



DESIGNING WITH TEACHERS

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Participatory Approaches
to Professional Development
in Education

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Professional Development in a Culture of Participatory Learning

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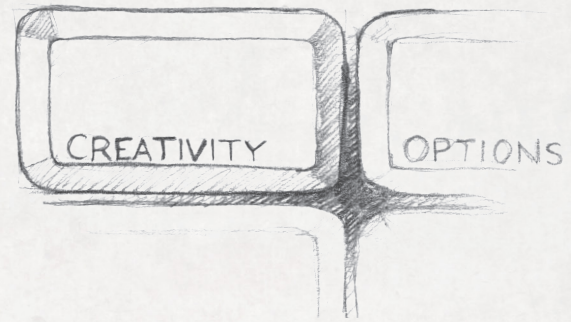
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In the contemporary educational landscape, emerging participatory practices, facilitated by technological and socio-cultural developments, have given rise to a new model of knowledge circulation. Knowledge is increasingly distributed among numerous and diverse networks. Individuals now have the capacity – and the cultural impetus – to become creative producers of information and cultural products.

The quickening pace of technological change means we can barely envision the actual contexts in which our students will use what they are learning in school. Some of the most important contexts will certainly include digital networks of user-generated content that is *persistent, searchable, and replicable* (boyd, 2008). These networks will feature *transactive interactions and shared control* (Xenos & Foot, 2007), and aspects of what Jenkins et al. (2006) characterize as “participatory culture:” low barriers to entry, abundant support for creating and sharing, informal mentoring of newcomers, and a strong sense of social connection. Such developments suggest that teachers need to foster “participatory learning” where communities of learners work together to develop conventional academic knowledge alongside newer networked knowledge.



Participatory learning is most likely to emerge in a culture that honors:

1. Opportunities for exercising **creativity** by using a variety of media, tools, and practices;
2. **Co-learning**, where educators and students pool their skills and knowledge, and share in the tasks of teaching and learning;
3. Heightened **motivation** and new forms of **engagement** through meaningful play and experimentation;
4. Learning that feels **relevant** to the learners’ identities and interests;
5. An integrated learning system - or **learning ecosystem** - where connections between home, school, community, and world are enabled and encouraged.

(Reilly, Vartabedian, Felt, & Jenkins, 2012)

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Professional Development in a Culture of Participatory Learning

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Participatory learning involves exploring information and concepts within a community of learners who all engage in making and discussing through inquiry (Greeno, 2006; Papert, 1980). As subjects are explored, learners share knowledge from all aspects of their lives (Cole & Engeström, 1993; Duschl & Hamilton, 2010), causing the discussion of concepts to be more meaningful, tangible, and relevant. Through social and cultural participation, we learn from each other whether through guided instruction in institutions that we belong to, informal learning that happens through mentoring, or through tacit knowledge gained as we appropriate learning and personalize it for deeper understanding (Rogoff, 1995). The effect of an apprentice's prior experiences can be seen in the way she negotiates communication with her mentor in a given context and then appropriates that knowledge in new situations.

A participatory learning environment gives learners – in a classroom or elsewhere – an opportunity to become part of a community where they can explore abstract concepts in a non-threatening social context, and then apply them in situations that hold personal relevance. Learners in a participatory learning system include all members of the learning space – students, teachers, administrators, and parents. Learning becomes a “negotiation and collaboration” between these participants (John-Steiner & Mahn, 1996, p. 197), so that different perspectives are valued and respected. Such an environment is stimulating, forcing each learner to think hard about her statements and the way arguments are formed (Roth & Lee, 2004; Hodson, 1999). In a participatory learning context, thinking is made visible through networked technologies; no longer is learning an individual task for the individual mind, but an exploration within a learning community, which provides a rich, robust learning experience for all participants.

It is important to clarify, nevertheless, that these technologies and media are mere tools that *facilitate* participatory learning and participatory instruction. This type of pedagogy extends beyond tools and resources, and quintessentially encompasses a respectful, open, non-hierarchic impulse that - beyond technology - is the true engine of this transformation.

In the same time, we recognize that the rise of digital participation, interconnection, and grassroots creativity has fundamental implications for the realm of both formal and informal education. Participatory learning, as a pedagogical model, underscores the urgency of facilitating educational experiences that help build the skills and knowledge necessary to contribute in today's evolving socio-cultural environments, digital and non-digital alike. Unequal access to these skills and experiences can prevent young people from meaningful social and cultural participation, and put them at a disadvantage in

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terms of their personal and professional pathways (Jenkins et al., 2006). The participation gap, which Jenkins and colleagues (2006) identify as one of the three core challenges to participatory culture, goes beyond questions of technological access; it fundamentally concerns the cultural competencies and social skills needed for full and meaningful engagement in these new cultural spaces.

This participation gap, nevertheless, cannot be fully and adequately addressed if teachers are not afforded these same opportunities to grow and learn. It is therefore crucial to acknowledge that the participation gap affects both students and educators, and that professional development for teachers is as essential and as necessary as the participatory learning initiatives directed at students.

Recent voices from the field of education have aptly called attention to this need, recommending the establishment of initiatives such as a “Digital Teacher Corps” that would facilitate a more relevant and innovative implementation of professional development in schools (Levine & Gee, 2011; Levine & Wojcicki, 2010). This Digital Teacher Corps would be modeled after Teach for America to address the need for improved digital literacy. According to this vision, young teachers who are already fluent in technology would receive additional training in participatory pedagogies and then be dispatched as “literacy evangelists” (Levine & Gee, 2011) to low-performing schools in rural and urban communities.



Thus, these teachers “would support evidence-based scaling of effective literacy instruction using the most modern and personalized digital literacy tools available” (p. 2). While the teachers in the Digital Teacher Corps are primarily responsible for addressing students’ needs through their instruction, another anticipated outcome is that they could affect the culture of the school and encourage other teachers to use digital tools for literacy instruction. Furthermore, in addition to teachers, the Corps would also engage community literacy mentors, such as librarians and cultural professionals, in an effort to build a multigenerational campaign to address the national literacy crisis (Levine & Gee, 2011).

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As digital media plays an increasingly significant role in our youth's lives, it is crucial that these young people have the necessary adult support that enables them to live healthy, meaningful experiences, both online and offline (Davis, Katz, Santo, & James, 2010). Teachers play a monumental role in facilitating opportunities for students to become critical thinkers, proactive citizens, and creative contributors to the world around them. They deserve to have access to the most relevant, meaningful and empowering professional development opportunities, and it is our hope that the current collection of case studies will help seed this critical conversation.

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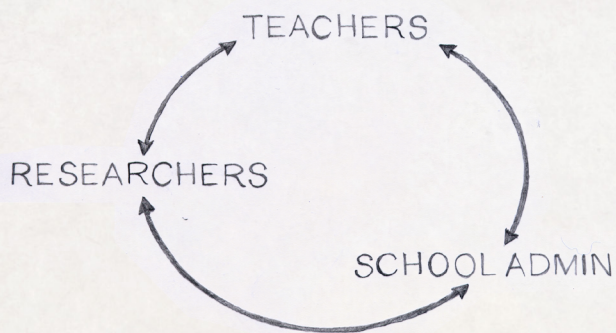
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Towards a Theory of Participatory Professional Development

By Ioana Literat

Collaborative Solutions in the PD Field: The Genesis and Goals of This Working Group

The idea of establishing a working group on participatory models of professional development grew out of discussions that occurred during the Digital Media and Learning Conference 2011. The aim of this working group was to bring together those who are designing, developing and implementing initiatives to support teachers in understanding the affordances of digital media in learning, and to engage in a much-needed dialogue on culturally relevant professional development. We believe that, in order to generate effective models of participatory professional development, an engaged collaboration is needed between multiple stakeholders who bring a diverse set of ideas and challenges to the conversation. Our group is, thus, a mixture of researchers, teachers and school administrators from a variety of disciplines, schools, and states. Instead of working in silos on the same issue, coming together as a collaborative has led to a productive and important discussion of how to scale and sustain successful models of 21st century professional development in education.



The Digital Age Teacher Preparation Council

Rebecca Herr-Stephenson

A formative influence on the Professional Development working group is the Digital Age Teacher Preparation Council first convened by the Joan Ganz Cooney Center at Sesame Workshop in January 2010. The Council, comprised of experts in early childhood education and child development, educational policymakers, and technologists, worked together to identify necessary changes in teacher training and professional development within the context of 21st century schooling.

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Through its collaborative work, the Council put forward several recommendations for educational policy and program design that better support the integration of digital technologies and participatory learning practices into educational settings for children from three to eight years old. Specifically, the DATPC highlighted five general goals for improvement and innovation related to training and support of early childhood and elementary teachers:

Goal 1: Modernize program designs and professional development models to promote success. Of primary importance to meeting this goal is helping teachers and students gain meaningful access to new technologies. In addition, the Council recommended changes to staffing, scheduling, and communication practices to create space and time for collaboration and intentional learning, as well as increased opportunities for parental involvement.

Goal 2: Train early educators to integrate digital and screen media into their teaching practices in developmentally appropriate ways. Following the lead of the National Association for the Education of Young Children (NAEYC), the Council's recommendation in this area focused on empowering teachers to make choices about the kinds of media to use in their classrooms, recognizing teachers' expertise in principles of developmentally appropriate practice.

Goal 3: Expand public media use as a cost-effective asset for teachers. This goal focused on raising awareness among teachers of the catalog of media available for use in the classroom through public channels and supporting design and production of public media across new platforms.

Goal 4: Advance coherent and equitable policies to promote technology integration across standards, curriculum, and teacher professional development. Acknowledging the ongoing, dual challenges of the digital divide and the participation gap, the Council recommended restructuring the allocation of funds and resources to ensure a more equitable distribution of new technologies.

Goal 5: Create R&D partnerships for a digital age. Also related to improving equity in the distribution of technologies and funds for professional development, the Council recommended creative, interdisciplinary approaches to R&D.

(Barron, Cayton-Hodges, Bofferding, Copple, Darling-Hammond, and Levine, 2011).

These broad goals outlined by the Council have been addressed by a variety of programs for students throughout K-12 schooling and expanded learning opportunities.

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The principal goals of this working group were to:

- Provide a common forum for professional development conversations centered around participatory learning
- Foster interdisciplinary dialogue among vested audiences in participatory learning
- Identify synergy among members and facilitate learning from each other
- Construct a common framework for participatory models of professional development
- Extract best practices and lingering challenges in the field
- Build a collection of case studies exemplifying these best practices and share them with the larger community of stakeholders in participatory learning

Our collective experiences in the realm of professional development and our dialogues within the context of this working group led to the identification and explication of four core values that we consider key to effective participatory PD programs. We believe that these four values, along with the design principles that they inform in practice, are an essential take-away from this multi-stakeholder conversation.

Thus, in our view, the values that shape the design of participatory PD are:

1 Participation, not indoctrination

There is a critical need, in the field of education, to transition from professional development *for* teachers to professional development *with* teachers. Participatory learning relies on a model of “distributed expertise”, which assumes that knowledge, including in an educational context, is distributed across a diffuse network of people and tools. We believe that professional development for teachers should similarly be conceived and implemented in a non-hierarchical, inclusive and participatory manner, thus modeling the type of dynamic pedagogy that characterizes participatory learning.

2 Exploration, not prescription

In order to inspire this sense of ownership and co-design in the participants, PD initiatives must allow ample room for personal and professional exploration. Attention must also be paid to what teach-

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ers *want* from a professional development experience, rather than just what is required of them. By allowing teachers to explore who they are and what their professional goals are, the PD program can provide educators with an opportunity to connect to the content and to display their own individuality in the process.

3 Contextualization, not abstraction

PD programs should be tailored to the specific questions and particular career goals of the participants. We acknowledge the tension between the desire to create scalable and flexible initiatives, and the need to cater most effectively to specific disciplines and levels of instruction; this challenge is all the more acute when it comes to sharing strategies for integrating media and digital technologies into the classroom. However, we believe that there is a way to reconcile this tension. By addressing the common core standards teachers need to fulfill, while in the same time accounting for the various disciplines and grade levels, program designers can craft versatile PD initiatives that represent – and feel like – a genuine investment in professional growth.

4 Iteration, not repetition

In order to sustain ongoing learning, the design of successful PD programs must provide opportunities for constant improvement, troubleshooting, and evaluation. In this sense, assessment emerges as a problematic yet nevertheless vital topic in the realm of professional development implementation. We hope that assessment practices in professional development will increasingly mirror the participatory shift in program design and reflection.

These values offer a blueprint for an innovative type of professional development. By incorporating these values into the design of professional development programs, researchers and practitioners can efficiently craft initiatives that are participatory, non-hierarchical, personally and professionally meaningful, relevant, flexible and sustainable.

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The Case Studies: Participatory Models of Professional Development

The present collection of case studies – the culmination of the activities of this working group – addresses these crucial questions, and introduces a diverse set of participatory professional development experiences from the field. The case studies are multimedia-rich, project-based articles from a variety of disciplinary, geographical and cultural contexts, shedding light onto the eclectic applications of professional development initiatives.

The collection begins with Sarah Morrisseau and Sarah Kirn describing and analyzing the PD elements of Vital Signs, an exemplary program for science education in Maine. The authors note that the process of involving students in such a hands-on, authentic science learning environment demands a different way of teaching than many educators are used to; their PD efforts, therefore, are expertly crafted to facilitate the educators' professional growth and to sustainably enable the implementation of Vital Signs both inside and outside of the classroom.

Next, Isabel Morales, a talented and passionate LAUSD teacher, provides us with a personal perspective on how PD programs should be designed in order to maximize teacher buy-in and to enhance the opportunities for personal and professional enhancement. Drawing on examples from her own PD experiences and lesson plans, Isabel discusses participation, relevance and sustainability in the context of such opportunities.

Antero Garcia explores the intersections between participatory PD, game-based storytelling and youth participatory action research (YPAR), in the context of the alternative reality game that he developed: "Ask Anansi", Antero invites us into the magical world of the spider Anansi, who explains how cross-generational collaboration and transformative social play can inform the craft of pedagogy and teacher PD.

Vanessa Vartabedian and Laurel Felt outline the principles behind the PD initiatives of PLAY! (Participatory Learning and You!), and the practical implementation of two such efforts: the Summer Sandbox and, respectively, PLAYing Outside the Box. Vanessa and Laurel identify "play" – an exploratory form of problem-solving – as a fundamental feature of successful PD efforts, allowing educators to engage in hands-on, participatory learning and self-enhancement.

Karen Brennan, drawing on her extensive work on the educational programming environment Scratch, discusses the design and implementation of

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ScratchEd teacher resources. These resources allow teachers to facilitate young people's development as creators of interactive media, and engage them in what Karen identifies as the four core activities of designing, personalizing, sharing, and reflecting.

Finally, Dan Hickey and Rebecca Itow describe current and future efforts to help teachers embrace participatory approaches to learning. They discuss an ongoing collaboration between assessment researchers, curriculum developers, and high school English teachers. Situated learning, connectivist instruction, participatory assessment, and design-based research were central to this collaboration; Dan and Rebecca suggest that these are essential elements of any effort to expand participatory learning.

Both read separately and in conversation with each other, these case studies exemplify a participatory approach to professional development in education, illuminating some of the promises as well as the challenges of this new mode of professional enhancement. It is our hope that the efforts of this working group will facilitate a better understanding of participatory professional development, contribute to this much-needed conversation within the digital media and learning field, and enable a wider and more diverse implementation of successful professional development programs in the years to come.

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PLAY! Professional Development Pilot

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VITAL SIGNS

The Vital Signs community and corresponding professional development initiative is at the forefront of a transformation in how students are learning science in the state of Maine. [Students are participating](#) (VIDEO 1) in learning environments that reflect the collaborative, social, generative nature of scientific practice. They are doing real research and are making real contributions to a growing community of scientists, citizen scientists, and peers. They are asking questions, working together, making evidence-based arguments, and driving their own learning. [Professional development experiences](#) (VIDEO 2) motivate and equip educators to build these authentic learning environments and to take full advantage of an online community of practice.



VIDEO 1: Students contribute to a real research effort, interact online with with scientists and peers in the Vital Signs community - <http://vitalsignsme.org/2012-vs-community-video>

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VIDEO 2: A summary of the key elements of Vital Signs professional development experiences - <http://vitalsignsme.org/2012-vs-professional-development-video>

Vital Signs (VS) is one piece in a suite of innovative science education programs at the [Gulf of Maine Research Institute \(GMRI\)](#) (VIDEO 3) that are designed to engage students with science, and help them become critical thinkers, problem-solvers, collaborators, and effective communicators. These education programs function within the broader context of GMRI's efforts to build an enduring relationship with the Gulf of Maine bioregion, focused on a healthy and well-understood ecosystem, sustainable industries, vibrant communities, abundant opportunities, and inspired citizens.



