one, but I will also lead discussions with two to six youth at once, including a screening for all the participants. Within the larger group, I will identify three participants who will commit to share their stories with one another three times during its development, so that I might more closely examine the impact of sharing digital stories within a community of learners.

Members will utilize existing video editing software available within the Computer Clubhouse Network to produce their digital stories. They may post their work to the Clubhouse intranet, "The Village", as well. To build a venue for an audience these stories can be shared with, I am developing a prototype of a collaboratively built streaming broadcast channel for the Clubhouse community, called Channel C. Before this system becomes fully operational, as part of my study I will involve the participants in design discussions of how such a tool might better support the sharing digital video, especially in the service of reflection on creative work.

Evaluation. I will interview each participant for at least 30 minutes at three points: before, during, and after the workshop. Interviews will reveal the intellectual and social growth the workshops encourage along three dimensions:

—members' changing perceptions of self, their work, and the nature of storytelling:
- their own ability to articulate their ideas and draw thematic connections between pieces in their body of creative work
- inherent worth of their work and personal pride in sharing it with other members
- how their work demonstrates technical or artistic prowess
- difficulty of constructing narrative and producing digital video

—what aspects of our tools and environments support digital storytelling and reflection
- individuals' understanding and utilization of features of video editing software for narrative composition
- what new understandings about their work emerged as they produced the stories

—how stories and reflective activity enhances community
- effects of other members' stories on the individual's final piece
- perception of other stories and tendency to establish connections between stories
- desire to share digital story with other members of individual's Clubhouse and with the Network.

My analysis of these interviews will reveal what aspects of the environment and activities best faciliate digital storytelling, and of those which support deeper reflection. I aim to gain a better understanding of what tools and resources adolescents choose to utilize in documenting their creative process, how revisiting projects and molding them into story form promotes reflection, what obstacles prevent such reflection in the culture of an informal learning community, and how these obstacles might be more easily overcome through tools we design.

Timeline

In the next month, I will finalize the design of workshop activities and ensure that hardware and software is set up properly. In the next few weeks, I will recruit participants and, upon obtaining parental consent for their participation, I will begin pre-interviews. This will continue into mid-January, when I will conduct the workshops and interviews. Throughout this work, I will continue developing the Channel C prototype with feedback from participants. In February, I will continue workshops and interviews as necessary, analyze the results from the interviews, and begin writing the thesis in March. I reserve April for revision based on feedback from my committee. In May I submit the thesis.

Resources

To facilitate reproducibility of the project, I plan to use existing software available at any Clubhouse site, or freeware and shareware that is readily accessible. I will use my group's digital video camera and cassettes for interviews and to archive the final pieces. I have been granted COUHES approval for an application submitted in late October.

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Reader Biographies

Edith Ackermann (edith@media.mit.edu) is Professor of Developmental Psychology, University of Aix-Marseille I, France (1994–present). She teaches design and creative learning at the Massachusetts Institute of Technology, School of Architecture (Design Technologies Group and Center for Advanced Visual Studies), where she was appointed Visiting Professor in the Fall of 1996. She consults for research institutions interested in the intersections between learning, teaching, kids, and media (TERC, LEGO, The Learning Company). As a Senior Research Scientist at MERL from 1996–1999, she designed and evaluated playful learning environments for young children and participated in the development of computer-based environments for collaborative learning/design. Ackermann was Assistant / Associate Professor of Media Arts and Sciences at the M.I.T. Media Laboratory, 1985–1994, and Maître-Assistant at the Faculté de Psychologie et Sciences de l'Education, University of Geneva, Switzerland. While in Geneva, she was a Scientific Collaborator at the Centre International d'Epistémologie Génétique (C.I.E.G.), under the direction of Jean Piaget (1972-79), and a research collaborator with Bärbel Inhelder and Guy Céllerier (1976-85).

Ceasar L. McDowell (ceasar@mit.edu) is an Associate Professor of the Practice of Community Development at MIT and Director of MIT's Center for Reflective Community Practice. He holds an Ed.D. from Harvard University. His research and teaching interests include the use of mass media in promoting democracy, the education of urban students, the organizing of urban communities, civil rights history, peacemaking and conflict resolution, as well as testing and test policy. He also serves as chairperson of The Algebra Project, was co-founder of The Civil Rights Forum, and served as Senior Researcher for the National Commission on Testing and Public Policy. In addition, Dr. McDowell has extensive experience in the area of public engagement, and the design and conduct of civic conversations that create opportunities for individuals from minority and poor communities to be included in a cross-generational and cross-racial public discourse. Dr. McDowell has served as an advisor to several national foundations, developed programs for public discourse and conflict resolution among educators from Northern Ireland and the Republic of Ireland. Dr. McDowell was also a 1991 W. K. Kellogg National Leadership Fellow.