VIDEO 3: Learn more about the Gulf of Maine Research Institute's education initiatives and impact through the lens of former Maine Governor Angus King - http://www.gmri.org/ar2008/voices_angus.html

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Vital Signs: Designing for student and teacher participation in a scientific research community

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PARTICIPATING IN A COMMUNITY OF STUDENTS, EDUCATORS, SCIENTISTS, AND CITIZEN SCIENTISTS

“Like no other program, Vital Signs creates a collaborative foundation for students, scientists and resource managers to respond rapidly to new environmental threats to Maine while providing essential experience to the next generation of its citizen scientists.” Paul Gregory, Environmental Specialist, Maine Department of Environmental Protection, 2009

Vital Signs is an online community of students, educators, scientists, and citizen scientists focused on the study of native and invasive species in Maine. Participants use online tools to map and share the [species observations](#) they make in their local ecosystems. They make meaning of their data in the context of the larger Vital Signs database of species observations, and then use the photo evidence and videos they collect in the field to create [media-rich projects](#) (VIDEO 4) that communicate their conclusions.



VIDEO 4: This video was produced by a team of students at Dedham Middle School in Dedham, Maine in an effort to communicate to their School Board that they prefer learning science by doing fieldwork and contributing to a real research effort. - <http://vitalsignsme.org/dedham-looks-didymo>

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Species experts and science professionals engage online to check students' species identifications and evidence, mentor novices, share stories, and recruit participants to collect data specific to their research. This growing database of rigorous species and habitat data is being used by organizations like the Maine Department of Environmental Protection, Maine Forest Service, and the national Early Detection and Distribution Mapping System (EDDMapS).

"My classes have a real purpose. We're on a mission to seek out invasive species on campus and in our communities, monitor these species, and identify the native species on our campus that may be impacted. We have the encouragement of scientists and others who comment on and use our findings. Kids are excited about science class, and so am I." Patrick Parent, Grade 7 Science Teacher, Massabesic Middle School, VS participant since 2009

Involving students in this kind of authentic science learning environment demands a different way of teaching than many educators are used to (National Research Council, 2008). In order for students to participate productively in this science learning environment, the three-person [Vital Signs team](#) (VS team) designs various in-person and online professional development (PD) experiences to scaffold and support Vital Signs' implementation in classrooms and in out-of school settings.

INITIAL PROGRAM DESIGN WITH EDUCATORS

"It was awesome to be part of this development process, and to have played even a small part in making this project a reality for students and educators across the state." Mike Denniston, Grade 7 Science Teacher, Middle School of the Kennebunks, VS advisor and participant since 2008

Vital Signs educator institutes launched in 2008 with 13 middle school educators engaged as collaborators in designing and testing the first Vital Signs website, curriculum, and field protocols. It was an intense and exciting year of meetings, site visits to observe Vital Signs prototypes in action, reflection, and iteration alongside a team of inspired educators and their students.

The first institute engaged this group in a series of online and off-line learning experiences that were the VS team's best guesses at what might excite students, engage them in rigorous science learning, and connect them in meaningful ways with the scientists who wanted their data.

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Educators assumed a student role during each experience. Using a mix of playful reflection and assessment processes, the VS team captured educators' reactions, reflections, ideas, and feedback to inform the next iteration of curriculum, field protocols and resources, and the ultimate design of the online learning environment. The VS team challenged educators to remix their institute activities into ones that would work for their own students, and to experiment and let the VS team know the results.

Educators readily invited the VS team into their classrooms to observe their unique implementations of Vital Signs, and were eager for their students to try out the earliest versions of the online platform. The VS team was pleased to see and hear that none were implementing Vital Signs in exactly the same way, proving it flexible enough to support educators' and students' diverse interests and learning goals. Educators felt challenged by the nature of Vital Signs to teach differently and were energized by their students' positive response. Educators ended the year feeling they had a more powerful way to teach science content, skills, and practices.

While subsequent PD experiences have focused on the implementation and evolution of an existing resource rather than on creating one from scratch, they have maintained the collaborative, participatory spirit of this initial institute that proved so successful for educators and for the larger Vital Signs community.

KEY ELEMENTS OF VITAL SIGNS PROFESSIONAL DEVELOPMENT

The VS team's experience designing PD for educators suggests that successful PD is born of ongoing conversations and shared experiences among educators and program providers, and that it must be embedded within the national conversation around research, standards, and evolving needs.

The VS team considers the following six elements essential to the design of effective PD:

1 Model a participatory learning environment

"I can imagine turning what I experienced today into exciting learning experiences for students. Just like we did, I imagine students in all parts of the watershed exploring the lake environments, and then working together with the community to identify new infestations and prevent their spread." Maggie Shannon, Executive Director, Maine Congress of Lake Associations, VS participant since 2011

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The Vital Signs learning environment and related PD experiences exemplify aspects of participatory culture and participatory learning as defined by Henry Jenkins (2006) and James Bosco (2010), respectively. These include:

- Low barriers to participation, specifically educators' participation in institutes, workshops, and webinars
- Causing purposeful interaction and mentorship among experts and novices
- Allowing individuals and groups to pursue and direct their own learning agendas
- Encouraging participants to construct new knowledge through their engagement with others
- Enabling the production and sharing of data, resources, and creative products of use to others
- Creating a unified environment that connects learning inside and outside of school.

Many of the educators who sign on to Vital Signs are initially unfamiliar with teaching practices that support science learning that is outside, online, and connected to a community of practice. Educators must facilitate teamwork and communication, foster evidence-based reasoning, encourage play, and embrace the messiness of scientific practice. To help educators make these practices familiar, and to help them imagine their students learning science differently, the VS team models for them the learning environment they hope educators will create for their students. Educators are active participants in institutes. They learn by doing, experiencing, contributing, and playing in ways that translate directly into classroom practice.

"Investigations that support student learning require educators who understand how scientific problems evolve, and educators themselves need to have first-hand experiences akin to those they create for their students. Educators must have these experiences, building their knowledge and comfort with science practice in order to create an effective environment for student learning" National Research Council, 2008

During institutes, educators assume a student role, and experience the hands-on classroom, field, and online components of Vital Signs. Activities include playing collaborative invasive species games, building investigation and analysis skills, completing Field Missions together, having evidence-based discussions about data, creating products to share, and engaging in online conversations with the Vital Signs community. The *VS team models the role of the teacher*, employing the best instructional practices that facilitate and guide active, student-directed learning. Practices include motivating and celebrating curiosity, creativity, and sharing, encouraging educators to

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rely on the group's collective expertise to answer questions, and prompting them to reflect on the value of their own learning experience during the institute. Educators see firsthand how to guide learning in an environment where work is active, social, and collaborative, conversations are evidence-based, and results have meaning beyond the classroom.

2 Support and sustain relationships long-term

"Unlike past research I've done with students, this Vital Signs work is really well supported – it doesn't look like it's going away." Patricia Bernhardt, Grade 7 Science Teacher, James Doughty Middle School, VS participant since 2009

For educators, changing practice and incorporating new content takes time and ongoing support. The VS team tries to ease the transition by:

- Equipping and familiarizing educators with the online tools, field equipment (cameras, GPS, quadrats, more!), and curriculum resources they need in order to implement Vital Signs with students
- Supporting educators in collaborating with one another to draft individual Action Plans that detail how they will incorporate Vital Signs into their curriculum.
- Following in-person introductory institutes with webinar series or advanced institutes to refresh and deepen practice. Many educators attend multiple Vital Signs PD offerings.
- Encouraging and being responsive to educators' questions at all hours, and offering ongoing, personalized support to those who need it. The relationships built during the PD process extended far beyond the institute, workshop, or webinar.

The practices that the VS team models and the content they hope educators will implement are research-based and standards-aligned. This empowers those educators who need to justify implementing Vital Signs to colleagues and administrators. Currently, the VS team relies on the motivation and passion of individual educators to implement Vital Signs. Going forward, they plan to include administrators and school boards in the Vital Signs community to ensure institutional, long-term commitment for implementation of Vital Signs.

3 Build community

"You don't understand... I've been teaching for 30 years and never experienced anything like this! It's so refreshing and energizing and helpful to have an ongoing, online connection to educators in Maine who – like me – are motivated and who want their students to learn science this way."
Anonymous survey response, Introductory Teacher Institute 2010

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The focus of Vital Signs PD is as much about building communities of educators who learn together and support one another as it is about gaining comfort with the tools and curriculum. It's not only about the website or the curriculum offered, but also about the community that is created, how the group frames and builds a context for learning, the collaborative nature of the conversation, and how the group experiments and plays with ideas together. Providing a set of shared experiences seems to establish a foundation of community among educators that can be reinforced through future online and in-person engagement with Vital Signs.

Institutes begin with the group generating explicit community norms, establishing a collegial tone that encourages educators to share their expertise and passion, take personal and professional risks, talk through challenges, and inspire one another. This is especially important in an environment where many educators are pushed out of their comfort zones, and where their content and technology knowledge and established teaching practices may be challenged.

The intent is for this professional community to continue sharing, supporting, and feeding itself long after an institute, workshop, or webinar is over. Educators upload their [own curriculum resources](#) and assessment tools, leave comments to share how they [modified activities](#), post their questions and implementation trials and triumphs to forums, and [comment on the projects](#) and observations published by other educators' students. Evidence that educators find value in this statewide community of like-minded, motivated educators includes:

- Educators actively recruit colleagues from in-district and out to join the community
- Experienced Vital Signs educators volunteer as online mentors to those who are just starting
- Educators across the state team up to do investigations and comparison studies
- Educators [seek out the expertise of students](#) who have published projects that they want their students to do
- Educators and students build local communities around their Vital Signs research efforts:

"Next year this same group of kids will be very adept at doing observations and will be able to teach a community lake-monitoring group how to do this along with us." Rhonda Tate, Dedham Elementary School, VS participant since 2011

The VS team encourages educators to build this type of learning community among students in their own classrooms to foster the productive communication and collaboration central to scientific practice and discourse. "The

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most productive classroom environments, in all subject areas, are those that are enriched by talk and argument. It can lead to a deeper engagement with the content under discussion, eliciting surprisingly complex and subject matter-specific reasoning by students who might not ordinarily be considered academically successful” (National Research Council, 2008).

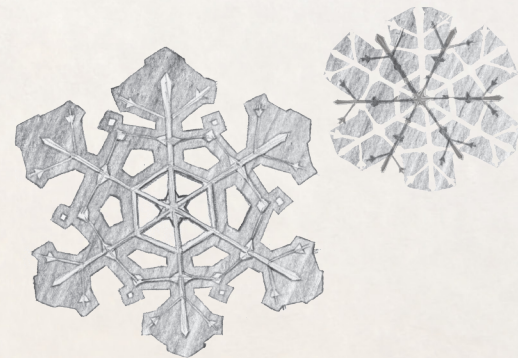
4 Deepen the conversation with pre-institute assignments

“The completion of the pre-institute work was an empowering and positive experience for educators. The opportunity to succeed, or to come to the institute with specific questions, facilitated their engagement.” Sasha Palmquist, Vital Signs Case Study Analysis, Institute for Learning Innovation, 2011

The website and fieldwork protocols were designed to be used by anyone without any prior scientific training. However, educators in the earliest institutes needed more orientation to the online tools than was anticipated. An experiment with pre-institute assignments in 2010 changed this. It let us instantly deepen the conversation from how the tools work to how the tools enable learning. It let experts and mentor relationships emerge naturally. It encouraged participants to drive the conversation towards components about which they were most curious or unsure.

The VS team now sends enrolled educators a [How-To Guide](#), and asks them to do an investigation and put their data on the website before coming to the institute. Educators are encouraged to get as far as they can and note which parts are frustrating and where, if anywhere, they get stuck. The result is a roomful of empowered educators who have either complete or partial success with the Vital Signs field protocols and data entry process. They come to the institute familiar with the website, having navigated to find the resources they needed to do their investigation. They are proud and eager to show off the species observations they published or full of questions about where they got stuck. They are ready to help and be helped by colleagues. They share tricks and stories.

A favorite story is that of Rhonda from Dedham Elementary School, who confessed to “cheating” and having her students do [her institute homework](#) for her. She handed them the guide, took them out into a foot of new snow looking for hemlock trees, and let them work through the data collection and online entry themselves. Hearing Rhonda’s story at the institute, others thought they might let their students figure it out themselves too, and embrace the student-driven nature of Vital Signs from the very beginning.



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Pre- and post-institute assignments have since addressed commenting, posting to forums, and joining forces with colleagues in separate parts of the state to compare and make meaning of data. Knowing where educators are uncomfortable or where they get frustrated with various site components has informed the VS team's resource development, website refinements, and PD offerings.

5 Stay relevant to the education landscape in Maine

"GMRI has made it their business to work collaboratively with the Department of Education to understand, reflect on, and develop valuable science inquiry programming for students and professional development for educators. They are a model for the type of collaboration required to educate and graduate a scientifically literate generation." Anita Bernhardt, Science and Technology Specialist, Maine Department of Education, 2009

Critical to the success of Vital Signs PD is an intimate understanding of the present education landscape in Maine, and an awareness of the opportunities and challenges facing educators. GMRI's involvement in state policy conversations and relationships built with classroom teachers and state education leaders make Vital Signs especially relevant to Maine educators.

The VS team makes sure that the learning activities and units they write help educators meet state and national standards in new, more engaging ways, and that the instructional practices modeled during institutes align with the research on how students best learn science as reported in the National Research Council's reports *Taking Science to School: Learning and Teaching Science in Grades K-8* and *Ready, Set, Science: Putting Research to Work in K-8 Classrooms*.

Secondly, the VS team makes sure educators understand how the standards-aligned Vital Signs curriculum can help them reach the learning goals they have for their students. They help educators understand that Vital Signs can be a more engaging and therefore effective way to teach required standards, not an add-on to an already tight curriculum.

"The goal and challenge of the Maine Learning Technology Initiative's 1:1 laptop program has been to engage students in 'meaningful work.' By connecting middle school classrooms with Vital Signs' active research, educators can now accomplish this goal with style." Jeff Mao, Learning Technology Policy Director, Maine Department of Education, 2009

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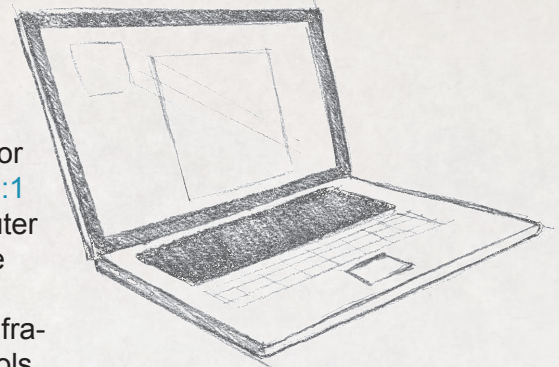
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The online nature of Vital Signs requires that educators have some familiarity with media and online tools, such that they are comfortable mediating online experiences for their tech savvy students. [Maine's 1:1 laptop initiative](#) puts a laptop computer in the hands of all 7th and 8th grade students and educators in the state. Many districts have extended this infrastructure into high schools. All schools and libraries in the state have high speed Internet access. Because of this initiative, most educators who participate in Vital Signs PD are familiar with basic computer functions and getting online. Comfort levels quickly decline, however, when educators are asked to post public comments, upload photos, use online maps and visualization tools, or [create videos](#) (VIDEO 5) and [other digital projects](#). Most are open to learning because they see the value in having their students use digital technologies and media to interact and communicate.



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VIDEO 5: This public service announcement video was made at a summer institute in 2011 by three informal science educators during a 40-minute project challenge - <http://vitalsignsme.org/vital-signs-tools-trade>

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6 Participate in state and national conversations on the future of teaching and learning

"I felt inspired. Vital Signs and Ready, Set, Science! confirmed for me what science teaching ought to be. For once in my career, I am ahead of the game." Anonymous survey response, Introductory Teacher Institute 2010

To ensure that PD experiences prepare educators for teaching and learning in the 21st Century, GMRI seeks out and participates in key state and national conversations influencing the future of science education. With education leaders in the state, GMRI is forwarding the idea of developing a common framework, language, and research base for all science-related PD happening in Maine. Research has found that educators need 80 or more hours of extended PD to change their teaching practice, but few providers can deliver this depth of training (Darling-Hammond et al., 2009). Following the lead of Anita Bernhardt, Maine Department of Education's Science and Technology Specialist, we have aligned our PD to the best practices of science education presented in the National Research Council's *Ready, Set, Science!* The logic behind using *Ready, Set, Science!* as a common framework is that if all PD in science uses common language and ideas, this will allow educators to derive cumulative benefit from PD offerings from diverse providers.

GMRI is also participating on the Maine Science Leadership Team, a group selected to review the draft Next Generation Science Standards being developed from the National Academies of Sciences' publication *A Framework for K-12 Science Education*. There is strong alignment between the teaching practices demanded by participation in Vital Signs and the changes called for by the *Framework*, particularly the new integration of science and engineering practices in addition to content. The *Framework* explicitly calls for significant new PD to support educators shifting their approach to teaching science. Being part of this conversation about evolving PD lets the VS team anticipate change and thoughtfully shift their own practice and curriculum to better serve educators long-term.

ASSESSING AND EVOLVING VITAL SIGNS

Inherent in the Vital Signs PD design process is a continuous cycle of experimentation, reflection, iteration, and evolution rooted in research and experience. No two institutes, workshops, or webinars are the same. During institutes, the VS team listens carefully to conversations, observes behavior and body language, and builds in feedback and reflection mechanisms to gauge the effectiveness of an experience and to get ideas from educators for how to improve their approach. The team works to correlate specific institutes with the subsequent needs and successes of educators and their students,

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including what educators do and do not need follow-up support to implement, input from email conversations, and the quality and nature of the species observations, comments, and projects students publish to the website. The result has been an invaluable series of experiments, and an ongoing dialogue with educators that continues to improve PD, website functionality, curriculum, and online resources. Experiments include:

- **Introductory institutes with follow-on webinar series** that are designed to grow the Vital Signs educator community and to immerse formal and out-of-school educators in basic scientific practice, online data sharing, and best instructional practices.
- **Curriculum-centered institutes** that bring together teams of educators, and vertical, multi-grade science educators from the same school districts to integrate Vital Signs content, skills, and practices across subjects and grades.
- **Institutes for out-of-school educators** that focus on the challenges and opportunities of doing Vital Signs with students in afterschool programs, recreation programs, summer camps, and other out-of-school learning environments.
- **Advanced institutes** that invite educators to do more with data analysis and meaning making, engage more deeply in online communication with experts and peers, and turn results into creative, media rich projects to share online.
- **Community-based workshops** (VIDEO 6) that involve educators, scientists, and citizen scientists from one local community. A subset of each community co-designs and co-delivers institutes and data collection experiences customized to their unique needs and desired use of Vital Signs tools.
- **Institutes that involve Educator Leaders** in the delivery of an Introductory Institute alongside the VS team. After seeing a number of educator mentors emerge organically, the VS team is experimenting with incentivizing and empowering a cohort of exemplary Vital Signs educators who will help grow, sustain, and evolve the Vital Signs learning environment in both formal and out-of-school learning environments.
- **Institutes led by Educator Leaders** that challenge a small team of leaders to work together – with little input from the VS team – to design and deliver multi-day courses that share their own firsthand experiences with Vital Signs.

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VIDEO 6: This video blog post summarizes the experiences of college students, college faculty, educators, and watershed group leaders during a community-based workshop in 2011 - <http://vitalsignsme.org/belgrade-workshop-video-blog>

To further refine PD experiences, the VS team checks with educators after institutes to learn how they implement Vital Signs with their students. Despite best efforts to show how customizable the experience is, educators implementing Vital Signs for the first time tend to do it exactly as they experienced it during an institute. It is not until their second or third time through that they make it their own. Knowing that a PD experience can translate very literally to classroom practice has given us the ability to indirectly shift students' Vital Signs experiences statewide. Most recently, the VS team emphasized the importance of online conversation and caused a noticeable **increase in students commenting** on others' species observations and engaging with experts online. They have similarly improved data quality and data analysis with institute tweaks.

The VS team pays particular attention to what educators remember and value months or even years following a PD experience. Their answers are often markedly different than what was noted on pre-institute surveys. Mention of contact hours for recertification, new curriculum resources, and field equipment is replaced by renewed confidence in their own teaching practice, an appreciation of Vital Signs' educator and scientific communities, satisfaction in how their students are now learning science, and the importance of a well-supported program.

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"I ended this year feeling that my students did some real science. I may not have gotten to all the content or vocabulary, but this is one of the first years in all my years of teaching that I felt like the kids really got their money's worth. I know they enjoyed going outside and all, but many, even some less gifted students really became student scientists. They enjoyed the questions, collecting evidence, figuring things out, right or wrong, and learned a lot in the process. I think several students enjoyed being a scientist so much that there is no turning back for them now. I know that just about all of them will look at the world differently from now on. I know I do." Patrick Parent, Massabesic Middle School, VS participant since 2009

Conclusion

The Vital Signs PD experiences will continue to evolve as participation in the community grows and deepens. We imagine that the key elements detailed above – that first emerged as Vital Signs was co-developed with educators in 2008 and that have served the community so well since – will endure in future iterations:

- Letting educators experience a participatory learning environment, and modeling for them the best instructional practices that enable hands-on, authentic science learning
- Building community and supporting educators' participation long-term through personal connections and institutional support
- Setting educators up to deepen, personalize, and shift conversations to meet their own professional goals
- Staying relevant to the changing education landscape in Maine, including standards, systemic changes, and legislation
- Participating in and shaping Vital Signs in response to conversations about the future of science teaching and learning
- Assessing and iterating quickly and thoughtfully in response to new needs, challenges, and opportunities

While these elements have proven exciting and effective for the Vital Signs community, we imagine they can be applied with similar success across disciplines and in other professional development contexts.

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Vital Signs: Designing for student and teacher participation in a scientific research community

Sarah Morrisseau and Sarah Kirn (CONTINUED)

Acknowledgements:

We would like to thank Christine Voyer for her help with the Vital Signs videos, and Alan Lishness and Jill Harlow for their helpful reviews of this case study.

Sarah Morrisseau joined GMRI's education team in 2005. Her focus is on the evolution of the Vital Signs online learning environment, the design and implementation of professional development experiences for educators, and the development of curriculum, resources, and experiences that support a growing, changing community. Sarah has a background in both research science and science education. She shares GMRI's commitment to integrating the two disciplines in meaningful ways to create authentic, connected science learning experiences.

Sarah Kirn has been the Vital Signs program manager at the Gulf of Maine Research Institute since 2002. Kirn believes that every student deserves exciting experiences with science that let him or her develop rather than lose their natural curiosity. She has overseen the evolution of Vital Signs from its start as a Palm-based pilot in six schools to its current incarnation as a web-based platform serving thousands of students, hundreds of educators, and dozens of scientists. Her credentials include a B.Sc. degree in geology-biology from Brown University, and a M.Sc. degree in oceanography from the University of Maine where she held a NSF GK-12 Teaching Fellowship.

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Professional development opportunities for teachers have the potential to be inspiring and instructive. Unfortunately, many administrators succumb to the latest educational fads when selecting professional development programs. Teachers often approach this type of PD with skepticism, questioning the legitimacy of the so-called educational experts presenting their latest silver bullet solution. Educators may be hesitant to invest themselves in pre-packaged professional development, because they have seen many programs be adopted one year, only to be abandoned for the next popular trend in education. Luckily, not all professional development is painful; innovative scholars and professionals are taking it upon themselves to create participatory, relevant experiences that provide teachers with skills and support to reflect on and refine their craft.

When participating in professional development, teachers respond to programs that establish legitimacy, demonstrate relevance and applicability, and provide ongoing support. This summer, I had the opportunity to participate in two such opportunities: PLAY! (Participatory Learning and You!) and California on my Honor. Both programs provided valuable resources and support, treated teachers as competent professionals, and were structured in a way that allowed for teachers to apply their learning and share their work with one another throughout an entire semester. Furthermore, as a result of my participation in these programs, I developed professional relationships with educators at other schools, who continue to inspire me with their creative ideas and positive energy.

The Summer Sandbox, a week-long professional development program hosted by USC Annenberg Innovation Lab's PLAY!, was an exciting opportunity to work alongside researchers, teachers, and students to develop participatory learning environments in the classroom. This was a professional development unlike any other: we did not sit passively in our chairs, while one person presented information to us; instead, we were active participants and co-creators of the experience. PLAY! brought together teachers with similar passions and interests, who were then able to share ideas and resources with one another. My colleagues taught me, for instance, how to use Dropbox and music videos on Youtube to find supplemental classroom resources. I taught them how to find grants and free travel opportunities on the internet. The workshop facilitators acknowledged that the teacher participants were professionals with useful knowledge and experiences to offer, and encouraged us to collaborate and create new learning opportunities.

The Summer Sandbox reminded teachers of the importance of revitalizing our teaching by infusing elements of play and collaboration into our curriculum. We learned by playing, and by participating in various activities that promoted thought-provoking discussion in creative and innovative ways. Once, we were

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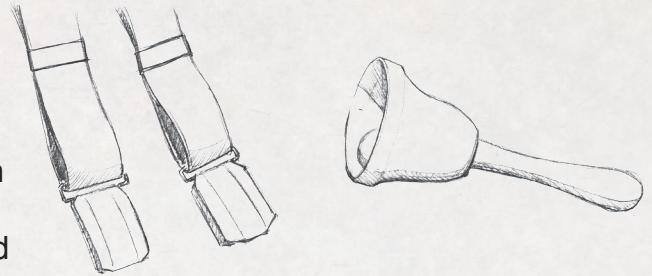
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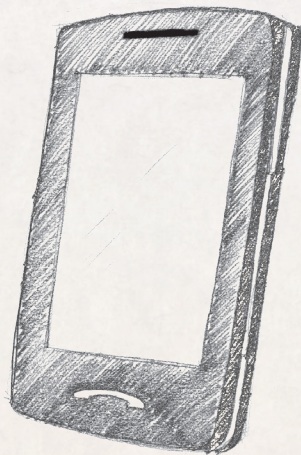
Pain-Free Professional Development

Isabel Morales (CONTINUED)

asked to bring a tool and a toy to the workshop, and were placed in groups with the only instructions being “find a way that you would use these objects in your teaching.” Initially, my group stared at our objects in utter confusion, wondering how we could integrate seemingly random items such as men’s suspenders, a bell, and a framed piece of sand art into a classroom lesson. The exercise forced us to think in an entirely different way, and eventually led to a deep conversation about how each of these items could be used to discuss the strength, influence, and fragility of democracy. My favorite activity was entirely hands-on, and it required us to reimagine our classrooms as a participatory learning space. With the help of my group, I was able to move my classroom furniture around to break away from a traditional classroom setup and create a more vibrant, inviting, and engaging space. The fact that this professional development opportunity provided teachers with activities that were applicable and relevant to our classroom contexts made this an extremely valuable and unique experience.



PLAY! was flexible, and allowed each teacher to voluntarily continue participating and exploring other interests. Summer Sandbox introduced me to a new way of conceptualizing my job as a teacher, and I chose to continue working with PLAY! throughout the semester, participating in workshops that taught me how to embrace animation, video, and mapping technology as learning tools. I learned to incorporate the technology that students love – cell phones, cameras, video and audio recorders, Twitter, Facebook, and blogs – into the curriculum. During a unit on civic participation, students visited wearethe99.tumblr.com and created their own protest statements, taking pictures of themselves and posting them to the [online Playground platform](#). As part of this instructional unit, we went on a field trip to City Hall and the Occupy LA encampment, where students were encouraged to record interviews with protesters and tweet their experiences. This proved to be an engaging and memorable learning experiences for the students, and in projects that they completed six months later, the themes and course content that they had previously explored continued to emerge. By participating in this professional development throughout the semester, I received ongoing support, in the form of one-on-one coaching and monthly workshops, which stands in direct contrast to the more short-term



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“drive-by” PDs. This long-term professional development allowed me to reflect on my teaching practice, develop professional relationships with talented colleagues, and create new learning opportunities for myself and my students.

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1. Students use common hashtags on Twitter to communicate their observations during a field trip to the Occupy LA encampment.
2. Taking a cue from the wearethe99percent Tumblr, students made their own “We are the 99% statements,” and posted them to the online Playground platform.
3. Integrating the skills and content learned in Economics, English, and Play Production, students created artistic canvases spreading awareness of poverty in Los Angeles. They presented their research and artwork at local community centers.

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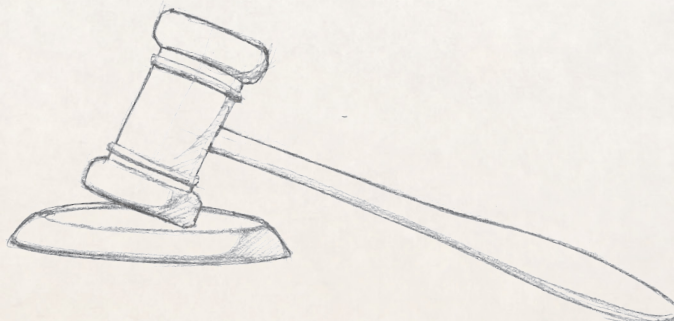
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After our field trip to Occupy LA and City Hall, a student created this video, conveying the ideas he was exposed to during that day - <http://vimeo.com/33079474>

“California on my Honor” was unique in that the project was sponsored by the California court system and California State University San Marcos, but was facilitated entirely by teacher leaders. The project immediately established legitimacy and earned the respect of its participants, as it was run by people currently “in the trenches,” and not by someone who was no longer in the classroom and disconnected from the realities faced by teachers. The program took place in a Southern California court, which allowed us to interact with attorneys and judges on a daily basis, participate in a mock trial, and observe real cases as they were happening. It allowed us to deepen our understanding of civics course content, make connections with other teachers, reflect on our own teaching, and produce curriculum that we would implement within the next couple of months. We were actively engaged the entire time, and rather than being handed a scripted curriculum, we were invited to create our own. Teachers work in a variety of different contexts, with students of diverse backgrounds, academic abilities, and individual interests. For this reason, it is important to allow teachers the freedom to develop and implement a curriculum that is appropriate and responsive to the needs of their students.



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Pain-Free Professional Development

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As we revised our curriculum during the fall semester, teacher leaders made themselves available to review our lesson plans and provide suggestions for improvement. We carried out these new lessons in our classrooms and met again four months later, armed with poster boards and handouts to share the student work that came out of these lesson plans. As we listened to teachers discuss their experiences, we provided one another with support, ideas, and resources for improving our teaching. I had not previously participated in a program that encouraged teachers to revise their curriculum, while also providing support, accountability, and space for reflection and revision. The participants of this program continue to share ideas through their Facebook page, and our newly developed curriculum is hosted on a website for other teachers to use. I appreciated the long-term nature of this professional development, as well as the continued support and space for development of professional relationships.

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In the spirit of creating communities of practice and inquiry, teachers shared curricular units with one another. The process provided critical feedback and inspiration for the teachers involved.

Pain-Free Professional Development

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Professional development should not be painful, nor should it feel like a waste of time to its participants. Just as teachers have been encouraged to move away from the “banking method” of teaching, facilitators of professional development should also move towards a more engaging, participatory model. Both PLAY! and “California on My Honor” provide successful models of professional development that invite teachers to be active co-creators of relevant and creative learning experiences. Administrators and developers of professional development would be wise to follow the example of these successful programs, and should aim to create meaningful, long-term opportunities for teachers to share resources and support one another.

Isabel Morales is a twelfth grade Economics, Government, and Yearbook teacher at Los Angeles High School of the Arts, one of the first pilot schools in LAUSD. She enjoys combining technology, the arts, and course content to create engaging lessons for her students. In an effort to further serve as a role model to low-income students of color, as well as expand her own knowledge base, she is currently pursuing a Ed.D. at USC.

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A Conversation with Anansi: Professional Development as Alternate Reality Gaming and Youth Participatory Action Research

Antero Garcia

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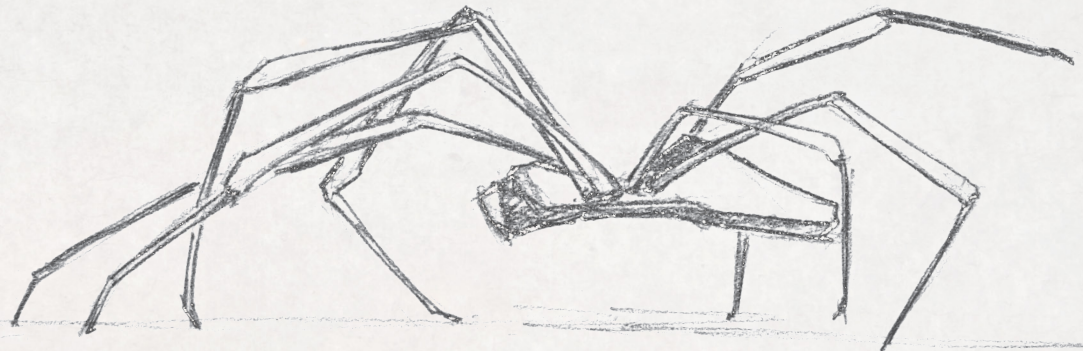
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In early 2012, as a high school teacher interested in integrating Alternative Reality Gaming into the classroom, I sat down and recorded a rare conversation with Anansi the spider. Over cups of tea and biscuits and horseflies, we discussed the game “Ask Anansi,” participatory professional development, the role of storytelling and gameplay within pedagogical development and teacher community building, and ways to sustain this work within public schools.

Ask Anansi is an alternate reality game (ARG); it allows students and teachers to role-play empowered identities to investigate real-world challenges based on classroom curriculum. Piloted in 2011 in a ninth-grade classroom, the premise of the game is one that extends beyond a single age group. In its most basic sense, Ask Anansi works on the premise of challenging students to ask and explore questions of their own design. The principles of storytelling and personal inquiry translate across ages.



Ask Anansi seeks to inform teacher professional development via direct interaction with students and student expertise. This participatory model draws on Salen and Zimmerman’s (2004) definition of Transformative Social Play:

Transformative Social Play forces us to reevaluate a formal understanding of rules as fixed, unambiguous, and omnipotently authoritative. In any kind of transformative play, game structures come into question and are re-shaped by player action. In transformative social play, the mechanisms and effects of these transformations occur on a social level. (p. 475)

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A Conversation with Anansi: Professional Development as Alternate Reality Gaming and Youth Participatory Action Research

Antero Garcia (CONTINUED)

It is important to note that the shift in focus that occurs via transformative social play occurs for both student and teacher. Through teacher collaboration, discussion, and group provocation, teacher PD moves from rote lectures to participatory development. Likewise, Ask Anansi is rooted in Youth Participatory Action Research (YPAR) as a method of shifting teacher PD from adult-driven to adult-facilitated.

There are three main principles that drive YPAR:

1. The collective investigation of a problem,
2. The reliance on indigenous knowledge to better understand that problem, and
3. The desire to take individual and/or collective action to deal with the stated problem. (McIntyre 2000, 128)

By involving students in designing and exploring meaningful learning experiences, YPAR “contributes to a way of thinking about people as researchers, as agents of change, as constructors of knowledge, actively involved in the dialectical process of action and reflection aimed at individual and collective change” (McIntyre, 2000, 148-149). YPAR engenders young people into the process of knowledge development. This PD model compels educators to move from telling to asking: it elicits stories and knowledge from youth in classrooms and is driven by youth interest.

Instead of simply learning the rules of Ask Anansi and attempting to input them into their everyday practice, teachers come to their professional development space with a set of simple topics or guiding questions they would like to use as foundations for inquiry within their classes. For example, suitable entry points for developing a transformative learning experience could include initial questions such as: *How does the Pythagorean theorem affect my daily life?*; *How does conflict impact human decisions?*, or *What are ways that symbolism impact how I read Shakespeare?* The PD, then, becomes less a space for consuming content and a much more generative space: teachers build these questions into a series of areas of inquiry that will be then fleshed out through student expertise.

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A Conversation with Anansi: Professional Development as Alternate Reality Gaming and Youth Participatory Action Research Antero Garcia (CONTINUED)

In the space below, Anansi and I discuss the pragmatics of blending transformative social play with Youth Participatory Action Research as a process for guiding teacher professional development and transforming the learning experiences of young people in schools.

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A clue with a dangling spider containing a QR code lead students to an abandoned classroom space. The experience provokes student and teacher dialogue and research about resources and funding in urban public schools

Antero: Who is Anansi?

Anansi: Me? Well, that's a long story (and I do love stories, as you shall see). While many tales have been spun [about me](#), for now it may be useful to know that I am a West African folklore hero. I often take the shape of a spider (as I do now). And while I encourage you to read of all my trickster tales, perhaps most pertinent to our discussion today is the fact that I own all of the stories you can possibly imagine. Getting me to share them with you, however... now that's another story.

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A Conversation with Anansi: Professional Development as Alternate Reality Gaming and Youth Participatory Action Research

Antero Garcia (CONTINUED)

Antero: I heard one way to get you to share your stories is through an in-school engagement model. What is Ask Anansi?

Anansi: Ask Anansi is a community-centered action alternate reality game. In this game students engage in inquiry-based problem solving by communicating with and helping to unravel the stories they are told by Anansi (that's me!), the trickster spider god of Caribbean folklore.

As the story-wielding spider god, I have answers and solutions to any question students can imagine; and fortunately, these students have recently received a means of communicating with me. Through simple text messages, emails, voicemails, and even disruptions within classroom experiences, students engage in a sustained dialogue with me.

My responses, however, are not always the most clear: I like tricks, riddles, and befuddlement. As a result, students will require critical literacy skills to unravel the web of my hints and instructions. Some clues are found outside the walls of the classroom and may appear as posters, barcodes, or phone calls. Once a question is asked, it cannot be unasked, and I am known to grow impatient with small children that do nothing but waste my time by not solving my puzzles - who knows what would happen to their teacher or their classroom materials if they dawdle...

Each Anansi question will take group effort to "answer." However, be careful. I am never satisfied with simply finding the answers to the many questions students ask; I often require that students work towards solving the challenges they discover. And while Ask Anansi operates within a fictitious narrative and the students (correctly) assume that their teacher embodies the Anansi-persona when communicating with them via text messages and emails, the gaming environment allows students to act, question, and engage in simultaneously critical and playful inquiry. Though the main product of this game is one of problem-posing critical thinking and civic participation, the goal of the game is one based in the alternate reality game's fiction: they must satisfy the insatiable need of Anansi for a good story.

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Students searched for hidden clues in and around their school to begin an inquiry into self-generated research topics. (Do you see me?)

Antero: It would really help me if you could show me what the Ask Anansi goals look like in a hypothetical setting...

Anansi: Here goes: Ask Anansi's goal is to guide students toward collective inquiry around a negotiated topic and civic engagement in addressing underlying causes of these topics. For example, a class may investigate why the food at their school is so unpopular. Through research about nutrition, budgeting, and distribution of food as well as qualitative surveying and ethnographic analysis of student perceptions of school food, students may determine that a lack of variety due to budget and contracting constraints as well as a social perception that the food is "bad" is detracting from students receiving adequate nutrition during the day. Next, students may determine that a course of action is to begin developing a coalition of concerned parents and students, speak at school board meetings, and even stage a cafeteria sit-in. Students will reflect on their efforts, discuss changes they have made, and record these steps in text messages, video, and mapping applications on mobile devices.

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Though the main product of this game is one of problem-posing, critical thinking and civic participation, the goal of the game is one based in the ARG's fiction: they must satisfy my insatiable need for a good story. Asking me a question seems innocuous. The game's initial premise of asking a simple question has significant repercussions: I will not simply provide an answer; I will trick, confound, and tease students. My messages are often shrouded as riddles, QR codes, or even latitude and longitude coordinates that need to be determined and then visited. Like the media messages that students are challenged to critically assess, my dialogue with students is one that challenges concerns of power, dominance, and agency in a capitalist environment. As students gain more information, my responses become more demanding. Students regularly talk and blog about their experiences. I may hack or edit their information in an effort to further a good story.

Once students have completed initial research and analysis, I tell them that they have the pieces of a great story but they need to now weave them into action; students need to begin working toward a course of action around the information they have received. Collective action and models of engagement are examined by the class and a strategic plan is developed and enacted.

In good nature, I confess at the end of the game to having tricked the students in places with my difficult clues. I suggest the students recruit others to continue the story they have weaved together. After all, I am here to remind players: a story never really ends; we may continue to tell of what happens until the next series of adventures.

Antero: This sounds like an enriching classroom activity, but how does it differ from more "conventional" models of PD?

Anansi: For teachers, this is really an opportunity to do a couple of things: it allows them to expand their practice beyond the walls of their classroom and to encourage student expertise to guide the work that occurs. However, to get to this kind of activity, the PD is really a space for teachers to shift from roles as experts to co-constructors of knowledge. The PD is about getting teachers to create spaces for young people to ask questions. To do that, teachers need to first be in a space to ask themselves questions as a peer-network. The same way you and I are in dialogue with sustained focus on a given topic, teachers will need to explore their pedagogical goals and look at this journey as one to construct pedagogically.

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Students utilize principles of storytelling to question their environment and begin narrating a counter-narrative about the space they inhabit.

Antero: And how exactly do you get teachers to start allowing students to ask questions?

Anansi: Funny you should ask, since you seem to be doing a fine job asking questions here. From my experience as a storyteller and a community rabble-rouser, I've found that people start engaging when they have specific roles to play and spaces within which to ask questions. This Q&A conceit, for example, is bounded by superficial constraints that limit us to discussion about participatory professional development. If your role as the questioner were unbounded we would be talking about favorite pizza toppings and Russian literature. However, by mutually agreeing that we will focus on the topic of participatory PD and my role in an ARG, we move toward ever more specific learning contexts (It's pepperoni and Tolstoy, BTW.)

**A Conversation with Anansi:
Professional Development as Alternate Reality Gaming and
Youth Participatory Action Research**
Antero Garcia (CONTINUED)

In engaging teachers in an Alternate Reality Gaming model of instruction, Ask Anansi seeks to move student and teacher interactions toward a model of mutual investigation. It is an iterative Youth Participatory Action Research (YPAR) engine. By asking students and teachers to collaboratively develop a research question and using the fiction of communicating with me, students are encouraged to explore and review their community while teachers engage students as co-researchers through a process of media production and play. This is also mirrored in the participatory PD. Though teachers may not feel it necessary to communicate with me, the PD essentially models the student experience: it is generative through question-driven inquiry.



Ask Anansi provokes students to explore traditional power structures within their school.

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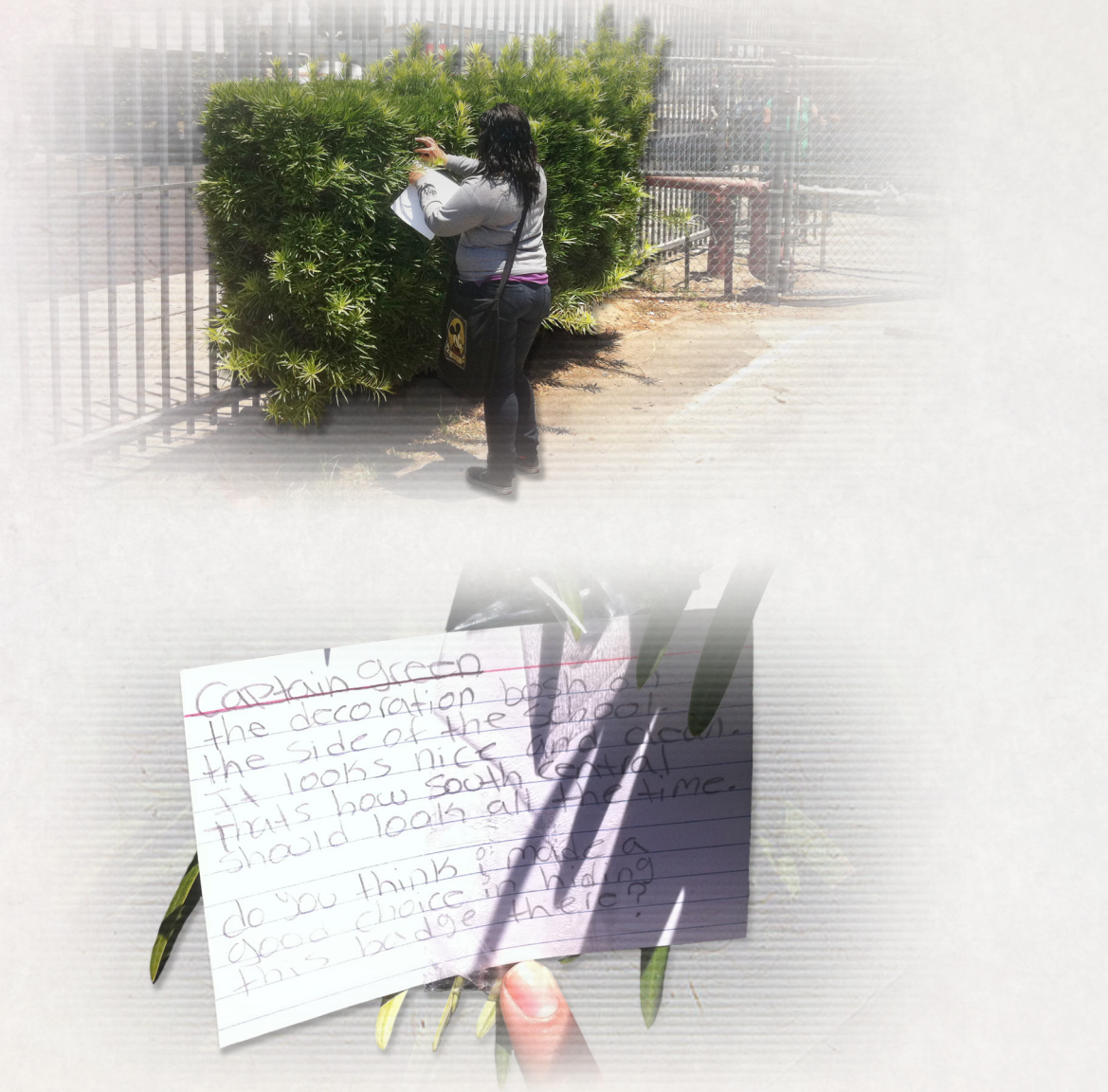
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A student questions publicly why there is only one green plant at her school, "Captain Green."

Antero: So this seems like a very different kind of experience for teacher and student alike.

Anansi: Absolutely. One thing I should point out is that, just as teachers - through this PD experience - shift their roles from distributors of knowledge to facilitators of student-constructed knowledge, students, too, shift identities. In particular, I highly recommend allowing students to take on various roles to help them ease into the process of inquiry that Ask Anansi creates. Assigned

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role shifts (even temporarily) help move students toward tangible research results and build ownership on specific components of the work within the classroom (some samples of ways students were given roles can be seen [here](#)).

Antero: I think I'm still not clear how all of this stuff happening in individual classrooms has anything to do with teacher PD and building teacher communities.

Anansi: Imagine for a second that the professional development that teachers have been encountering for eons (at least in spider years) no longer exists. Instead, teachers walk into a space that is collaboratively productive; they take turns posing questions and engaging in dialogue with each other. Structurally, during a school's designated PD time, teachers spend the first 15-20 minutes independently developing a curricular or thematic question related to their content. With them, the teachers bring instructional materials, topics, and texts that they intend to develop lessons for. Next each teacher's question is briefly workshopped: they verbally share inquiry questions around which their instructional time could be centered. The remainder of the PD is focused on refinement of questions and teachers working in pairs and small groups to further develop their instructional plans.

For a multidisciplinary space, one can imagine the questions will mimic student questions – the science teacher may not understand the principles the art teacher is hoping to teach and questions, thus, are reductive to the pith of necessary student understanding. What happens in this PD space is that teachers co-construct a series of question-based objectives for their individual classrooms. They do this through engagement and provocation from their peers. In this way, each teacher develops a model that meets the nuanced contexts of their classroom communities and they build a stronger relational component to their PD experience. By yielding ownership over the PD space to teachers and to participatory experiences, school administrators ensure a greater attention is placed on student needs and a stronger network of knowledge production amongst the teaching staff.

Antero: Okay, I'm willing to try this with a group of teachers at my school, but how do you actually go about implementing and then sustaining this project?

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Anansi: As briefly mentioned above, implementation of this participatory PD is simply a process of restructuring PD time toward teacher-driven inquiry that leads to student-driven inquiry: if teachers are meeting weekly or bi-weekly, this time is structured for first independent development of Socratic questioning and then a workshop space to solicit feedback from multidisciplinary perspectives.

The long-term sustainability of Ask Anansi relies on teacher and administrator collaboration. This game does not mandate a specific textbook, daily practice exam drills, or other components of a standardized-testing climate. Instead, authentic learning experiences are drawn from the community around students in ways that provoke standards-supporting ELA instruction. This moves teacher PD beyond the climate of high-stakes testing.

Question: You are one smart spider! I-

Anansi: Thank you.

Question: I was wondering... even though you are saying most of this work will be constructed by teachers within their PD, do you have some, um, worksheet models to help us get the ball rolling?

Anansi: I suppose I would allow you to take a look... samples can be found [here](#). Now if you'll excuse me, on the count of three, I will disappear and the creepy omniscient third person will take my place to wrap things up (I assure you this is a painless process for me).

One... Two... **THREE!**

While Ask Anansi is playful in tone, the PD experience for teachers is purposefully driven to create spaces for adult and student growth. Ask Anansi guides learning through a model I call, Inform, Perform, Transform:

Inform - Students gather, analyze, and collate information in order to produce their own, original work.

Perform - Utilizing the knowledge and information acquired through their informational inquiries, students produce/perform new work that is tied to a larger critical, conceptual, and/or academic goal.

Transform - Extending their performance toward publicly shared knowledge and action, students focus on directly impacting and critically transforming their world.

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In using the alternate reality gaming fiction as a tool for transformative social play, teacher-targeted PD experiences should help educators collaboratively identify ways Anansi, as a character, will drive engagement: How will Anansi, as an outside agent, help provoke, move content forward, and drive students toward understanding and content mastery? While the products that students create and analyze speak to the transformative power of gaming, these activities function within this larger pedagogy of transformative social play. At its heart, Ask Anansi is an opportunity to reposition the relational component of the classroom community through purposeful play, storytelling, and interest-driven research.

Antero Garcia is an assistant professor in the English department at Colorado State University. Currently, he is conducting research on spatial literacies, mobile media devices, and computational thinking within English Language Arts K-12 classrooms. Antero received his Ph.D. in 2012 at the University of California, Los Angeles. Before moving to Colorado, he was an English teacher in South Central Los Angeles for eight years. Antero's research addresses technology, educational equity, and critical media literacy. Updates about his work can be found on his blog, www.theamericancrawl.com.

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PLAY! (PARTICIPATORY LEARNING AND YOU!)

Over the past year, our team at the [Annenberg Innovation Lab](#) at the [University of Southern California](#) has pursued a multi-faceted research project that we refer to as **PLAY!**. The word **PLAY!** is not only an acronym for **Participatory Learning and You!** but also represents our appreciation of the value of the new media literacy *play* in the educational process. As educators are pressured to ruthlessly focus on teaching to the test, play is too often left by the wayside.

Our goal is to foster a more participatory culture of learning in which every young person has the skills, access, knowledge, and support they need in order to meaningfully participate in the new media landscape. Such a culture supports the learner not only in school, but throughout the learning ecosystem, and builds capacity for self-directed, ongoing growth. Play is an important vehicle for bringing about this cultural shift.

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What is participatory culture? - <http://vimeo.com/33121279>

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Play challenges teachers to create a classroom culture where both they and their students feel safe to experiment creatively and fail productively. In formal education settings, many teachers have mixed feelings about embracing this risk. For students, *play* might invoke fears of personal failure; for teachers, *play* means letting go of prescribed outcomes. *Play* is often perceived as “being off-task,” an activity whose end is “frivolous fun.” We have learned, however, that with permission to experiment and discover through playful learning – fears, resistances, and misunderstandings quickly dissolve. Consequently, students’ levels of engagement, self-confidence, skill proficiency, and knowledge retention increase, and teachers’ needs for participation in a robust learning community are met.

PARTICIPATORY DESIGN FOR PROFESSIONAL DEVELOPMENT

Informal learning contexts often facilitate youths’ acquisition of valuable skills and experiences, yet access to these sites varies widely. Whereas the digital divide focuses on the unequal access to technologies, the “participation gap” is concerned with “the unequal access to the opportunities, experiences, skills, and knowledge that will prepare youth for full participation in the world of tomorrow” (Jenkins, Purushotma, Clinton, Weigel & Robison, 2006, p. 3). Schools and libraries may be best situated to provide students with more egalitarian access to these opportunities. So how do we achieve that? PLAY!’s answer was to work directly with teachers, modeling what participatory pedagogy can look like when integrated across grades and subject areas. Thus, PLAY! developed a two-part professional development pilot for Los Angeles Unified School District (LAUSD) educators of grades 6-12: The Summer Sandbox and PLAYing Outside the Box, which ran consecutively from July to December 2011.

THE SUMMER SANDBOX

The Summer Sandbox was designed as an intensive one-week professional development (PD) workshop geared toward collaborative exploration of participatory learning. PLAY! hoped that, by experiencing the rewards of a participatory learning environment first-hand, participants would go on to explore PLAY!'s pedagogy more deeply in their own classrooms and schools. Twenty-one educators from 17 schools and a multitude of disciplines, including social studies, physical education, life sciences and special education, completed the program.

In terms of technology, The Summer Sandbox modeled various digital media tools and resources such as wikis, blogs, video-sharing sites, online presentation and design software, mobile devices, mobile apps, and the PLAYground - PLAY!'s free, online platform for the curation, creation and circulation of user-generated learning activities. The PD also modeled the productive use of non-digital media and technology, such as analog art and writing tools (see Figures 1 and 2), board games, face-to-face conversation, and personal artifacts. This approach emphasized the philosophy that technologies should be judged in context, according to their capacity to help learners meet learning goals. No single technology, whether high tech (e.g., Wikipedia), low tech (e.g., CD-roms), or no tech (e.g., role-play), is an unqualified boon. Additionally, PLAY! facilitators refused to assume the position of expert by unilaterally teaching participants any given technology. They challenged participants instead to reflect on their discrete lesson's learning goals, identify tools that might help meet those goals, search for and locate those tools, learn how to use them through play, and incorporate or reject according to the tools' potential. When time permitted, facilitators also sat down beside participants and joined them as co-learners in the process of pursuit and discovery.

Accordingly, The Summer Sandbox's curriculum included hands-on activities, individual and small group challenges, community partners' resource presentations, critical dialogues, expert sharing sessions, and curriculum construction. Participants also engaged in exploration and remix on the PLAYground.

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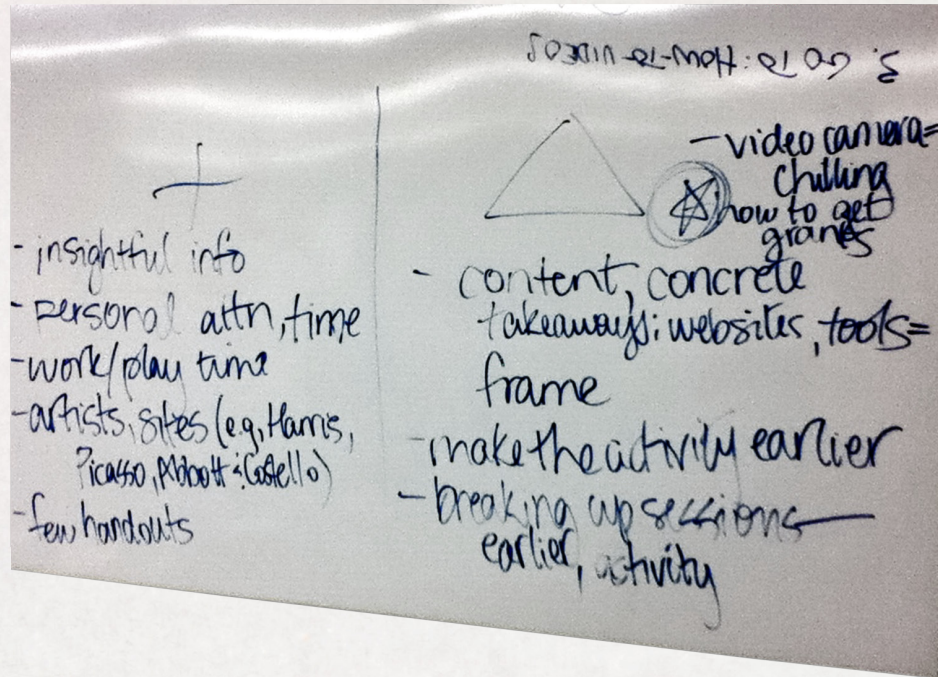


Figure 2. On a daily basis, participants were also welcomed to declare which parts of the session were working for them and which parts could benefit from retooling.

Collectively, these experiences were designed to provide participants with opportunities to:

- Showcase identity;
- Build capacity and community;
- Gain familiarity with new media literacy skills, social and emotional learning skills, and participatory learning;
- Meaningfully integrate new technology practices that heighten engagement in learning;
- Evaluate how well their classrooms support participatory learning;
- Rethink curriculum design to incorporate participatory learning practices;
- Reflect on pedagogy and offer feedback to others in face-to-face and mediated contexts; and
- Have fun!

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For management of curricula and communication, The Summer Sandbox relied upon its PLAY! [wiki](#). This space for asynchronous reflection and democratic sharing was intended to increase ownership of and participation in the PD experience.

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On their applications for The Summer Sandbox, teachers stated their goals for participating. Some included boosting student engagement, incorporating more technology into their teaching, and connecting with like-minded peers.

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“I hope to learn innovating [sic] strategies that will enhance my lessons, which will challenge my students to become 21st Century learners. In addition, I hope to develop relationships with fellow colleagues and form a partnership with neighboring schools and organizations.” –Participating teacher

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Several teachers also hoped to increase both the relevance of curricular materials and their own self-efficacy vis-a-vis technology.

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“I am looking to expand my own knowledge and understanding of using technology as a critical learning and instructional medium. I would like to learn new ways to design relevant lessons and projects for my students.” –Participating teacher

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Very few educators mentioned the effectiveness of harnessing media from popular culture to help students access core concepts. Far more identified the utility of high-tech media, such as digital presentation tools, for this purpose:

“I enjoy using media in my daily classroom instruction. Images, video clips and music helps students to open their imaginations. The students learn best when their imaginations allow them to connect music, lyrics, for example, to the history content I communicate to them” – Participating Teacher

However, immediately after the week-long PD, these teachers perceived drastically different ways to meet their educational goals, shifting from technocentrism to participatory design and play:

“After this week, I realize that while there is some equipment I will likely purchase to help me implement my fledgling plans – the discussion as to the social, cultural, and political implications of using images, accessing information, and presenting information sort of made it quite urgent that my teaching from now on is informed by these discussions.

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For example, many of my students already own iPod Touch units, so after this week, it seems imperative that I give them an opportunity to actually use them for learning. ... My future goals are to prime the pump with things like the 54-second video, and creating a Challenge for my kids to use in class, and start a Wiki about what they are currently learning, but to hand over the control of the content to them.” – Participating Teacher

Karl, a physical education teacher who initially just wanted to find activities for his students to do on rainy days, concluded by realizing his passion for learning through games. Middle-school educators Katie and Natalie entered with the aspiration to better grasp media literacy concepts and left with the resolve to incorporate new media literacies (NMLs) into their curricula. Most participants also designed no, low and high tech activities to critically examine media products' potentials and/or creatively incorporate social networking. For example, U.S. history teacher Nancy planned for her students to adopt the identities of various Founding Fathers and compose digital or analog Tweets espousing their perspectives.



Teachers reflect on their experiences during the last day of the intensive week-long Summer Sandbox.- <http://vimeo.com/30071237>

PLAYING OUTSIDE THE BOX

In order to sustain The Summer Sandbox graduates' implementation of participatory learning, PLAY! offered a PD extension called PLAYing Outside the Box (POTB). Its structure was even less prescriptive than that of the relatively malleable five-day immersion. POTB was conceptualized more as a service than a seminar, intended to scaffold and support participants' self-directed efforts. This personalizable design reflects innovation in PD best practice. According to education expert Dr. Linda Darling-Hammond (2006), "...[P]rograms must help teachers develop the disposition to continue to seek answers to difficult problems of teaching and learning and the skills to learn *from* practice (and from their colleagues) as well as to learn *for* practice" (p. 304).

In addition to a second LAUSD salary point and \$1000 stipend, participants also benefited from tailored, one-on-one mentoring; continued access to like-minded communities of practice; and outlets for demonstration of and reflection on experiments in curriculum and pedagogy. Approximately half of The Summer Sandbox graduates enrolled in POTB. These 10 educators hailed from 10 different schools, located up to 20 miles apart, that served student populations whose socioeconomic and developmental profiles varied considerably.

POTB utilized a research approach that values co-constructed knowledge-building through collaboration, known as Participatory Action Research (PAR). PAR is an iterative cycle of planning, action and reflection, with regular re-evaluation over time.

PLAYing Outside the Box's curriculum consisted of the following elements:

Reading: [Confronting the Challenges of Participatory Culture: Media Education for the 21st Century](#) (Jenkins et al., 2006) was the only "required" reading. Prior to the PD, none of the participants had read this conceptual springboard for PLAY!.

Discussion: In order to share and expand on PLAY!'s concepts and practices in context, participants were encouraged to utilize the PLAY! wiki, the PLAYground platform, [VoiceThread](#) and [Vimeo](#).

PLAY On! Workshops: Participants could choose to participate in at least one of three [PLAY On! programs](#) held after-school and/or on Saturdays. These diverse programs offered no, low, and high tech means to experiment with *civic engagement through storytelling* (see Figures 3 and 4).

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Figure 3. Teachers mark and annotate their schools' neighborhoods in Los Angeles during a Departures Youth Voices session



Figure 4. An English teacher draws animation frames with AnimAction during a Saturday workshop

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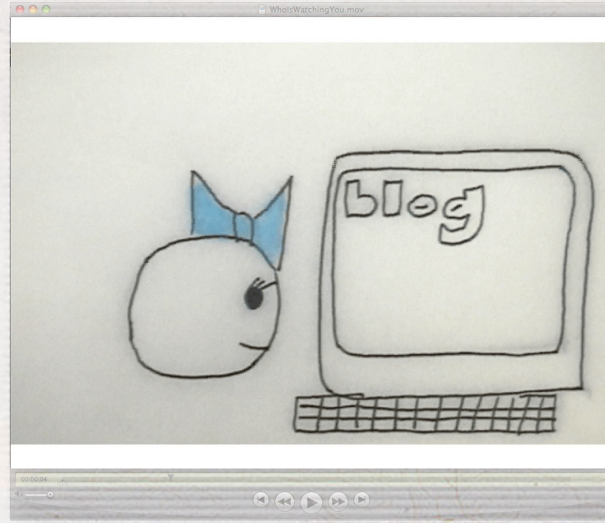


Figure 5. Video still from teachers' AnimAction project about online participation

Coaching: POTB offered ongoing, one-on-one mentorship to all participants. This support was intended to help educators realize the goals they had set during The Summer Sandbox, as well as facilitate their efforts' long-term sustainability. Participants reported increased self-confidence and self-efficacy, and appreciated their mentor's instrumental and emotional support as they experimented with new tools and pedagogical approaches.



Figure 6. Examples of no tech and low tech ways of using Twitter.

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U.S. Government teacher Nancy believed in “meeting students where they’re at with what they’re already doing,” and so designed this opportunity to creatively assess her students’ knowledge about historical figures.

Video Reflection: Watching oneself on video and receiving supportive, critical feedback from peers and coaches supports teachers’ active knowledge construction and sense of self-efficacy (Goker, 2005; Pickering, 2003). Classrooms are complex contextual environments; to make sense of these spaces, repeated viewings of video logs and reflections are crucial (Kinzer & Risko, 1998). Thus, participants in POTB videotaped themselves leading an activity in their classroom and uploaded these videos to a private space on Vimeo. They also videotaped and uploaded a post-activity reflection. POTB peers and PLAY! facilitators viewed these videos and offered feedback via comments.



Isabel's lesson: Congressional Soccer, American Government and Economics, Grade 12 - <http://vimeo.com/33052302>



Isabel reflects on her own lesson - <http://vimeo.com/3305283>

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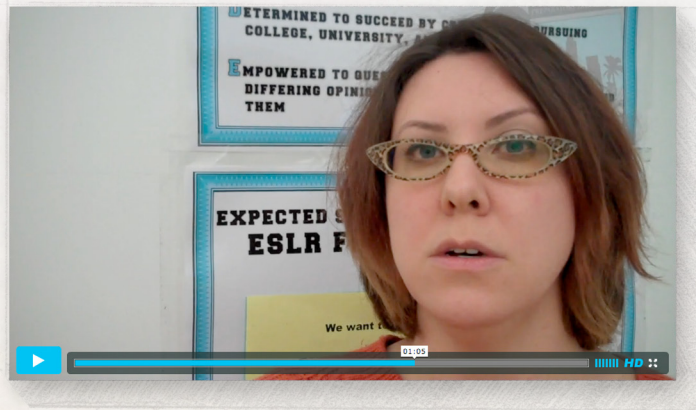
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Transmedia Play: The PLAYground is an open-content, open-knowledge online system that encourages both adults and youth to discover, learn and teach each other. The PLAYground uses “Challenges,” or non-linear, trans-media lessons and activities, to encourage learning through play (see Figure 6). Teachers in POTB informed the PLAYground’s current design by using the platform during its alpha phase and sharing usability feedback in focus groups.



Figure 6. Student-created Challenge for Helen’s English class



Helen reflects on using the PLAYground with students in English class - <http://vimeo.com/32107741>

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PLAY! Retreat: POTB participants met for one last session to share classroom experiences, reflect on personal growth, identify challenges, discuss sustainability, and plan for next steps.

PARTICIPANT REFLECTIONS

Facilitators utilized a reflection technique called Most Significant Change (MSC; Davies & Dart, 2005). MSC asks participants to describe their personal experiences of program-produced change and articulate “the significance of the story from their point of view” (Davies & Dart, 2005, p. 26). ([Link to this activity’s protocol here.](#))

While each participant’s experience was unique, three key themes emerged across all the stories: surrendering some classroom control in order to honor students’ self-directed learning and creativity; embracing technology and digital media even in the absence of personal expertise/mastery; and valuing process over product – that is, escaping the tyranny of perfection. Literacy coach Natalie titled her MSC account “Becoming Tech Savvy.” Natalie introduced a unit called “Voices for Change” in which students researched, wrote, filmed, and edited public service announcements on issues of their choosing.

“Being able to acquire the skills to use different digital tools... being able to navigate various issues that came up... It empowered me, made me feel more confident as an educator in the 21st century because, while I assume that my students know a lot, on the other hand, they don’t, and yet they are very familiar with a lot of what social media is and how it’s what engages them, and so now I feel more equipped to make my instruction relevant to them.”

“It [the PD] inspired me to think about what kind of things do I want to change...I would encourage as many teachers to just keep an open mind, to be willing to make mistakes, to be willing to have fun, know that not everything’s going to work out perfectly, but that’s okay, it’s going to help you to become more proficient.”

High school government and economics teacher Isabel dubbed her story “Giving Voice to the Youth.”

“For me the most significant change was ... I’ve definitely integrated it [technology] into pretty much every project. In the past I was worried that I didn’t have all the skills necessary to teach them things or we [school] didn’t have all the equipment or they [students] didn’t have it at home. But I thought, this year, let’s just go for it. And I was open to students participating in whatever way they could.”

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Subsequently, she modified her curriculum extensively, introducing a project in which students visited the Occupy L.A. encampment and created a PLAY-ground Challenge to share out their learning (see Figure 7).

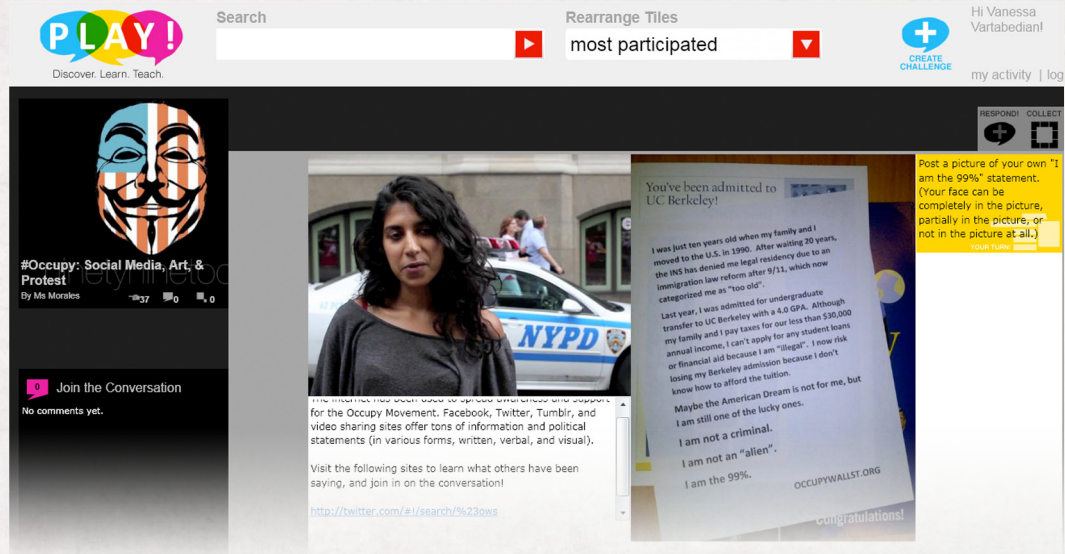


Figure 7. "#Occupy: Social Media, Art and Protest" Challenge created by Isabel, a high school government and economics teacher

Continued Isabel:

"Our kids have made songs. They've made videos. They've done stuff online. And I actually think they've learned a lot. This is the first year that, after a unit is over, students come back to it and they're like, 'Oh, Miss, did you hear that this happened with Occupy L.A. or on a Facebook page?' They'll just post videos and news stories about it and talk about it. And I'm like, 'Well, that's cool.'"

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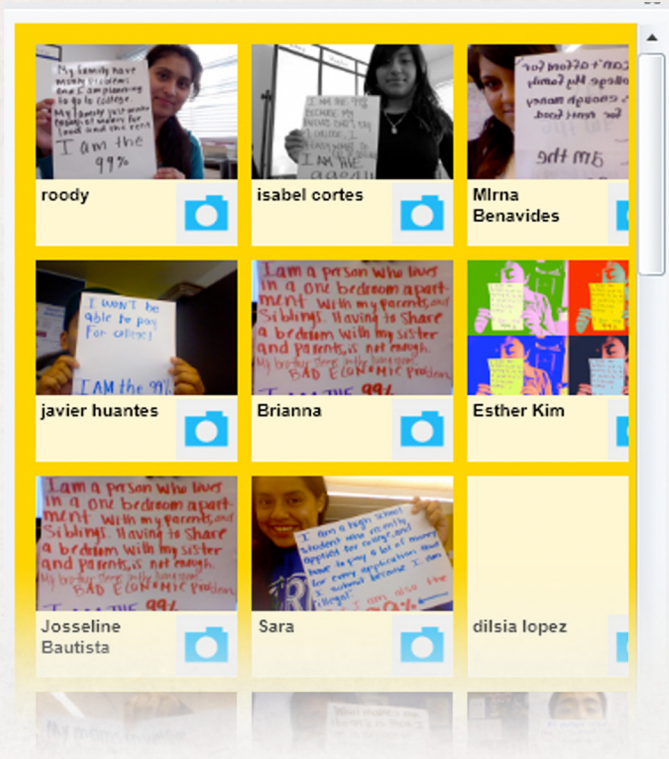


Figure 8. Isabel's government and economics students' "I am the 99%" statements, posted as "Your Turn" responses to the "#Occupy: Social Media, Art and Protest" Challenge

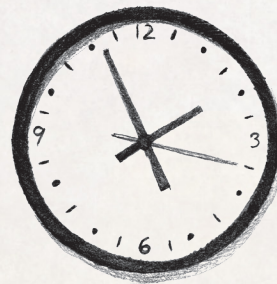
A classroom viewing of the Chinese documentary *Please Vote for Me* also ignited Isabel's students' curiosity.

"I think that this year my students have definitely gotten more engaged with the world. They said, 'Can we have our own election?' I was like, 'Well, I wasn't planning on it, but okay, let's do it...' And in there I integrated things about campaigning and media, and so we became a class congress, and so they're learning how bills get passed but by doing it themselves...It has involved letting go, and just being very, very experimental. And being okay with it if it's not perfect. But," Isabel smiled, "I think we're having a really good experience."

SUSTAINABILITY

Despite these dedicated educators' passion, several issues still challenge comprehensive and long-term sustainability of PLAY!-related practices and networks. When queried as to the type of support that educators require in order to variously incorporate digital media, learning through play, participatory learning, and new media literacies into their classrooms, educators' responses cohered around three categories: curricular support, e.g., online support community, lesson plans, models, and examples; personal support, e.g., administrator buy-in, professional development/training, peers' endorsement, and classroom assistance; and financial support, e.g., funds for materials.

Broadly, teachers need time. They need paid time outside of the classroom to develop curricula and assessments, seek inspiration and reflect on experiences, and engage in mentor relationships (both as teachers and as students). Teachers and students also need more free time inside of the classroom to build community and culture, explore new processes and pursue emergent opportunities, and ensure that formal schooling doesn't prevent true education. When these aforementioned activities are conducted socially as opposed to individually, embedded within and supported by a community of practice, then their richness increases (Lave & Wenger, 1991).



Additional sustainability challenges include:

- Firewalls and Internet filters commonly installed on school networks that deny users' access to social networking, gaming, and other sites in which rich collective experiences can be enjoyed. According to Jenkins, this effectively "strips the [Internet's] collective intelligence of [its] diversity," thereby reducing its potential and diminishing its value (cited in Long, 2008);
- Inadequate digital technology at school (related to difficulty in booking lab space and equipment, or simply not having such resources at all);

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- Equity/access differentials related to digital technology use out of school due to families' various income levels and purchasing decisions;
- Lack of administrator buy-in (to the point of forbidding the use of mobile devices); and
- Lack of co-teachers' support (who often become annoyed with students using mobile devices in their classes and so threaten confiscation).

Although PLAY! facilitators frequently modeled the use of the wiki and participants posted to the wiki during the PD's tenure, neither the space nor the practice has been taken up. Because POTB educators are so spread out across the sprawling district, they are unlikely to bump into one another regularly or even randomly. Thus absent from both virtual and physical common grounds, POTB graduates risk losing touch.

Such a fate would be an anathema to Ziyi, who declared at the program's concluding retreat, "I really need us to somehow continue. Because not many people in the district are doing this kind of stuff and it's difficult to get a group together that's doing just creative things like everybody else is doing... I just need the opportunity and a place and time for us to have future gatherings like this. Because I've gotten a lot out of it and just to see what other people are doing is really inspirational and it gives me ideas about what I could do on my own classroom. So I need more. Please don't let it stop."

*As the Coordinator of PLAY!, **Vanessa Vartabedian** plays an integral part of developing, implementing and assessing new models of participatory learning through PLAY! action-research methods at USC's Annenberg Innovation Lab. PLAY! projects include after-school programs for students and professional development with teachers in Los Angeles. Vanessa's background is in theatre, film and education. She is the producer and director of several award-winning short films, founder of Tidal Theatre Company in New York/Cape Cod and holds a BFA in Theater from NYU's Tisch School of the Arts.*

***Laurel Felt**, the Research Assistant for PLAY!, is a doctoral candidate at USC's Annenberg School for Communication & Journalism, focusing on nurturing youths' social and emotional competence and meaningful communication. With PLAY!, Laurel developed pedagogy, wrote curricula, taught programs, designed research, and analyzed data. Currently, she co-chairs USC Impact Games; consults with Laughter for a Change, GameDesk; and develops curriculum for USC Joint Education Project, USC Shoah Foundation Institute. Laurel received her B.S. from Northwestern University and M.A. from Tufts University.*

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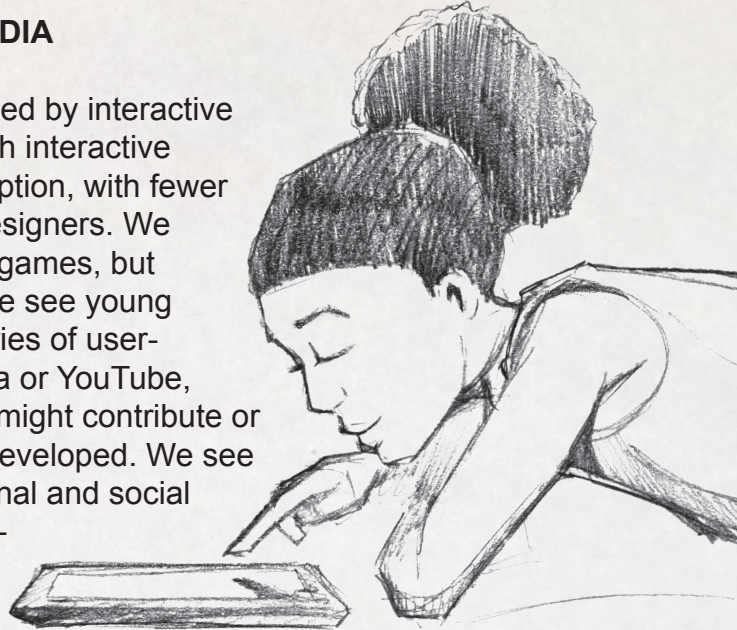
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ScratchEd: Developing support for educators as designers

Karen Brennan

DESIGNING INTERACTIVE MEDIA

Most young people are surrounded by interactive media. But their engagement with interactive media is often limited to consumption, with fewer opportunities to participate as designers. We see young people playing video games, but not creating their own games. We see young people accessing large repositories of user-generated content, like Wikipedia or YouTube, but not understanding how they might contribute or how new repositories might be developed. We see young people contributing personal and social information to services like Facebook, but without knowing how the infrastructure is (or might be) designed to support control over that information. Young people are readers of computational culture, but are mostly unable to participate as writers of computational culture.



There is an increasing sense of urgency that everyone should be able to participate as writers of computational culture. This need has been expressed by a variety of sources, including computer science education researchers (e.g. Guzdial & Forte, 2005), literary theorists (e.g. Hayles, 2005), and government agencies (e.g. Chopra, 2012), and stems, in part, from a concern that unless we understand how to actively participate in computational culture, we risk being controlled by it:

Everyday life is increasingly regulated by complex technologies that most people neither understand nor believe they can do much to influence. The very technologies they create to control their life environment paradoxically can become a constraining force that, in turn, controls how they think and behave. (Bandura, 2001, p.17)

In order to support young people's development as designers, not just consumers, of interactive media, they need access to tools and community. To this end, the Lifelong Kindergarten research group at the MIT Media Lab, with support from the National Science Foundation, has developed a programming environment, called Scratch, that enables young people to create their own computational media – interactive stories, games, animations, and simulations – and share their creations online. The Scratch website

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(<http://scratch.mit.edu>), launched in May 2007, has become an active online community, with more than a million registered members sharing, discussing, and remixing projects (Resnick et al., 2009). There are more than 2.5 million projects on the Scratch website, and each day members (mostly ages 8 to 16) upload approximately 2500 new Scratch projects to the website – on average, two new projects every minute. The collection of projects is incredibly diverse: interactive newsletters, science simulations, virtual tours, animated dance contests, interactive tutorials, and many others, all programmed with Scratch's graphical programming blocks.

Scratch follows in the constructionist tradition – an approach to learning that emphasizes the importance of constructing, building, making, and designing as ways of knowing, “that knowledge is not simply transmitted from teacher to student, but actively constructed by the mind of the learner. Children don't get ideas; they make ideas” (Kafai & Resnick, 1996, p. 1). This builds on constructivist assumptions that learning does not happen through a process of transfer or acquisition, but rather that it is a process of a learner constructing new models and understandings that are connected to the learner's existing structures and models (Duffy & Cunningham, 1996; Scardamalia & Bereiter, 1991).

Constructionism is grounded in the belief that the most effective learning experiences grow out of the active construction of all types of things, particularly things that are personally or socially meaningful (Bruckman, 2006; Papert, 1980), that are developed through interactions with others (Papert, 1980; Rogoff, 1994), and that support thinking about one's own thinking (Kolodner, 2003; Papert, 1980). These four aspects of constructionism – learning through the activities of *designing*, *personalizing*, *sharing*, and *reflecting* – are key activities of young people participating as designers of interactive media with Scratch.

TEACHER RESOURCES

Much of the early use of Scratch took place in homes and after-school settings, and many of the initial participants came from home environments that encouraged and supported creative explorations with technology. But in recent years, a growing number of schools have started to include Scratch in classroom activities. The adoption of Scratch in schools is essential for broadening and diversifying the community of young people who are participating as computational creators, moving beyond early adopters and connecting opportunities for learning across informal and formal settings.

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To further the inclusion of Scratch in schools, we ask: *what support do teachers need in order to facilitate young people's development as creators of interactive media, and engage them in activities of designing, personalizing, sharing, and reflecting?*

Scratch is used in a variety of settings – across disciplines, from computing studies to language arts to science to visual arts, and across ages, from kindergarten to college – and by educators who have varying levels of familiarity with Scratch and computational creation. In order to support this diverse range of disciplines, audiences, and experience levels, a variety of professional development opportunities have been designed that educators can access in multiple ways.

The ScratchEd professional development model involves several key components. First, there is an online community for educators working with or interested in Scratch, called ScratchEd (<http://scratched.media.mit.edu>). More than 5000 educators have joined ScratchEd in the first two and a half years since its launch in August 2009, and educators have shared hundreds of stories and resources, as well as asked and answered thousands of questions. To accompany the ScratchEd online community activities, there are face-to-face and online gatherings where teachers can gain a deeper understanding of Scratch and constructionist approaches to learning; these include monthly introductory workshops for educators new to Scratch, meetups for educators with some Scratch experiences, and webinars that are recorded and shared on ScratchEd. Finally, there are resources for teachers to use when introducing Scratch to students and when conducting workshops for their colleagues. For example, a curriculum guide for Scratch was released in September 2011, and was downloaded more than 16,000 times in the four months following its release. Accessing and exploring these resources is made as easy as possible by connecting announcements to other channels, such as email, Twitter, and Facebook.

The role that teachers occupy in their professional development is a central consideration for designing support and activities. Many professional development opportunities treat teachers as consumers, neglecting fundamental understandings about how people learn, as evidenced by language like “teacher training.” As Papert (1993) argued,

Although the name is not what is most important about this concept, it is curious that the phrase “teacher training” comes trippingly off the tongues of people who would be horrified at the suggestion that teachers are being trained to “train” children. (p. 70)

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For designers of professional development opportunities, teachers must be respected as learners. Teachers need to be treated as designers of learning environments, not merely agents enacting a vision, following a prescription for pedagogy. Teachers need to be treated as co-designers of their learning experiences in professional development. The ScratchEd approach is to create opportunities for teachers to engage in the same *designing, personalizing, sharing, and reflecting* activities that are essential for young people as designers of interactive media.

DESIGNING, PERSONALIZING, SHARING, REFLECTING

Designing, personalizing, sharing, and reflecting are integrated in all aspects of the ScratchEd approach to teacher professional development – from the design of the online community, to the face-to-face and virtual gatherings, to the resources. For the remainder of this case study, we use the monthly meetups (which are attended primarily by K-12 classroom educators) as one example of how these activities are supported in our professional development.

The monthly meetups began in December 2010. They emerged as a “next-step” space, after several years of hosting introductory Scratch workshops for hundreds of Scratch educators, as a way for educators interested in Scratch to connect with their peers, learn more about working with Scratch in a classroom setting, and share their experiences. The meetups are three hours in duration, take place on Saturday mornings at the MIT Media Lab, and are structured into three parts. Part one involves networking and introductions, in which people get to know each other – or given the number of repeat attendees – to get caught up. Part two consists of self-organized breakout sessions. The group (which ranges in size from 10 to 40 people) collectively negotiates different tracks of learning, focus, and activity, and then breaks out into smaller groups to pursue those interests. Part three, which occurs over lunch, involves reporting out from the breakout groups, sharing experiences in a Show & Tell format, and general group updates.

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Designing

At a recent meetup, the group had just finished the networking activity, and it was time to organize the activities for the rest of the session. "OK," one of the meetup hosts said to the group, "this is always the most chaotic time of the meetup. What suggestions do people have for what they'd like to achieve today?" People started to call out suggestions: "I want to learn how to use the pen blocks!", "Can someone help me understand variables?", "How are costumes different from sprites?", "I developed an assessment that I'd like some feedback on.", "Oh, that reminds me of a resource that I found and wanted to share and get reactions from the group." Julie, an educator who has attended numerous meetups, volunteered to lead – in collaboration with Sarah, another meetup regular – a session combining several of the suggestions that were focused on learning more about how to create with Scratch. They developed a breakout group that supported participants' explorations with Scratch through a design challenge of building a project given a particular constraint. While this subgroup met and worked on Scratch projects, another subgroup discussed strategies for helping kids get started with Scratch, and one person spent time planning an upcoming workshop he was hosting for his colleagues.

In the context of Scratch, teachers act as designers at multiple levels. They are designers of computational media (like their students) and designers of learning environments (for their students). The meetups serve as a space to support both of these activities.

As designers of computational media, teachers often want to learn more about particular features of Scratch (as in the vignette above) or develop strategies for making projects. Teachers vary in their experience with Scratch, and in how comfortable they feel with their own level of experience. Some teachers are unwilling to work with Scratch until they have attained what they feel is a reasonable level of mastery. Other teachers feel more comfortable with the (ideally) open-ended nature of Scratch design activities, and see their role less as the "one who knows" and more as the "one who helps." As Margaret, a high-school art teacher said about the role of an educator who works with Scratch:

It would be good if the teacher feels that they can say, "Well, I don't know." Because there's no way you're going to be able to answer all [your students'] questions. I don't know how to do some things, but I feel OK as long as I can sort of know where to get help.

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As designers of learning environments, teachers often share their lesson and unit plans with each other, comparing their strategies for designing learning environments – how much structure to provide, what roles people play in the environment, and which resources to make available. The meetup itself becomes an exercise in the design of learning environments, with the teachers participating as co-designers of their professional development experience. The ScratchEd team, which hosts the professional development, provides an outline (day, time, 3-part structure), a place, and food, but the teachers fill in the details, designing learning experiences for themselves and their colleagues.

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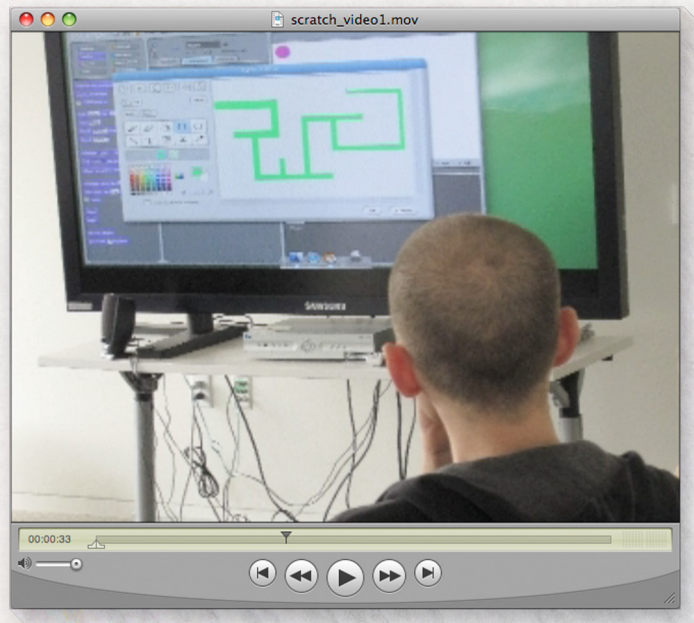
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Designing: Pac-Man Fever - <http://vimeo.com/36922504>

Personalizing

In a breakout session about assessing Scratch projects, Theresa (an educator who runs an after-school Scratch club for middle-schoolers) suggested that the group look at a Scratch project rubric for middle-school students she had found on the ScratchEd website. Carter, who was using Scratch with his 7th-grade math students, liked the rubric, but said that he would need to add dimensions to the rubric that covered content – the mathematical concepts he was interested in weren't covered. Julie, who was using Scratch with 10th-grade computer science students, also liked the rubric, but said that she would need to modify it to include more advanced computer science concepts

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and practices. Inez, who was currently working with 2nd-grade students, liked the rubric, but couldn't imagine her students using it for self-assessment – the language was too sophisticated, and her students weren't fluent writers yet. Some of Carter's students also struggled with writing, he said, and the group brainstormed ways of dealing with that particular challenge. Adrien, a research intern with the ScratchEd project, wondered if having the kids record audio responses to the rubric prompts (instead of text) would be a good approach. Carter didn't think that would work with his students because he didn't have access to good microphones, but Inez was inspired. That month, Inez experimented with having her 2nd-graders record their project development reflections.

Scratch's ability to fit into a wide variety of settings attracts a diverse array of teachers. Although introductory workshop activities are usually structured in a way that keeps the learners pursuing a collective learning goal, meetups are structured to provide participants with opportunities to define and pursue learning goals that suit their individual contexts. Meetups are not one-size-fits-all, offering multiple pathways and engaging the diversity of participant perspectives. This diversity often leads to new ideas and inspiration, through the process of looking across ages and across curricular areas. Personalization is further supported by providing access to resources that educators can remix and customize. All of the resources that the ScratchEd team develops are shared via the ScratchEd online community and are Creative Commons licensed.

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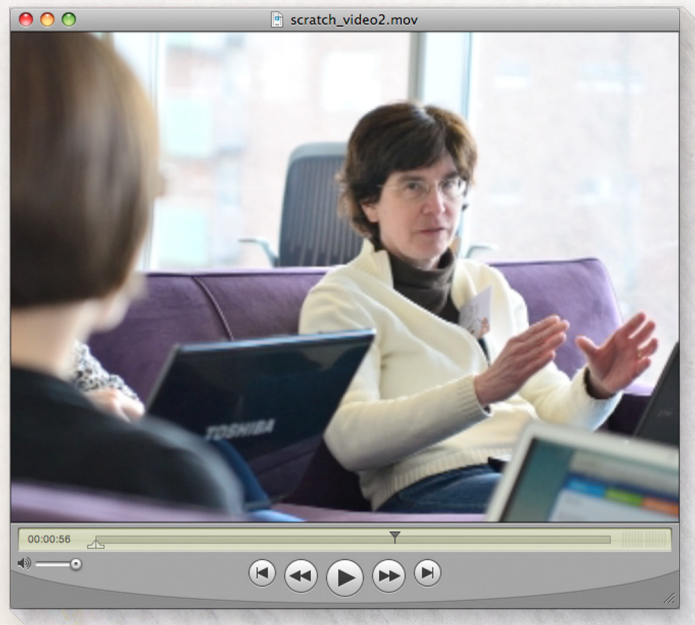
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Personalizing: Different Perspectives, Different Pathways - <http://vimeo.com/36925488>

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Sharing

Twelve people signed up for the Show & Tell component of the meetup. Jessica shared a project that one of her students had created and asked for feedback from the group. Robert presented an activity to support his students' explorations of the Cartesian coordinate system with Scratch. Laura described how she worked with a music teacher to record her students singing and how the students incorporated the mp3s into Scratch projects. Jackie catalyzed the group of teachers by talking about her experiences working with the Scratch online community, which many teachers feel they are unable to bring into their classrooms. Drawing on her experiences as an English major, Jackie argued that it was essential for students to share their work with each other and the world. She talked about some of the challenges that she faced, and how she dealt with those challenges. She told the group, "My middle-schoolers are mostly inspired by the feedback they get from their peers and the gratification they get from sharing their projects in such a public way." Some of the teachers who had been unwilling to experiment with the website were inspired by Jackie's story and followed up with her for further conversation.

Members of the MIT Scratch Team attend the meetups to learn about educators' experiences and to offer support and guidance: technical advice, project ideas, resource connections. But teachers offer a different and important form of support and guidance, with greater legitimacy when talking about Scratch in the classroom. The power of personal testimonials from fellow teachers has supported great learning moments for meetup participants, which is why the Show & Tell component is a part of every meetup. Teachers get ideas from each other, find collaborators, and cultivate confidence to experiment and try new things. The more than 50 recorded Show & Tell videos are some of the most popular resources in the ScratchEd online community, and have been viewed thousands of times.

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Sharing: Learning Together - <http://vimeo.com/36923067>

Reflecting

“Let’s start today,” one of the meetup facilitators said, “with reflections on the past month.” Handing out red, yellow, and green sticky notes, the facilitator asked everyone to write down something that they felt great about (the green), something that they felt ambivalent about (the yellow), and something that they felt not-so-great about (the red) in their teaching practices. The room fell silent as people thought about the red, yellow, and green of their month. After a few minutes, people shared some of the successes and challenges they had experienced. The red, yellow, and green reflections served as a basis for designing the rest of the meetup, identifying areas of group expertise, as well as areas for further development.

Reflection – the process of stepping back, assessing what is known and what is to be known – is often neglected in the hectic activities of a busy educator’s teaching practice. Teachers need opportunities to reflect on their practice, to talk about their successes and challenges, to get feedback and fresh perspectives on their experiences, and to be asked questions about their ideas. The meetup structure is designed to include multiple points of reflection: reflecting on one’s teaching practice (as illustrated by the preceding vignette), reflecting on one’s learning experiences in the breakout sessions (through reflective reporting over lunch), and reflecting on the meetup itself (through exit notes and ScratchEd forum posts).

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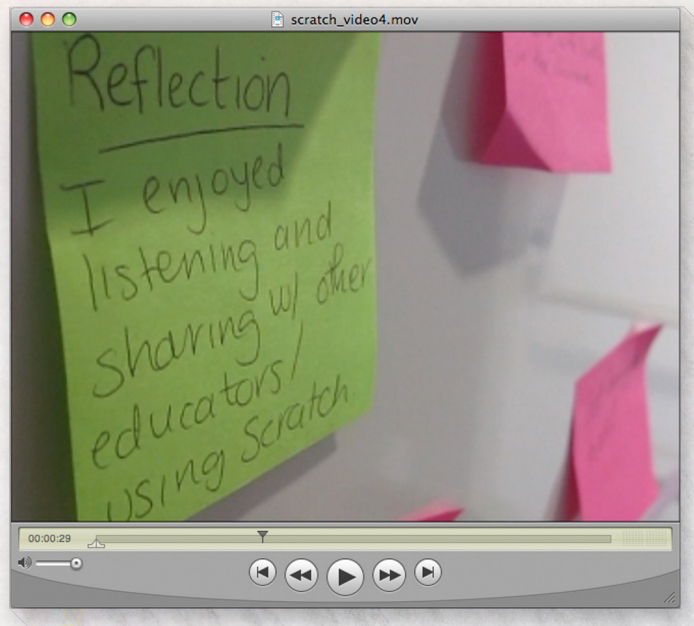
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Reflecting: On Learning - <http://vimeo.com/36932572>

DESIGNING FOR DESIGNERS

To broaden participation in computational creation with a tool like Scratch, its inclusion in school-based activities needs to be supported. Teachers are powerful collaborators in working toward this goal and the ScratchEd team has been studying how to support teachers – creating spaces of learning, exploration, and opportunity that respect teachers as learners and designers. These spaces are co-developed by researchers and teachers following the same design principles that are advocated for young designers of computational media:

- **Designing:** Teachers need opportunities that treat them as designers of learning environments – ideally supported by involving participants as co-designers of their own professional development experiences.
- **Personalizing:** Teachers come from a variety of settings and need to make connections to their personal interests and contexts.
- **Sharing:** Teachers need to hear from other teachers about their experiences. Shared, first-hand experiences have greater authenticity and legitimacy than experiences communicated by someone outside of that lived experience.
- **Reflecting:** Teachers need opportunities to critically reflect on their methods in order to assess where they are and where they would like to be.

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Working within a co-designed or participatory model of professional development presents challenges. There is, for example, always a tension between promoting ideas about how Scratch might ideally be used, and connecting with educators' needs and approaches. In early meetups, there was also some confusion about the meetup model – it represented an approach quite different from the professional development that most educators are accustomed to. Over time, educators are taking greater ownership of the meetup space, as a regular format for the meetups is cultivated and the culture of trust and risk-taking required for this type of learning is developed.

These professional development activities are assessed through observation of – and conversations about – what teachers are doing and saying. *Are teachers designing, personalizing, sharing, and reflecting? Are teachers returning to participate in the collaborative, co-constructed space? Are teachers learning more about Scratch, making connections to new ideas and to each other, and sharing their experiences?* Most importantly, however, is the degree of iteration. Success is when teachers are able to be iterative in their practice, trying new things based on something they learned at a previous session. Success is when members of the group, as a professional development collective, are iterative in these co-designed opportunities and structures – taking the best of previous meetups, making connections between the different professional development opportunities, and designing new learning experiences together.

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Karen Brennan is a PhD candidate at the MIT Media Lab, a member of the Scratch Team, and leads the ScratchEd project. Her research is primarily concerned with the ways in which learning communities support computational creators. More concretely, her work focuses on Scratch and the Scratch educator community, studying how participation in the Scratch online community and how professional development for educators can support young people as creators of computational media.

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Participatory Assessment for Participatory Teaching and Learning in School Contexts

Daniel T. Hickey and Rebecca C. Itow

We agree with widespread concerns that schools must change to reflect the increasingly networked world (U.S. Department of Education, 2010). But we believe that many current efforts to define and assess “21st Century Skills” are misguided (e.g., Partnership for 21st Century Skills, 2007) because they reframe interactive digital networking practices as decontextualized skills, while ignoring the importance of multi-modal writing in authentic networked contexts (see Brandt, 2005). We also believe that societies will continue to standardize conventional academic knowledge and hold teachers and schools accountable for it. By “conventional” we are referring to knowledge of reading, writing, math, and the various domains that Gee (2004) characterizes as “academic varieties of language and thinking.”

This paper describes the collaborative design of curricular modules that embrace newer “participatory” theories of learning and assessment. These modules reframe the relatively static knowledge outlined in the U.S. Common Core State Standards as more dynamic interactive practices. By including networked open educational resources in these modules, classrooms learn to learn in the digital knowledge networks of the future; by including carefully constructed classroom assessments, teachers learn how to indirectly (but consistently) ensure that each student takes away enduring understanding (Wiggins & McTighe, 2005) of targeted “conceptual tools.” By bracketing modules with conventional achievement tests, researchers can document achievement impact and document improvement over time. Importantly, this approach obtains and documents achievement impact without ever reducing the content knowledge in the standards or the interactive knowledge practices to isolated associations that might appear on an achievement test.

DIGITAL NETWORKS, PARTICIPATORY LEARNING, AND SCHOOLS

The shift to participatory teaching and learning will be a daunting transformation for many schools and teachers. Conventional views of learning and teaching have left teachers and students most comfortable with structured activities that present well-defined content that successful students can confidently reproduce on classroom assessments. And teachers are increasingly pressured to directly increase scores on standardized achievement tests, which often leads to dreary test prep and “interim” assessments. The crush of heavy teaching loads limit the informal sharing and mentoring that most other professionals take for granted, and which facilitated prior transformations in most other information-based industries.

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This transformation must reflect the cultural practices that new networked technologies foster (Jenkins et al., 2006). It will require teachers to think about what it means to know and (therefore) learn in new ways. We agree with Brown and Adler (2008) that so-called “situative” theories of learning (e.g., Greeno et al., 1998) are essential for understanding how knowledge is created, shared, and learned in new knowledge networks and participatory cultures. From these perspectives, the contexts in which academic knowledge is used are a fundamental part of that knowledge. Rather than just examples and illustrations to help students understand concepts and practice skills, the contexts-of-use give those concepts and skills their meaning.

More than most other information-based professionals, teachers’ work is fundamentally defined by their assumptions about knowing and learning. Adjusting one’s thinking and practice to reflect these newer theories of learning may be uncomfortable for many teachers. While we think that new assessment is essential for transforming schooling, new assessment practices must be embedded in curricular resources that are immediately useful if teachers are to experience them in a meaningful way.

So far in our work we have focused on developing curricular resources and assessments in close collaboration with a few select teachers. Generally speaking, we believe that such resources should

- Foster participatory learning of new digital media practices while supporting whatever conventional literacies, numeracies, and academic knowledge that teachers are accountable for;
- Be usable with modest levels of professional development and prevailing levels of student network access;
- Be less laborious than existing resources.

PRIOR COLLABORATION AND PARTICIPATORY ASSESSMENT DESIGN PRINCIPLES

This research was initiated in 2008 as collaboration between a University-based team of assessment specialists, Project New Media Literacies, and one gifted English Language Arts (ELA) teacher. As elaborated in Hickey, McWilliams, and Honeyford (2011), this collaboration used emerging sociocultural approaches to informal and formal classroom assessments for Project NML’s *Teacher’s Strategy Guide*. These assessments structured increasingly formal activities, where the initial activities are more informal and participatory, while the later activities are more formal and conventional. The assessments help students and teachers see how academic knowledge takes on different

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meaning in different contexts. The assessments provide a dynamic balance of summative and formative feedback. This feedback was used to shape (1) the classroom's social learning of the shared literary practices, (2) each student's individual learning of the underlying concepts and skills, (3) the teacher's learning to enact and refine the module, and then (4) the researcher's learning about the module's impact on achievement. This collaboration yielded a more fully articulated approach to assessment that is introduced in this paper.

The approach that emerged from these earlier efforts is called *participatory assessment*. This approach assumes that assessment is the key for transforming teaching because assessment forces tacit assumptions about knowing and learning to the surface. This approach is inspired by new situative views of assessment that assume a much broader view of learning than conventional behavioral and cognitive theories (Gee, 2003; Greeno & Gresalfi, 2008). As such, they lead to a much broader view of what counts as "assessment" (Hickey & Anderson, 2007). This broader view blurs the distinction between "instruction" & "assessment" and argues that all learning involves assessment. This broader view also blurs the widely-held distinction between "summative assessment" (i.e., assessment *of* learning) and "formative assessment" (assessment *for* learning). Crucially for our wider goals, participatory approaches to assessment highlight the broader "transformative" functions of assessment. This view of "assessment as learning" assumes that assessment practices can and do create entirely new learning ecosystems. This new assessment-driven ecosystem for participatory learning presents the teacher professional development goals and challenges that are the focus of this paper.

At the start of the more recent collaboration to be described in this paper, the participatory assessment approach was organized around four general assessment design principles.

Let contexts give meaning to concepts and skills. This means fostering increasingly sophisticated, communal discourse around valued concepts and skills by considering how this knowledge gets its meaning from the contexts in which it is used.

Assess reflections rather than artifacts. This means protecting participation by not directly evaluating the artifacts that students create in assignments or projects.

Downplay classroom assessments. This means protecting engagement by using formal (i.e., on demand) assessments primarily for assessing and improving the curriculum (rather than students' knowledge).

Isolate achievement tests. This means protecting curricula by using external tests primarily to assess the impact of the curriculum-assessment ecosystem on conventional academic knowledge.

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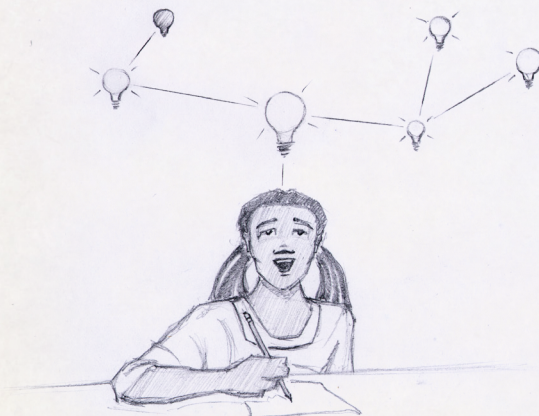
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Reflecting contemporary design based research (DBR) methods (e.g., Kali, 2006), these general principles are transformed into more specific principles by designing specific features in particular instructional contexts. As such, our approach to professional development so far has been intensive collaboration with a handful of select teachers to carry out this transformation.

Our approach to participatory professional development has been shaped by what Penuel, Fishman, Cheng, & Sabelli (2011) labeled *design-based implementation research* (DBIR). DBIR highlights the crucial role of teacher-collaborators and classroom implementations. Through iterative refinement of the modules, we are producing a coherent set of resources whose features embody specific design principles across a range of topics and activities. By involving teachers in the process, we also create resources that real teachers can use in real classrooms. We are collecting evidence of achievement gains using rigorous designs and methods primarily to show that participatory learning can impact achievement. We are also using achievement measures to track increased impact as we go forward.

Our approach to professional development also draws from studies of the way new ideas “spread” in some digital networks and “die” in others (Jenkins, Ford, & Green, 2012). We think of the curricula we develop and the principles they embody as “spreadable educational practices” (Hickey, 2010) which can and should be adapted and refined for particular contexts.



This notion of spread is directly reflected in our collaborations with teachers. For example, researchers and teachers work together to write reflections embedded in the modules, which are carefully worded and sequenced to help teachers see learning in terms of “trajectories” of participation (Lave & Wenger, 1991). These reflections anchor discussions of abstract concepts and isolated skills to more concrete contexts. This gives struggling students sufficient experience with the curricular context to participate meaningfully in more advanced and more abstract conversations. This also discourages

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students from attempting to memorize concepts that they are unprepared to understand, or mindlessly practicing isolated skills in order to reproduce them on a classroom assessment.

EXPANDED GOALS FOR TEACHER PROFESSIONAL DEVELOPMENT

A 2009 federal grant for dozens of netbook computers provided an opportunity to expand the earlier collaboration to roughly a dozen high school language arts teachers in two area school systems. We expanded beyond implementing and refining Project NML's modules to creating new modules using participatory assessment. Some of these collaborations were more successful than others. In particular, some of the teachers wanted to incorporate our new curricular resources and features into very traditional instruction. These teachers were more inclined to treat participation as another set of concepts and skills for them to teach alongside the existing content. As such, they generally resisted our efforts to transform their existing curriculum or implement new modules in ways that would "invite participation." Generally speaking, it was clear that the underlying goals of our approach were still too tacit and needed to be made more explicit if more teachers were to take up our approach more readily.

Our observations pointed to specific goals that needed to be more explicitly represented in our professional development efforts. For example, our first participatory assessment design principle (*let contexts give meaning to concepts and skills*) encourages classrooms to look beyond concepts and skills to their contexts-of-use. This is intended to generate shared contextual knowledge that is relevant to learning more abstract concepts. Our strategy is to support knowledgeable participation in discourse around the *appropriate uses of concepts* and skills in particular contexts. The goal here is helping teachers appreciate that this shared contextual knowledge develops more easily (and naturally) because it is informal and concrete, whereas the concepts and skills are formal and abstract. But we found that some teachers had a tendency to explain appropriate and inappropriate uses well before many students had enough experience to comprehend what the teachers meant. This suggested that one of our professional development goals was providing more useful examples of this "context x concept" discourse and convincing them to give students experiences using concepts in contexts, rather than teaching students about those concepts.

Another set of professional development goals concerned three very specific types of participatory reflections that had emerged in the prior studies: *consequential engagement* ("what were the consequences of this concept

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in this context?”), *critical engagement* (“was this a good context for learning this concept?”) and *collaborative engagement* (“how were your classmates’ contexts helpful for learning this concept?”). In the prior studies, these had proven quite useful for fostering participation in shared discourse that would indirectly foster conceptual understanding and overall achievement. The elaboration of the first participatory assessment design principle (*foster increasingly sophisticated communal discourse*) emphasizes that students need to first encounter very informal (i.e., conversational) versions of these reflections when activities are being introduced. This prepares students for semi-formal (written but ungraded) versions of those same questions once the activity is under way. We observed that some teachers would phrase the informal reflections as “known answer” questions. Not surprisingly, rather than engaging in interactive discourse, these students tended to respond with the “answers” to the reflections, which they would then simply restate for the semi-formal reflections. We also observed that other teachers would allow more experienced students to quickly take the informal reflections into very abstract characterizations of the concepts that were meaningless and overwhelming to the less experienced students. This inspired a much clearer articulation of the discursive goals of the reflections for subsequent teachers.

The formal (written and graded) reflections that students would complete once the activity was completed are embodied in our second participatory assessment design principle (*assess reflections rather than artifacts*). The related professional development challenge that emerged was convincing teachers that students must *have* or *develop* enduring understanding (Wiggins & McTighe, 2005) of targeted concepts and skills in order to write coherent consequential, critical, and collaborative reflections about their artifacts. While this principle did not come “naturally” to any of the collaborating teachers, some of them quickly saw the advantages of not directly grading artifacts or performances. But some of the other teachers resisted, suggesting much more work was needed in this regard.

Our most important professional development goal was helping teachers appreciate how the curricular features across levels of learning work together to serve the broader transformative goals. Less-formal participation at one level is “protected” by the more formal participation at the next level. More specifically, the third and fourth participatory assessment principles highlight the way that formal classroom assessments can more directly assess enduring understanding of concepts than student-created artifacts or performances. The specific challenge here is convincing teachers that the discourse fostered by artifact reflections can *and likely will* leave behind the understanding and fluency that classroom assessments can more readily capture. Likewise, we need to convince teachers that it is our job as designers and researchers to

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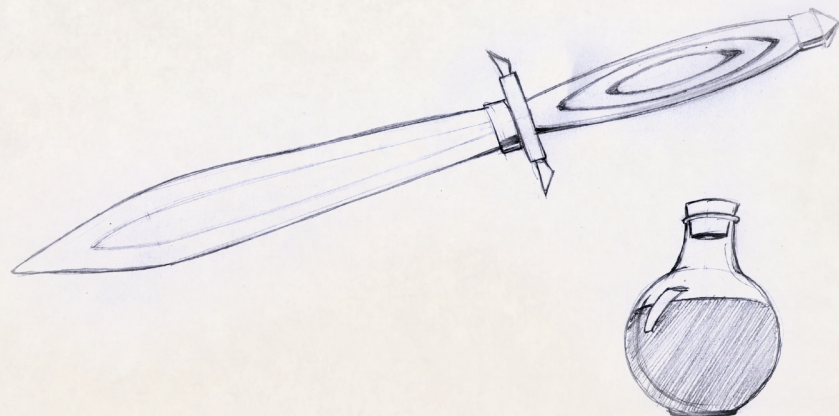
make sure that the modules impact external achievement, and that we can't do that if they directly prepare students for tests by focusing excessively on isolated associations.

CASE STUDIES OF CURRICULAR DEVELOPMENT AND SPREAD

This section describes how this approach informed the creation of two new secondary ELA modules. The first was developed via a collaboration between the first and second authors, while the second author was still working as a classroom teacher. The second module was developed via a collaboration between the second author and another high school ELA teacher who had been participating in the ongoing collaboration. In the interest of space, our descriptions here will be necessarily brief. More information about both modules and the actual resources are available at [Digital Is](#), a website sponsored by the National Writing Project, and at [Common Core PLAnet \(Participatory Learning and Assessment Network\)](#).

Romeo and Juliet

The first module was developed and implemented in Spring 2011. The second author, with an M.Ed from a progressive training program, had already been implementing elements of participatory learning in her high school English classroom in Southern California. She had been accepted into the doctoral program to join the research team headed by the first author. In advance of that opportunity, she elected to implement participatory assessment in her own classroom. Based on the several other examples that had previously been developed, she built a module using custom resources and existing open educational resources from the Internet that were aligned to a primary and a secondary Common Core English standard (concerning character analysis and writing). The [module](#) consisted of four activities, including discussion & role play, a mock trial, a digital poster, and a formal essay.



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For each activity in the module, increasingly formal reflections were collaboratively drafted by the two of us. Informal reflections were included before and during each activity (e.g., How will/does using Romeo and Juliet impact the way we learn to analyze characters?). Semi-formal reflections were included after each activity (e.g., How was analyzing characters different in the role play than the mock trial?). Formal artifact reflections asked students to reflect on the things they produced in the activities (e.g., How did the characters you analyzed in your essay impact what you learned about character analysis?). For the entire module a *curriculum-oriented assessment* was created to assess the impact on students' understanding of character analysis as it was represented in the Common Core standard. Finally, a *standards-oriented test* was created using released items aligned to the targeted standards but independent of the curriculum to discreetly estimate impact on external achievement.

The module was implemented successfully in that (a) it was manageable for both the teacher and students, (b) the reflections revealed increasingly successful participation in increasingly formal discourse about the text and the practices of character analysis, (c) the formal essay completed at the end of the unit demonstrated adequate understanding of the concepts and fluency with skills in the standard, (d) students excelled on the formal assessment, and (e) scores increased significantly on the achievement test. Based on that experience, the module has been refined and we are planning to have it implemented again by a new teacher and study and evaluate it more formally, along with some new professional development resources.

Learning the Art of Persuasion

The second module was developed in collaboration with Angie Cannon, a high school ELA teacher. Working in close collaboration, Angie assembled custom resources and networked open resources that were aligned to a primary and secondary Common Core English standard. The module was similar in structure to the first module, but targeted a different Common Core standard, and used formal debates rather than a mock trial as the student performance. [Activities in the module](#) included structured class discussions about the standard, comparison and contrast of several recorded speeches on YouTube, a formal debate, and transforming a research paper into a persuasive speech.

As hinted above, some of the professional development associated with the module took place during its collaborative creation. While assembling the various parts, examples and anecdotes from the first module were used to begin addressing the four goals outlined above. This second implementation

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was successful in that Angie was able to effectively execute it. It would have been premature to attempt to formally document our professional development success with this module. But our conversations with Angie convinced us that we accomplished the four goals outlined above. We found her characterization of her initial reluctance to not grade the student speeches was typical of many of the teachers we have worked with:

...the way I've always approached it in the past is that I've graded their speech. I've graded them on their presentation and how they handle themselves in front of people, ...their use of persuasive techniques--you know, if you used this many persuasive techniques in your speech then, you get this certain score.

While she had recognized that it usually didn't work very well, she had persisted nonetheless:

...they didn't always do so well with that, obviously, because they're fifteen or sixteen years old. [But] I was concerned that if they knew that I wasn't going to be grading their speech that they wouldn't try. They wouldn't worry about making a decent speech.

Angie's description of what happened when she only graded the reflections on their speeches nicely captured the overall goals of participatory assessment:

I think it was kind of nice that they had the pressure off of them a little bit, and the kids still had to be able to recognize techniques by watching the other speeches. And I think that having the pressure taken off, that this is, that their grade is dependent on their ability to do this thing that is nearly impossible for most average fifteen year olds, sixteen year olds helped them do a little bit better.

Finally, her comments convinced us that she appreciated our suggestion that students need to understand the concept in the standards in order to complete the formal reflections:

When they answered the reflection questions ... especially this one: "Match each speech device with the debate topic that was best suited for illustrating that device and explain why (claim, appeal to authority, rational appeal, emotional appeal)" I was able to see with that question right away, do they understand those, do they get those devices?

What made the overall case study a success for Angie is that all of the students' performed adequately on curriculum-oriented formal assessment, and some did quite well. What made the "curriculum-assessment ecosystem"

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a success for us as researchers was that the gains on the standards-oriented achievement test were statistically significant.

FUTURE PROFESSIONAL DEVELOPMENT GOALS

At this time we are continuing to work with several collaborating teachers while pursuing the external support needed to expand our efforts. While our current collaborative approach is working for some teachers, it is quite laborious, and has not worked very well for other teachers. We are currently developing more formal professional development resources needed to prepare new teachers who join our network and foster their collaboration with the teacher(s) with whom we originally developed the modules. Our approach to teacher learning also embraces participatory learning.

These insights and other ideas articulated in Jenkins and Kelly (in press) are being incorporated into a range of professional development resources. These include:

- Self-paced *tutorials* that illustrate the specific (but narrow) role of highly structured expository resources.
- Inquiry-based *investigations* that help teachers uncover their existing (and likely tacit) beliefs about learning so that those beliefs can be discussed and transformed.
- Small *projects* that let teachers experience the way that informal and semi-formal reflections can prompt consequential, critical, and collaborative engagement.
- Sample *formal* assessments that let teachers experience how the knowledge they gain about participatory learning is only weakly represented in that context, and is a very incomplete representation of what they might be able to do in their own classroom.
- Example *achievement* tests that will help teachers appreciate how such contexts call on narrow procedural and factual knowledge, and can't provide valid evidence of social or technological practices.

By embedding these and other resources within a broader professional development network, we can show teachers how the full value of any educational resource can only be realized when they are appropriately situated within a networked community of learners.

Our ultimate goal is creating digital professional development networks that are dedicated to participatory and transformative assessment in particular domains. It is crucial that we develop technology supports so that newcomers

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can more readily observe and begin participating in this collaborative design process.

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DESIGNING WITH TEACHERS:
Participatory Approaches to Professional Development in Education

SECTION THREE:



DESIGN GUIDE

**Design Principles for Participatory Models of
Professional Development**

Erin Reilly

Design Principles for Participatory Models of Professional Development

Erin Reilly

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The first wave of work on new media and the classroom was indeed technology-focused, as schools sought to ensure that every American child had access to networked computing in the face of a persistent digital divide. We have been largely successful in this task, with recent research suggesting that as many as 95 percent of American school-aged children now have digital access. But the downfall of this success was that teacher professional development became increasingly centered on defining digital literacy by offering workshops on specific applications to use in the classroom. A technology-based solution will simply result in an arms-race where each school spends more and more of its budget on tools, while stripping bare the human resources (teachers, librarians) who might help students learn how to use those tools in ethical, safe, and creative ways.

Beyond tackling the digital divide, we need to devote resources to resolving the participation gap, which refers to access to core skills, knowledge, and learning experiences required to more fully engage with this emerging landscape. In practice, many of the core skills needed to join a networked society can be taught using low-tech, non-networked technologies or no-tech means, even if schools have grossly uneven access to core technologies. However, teachers need to feel comfortable implementing these innovative pedagogies, and for this, they must have access to the most valuable and relevant professional development opportunities.

#participatorylearning

We have come in contact with teachers who are curious about changing technologies and teaching practices. For example, many teachers question if Facebook should have a place in the classroom and others wonder how Twitter can be used to have students collectively explore character development or deepen classroom discussions with an extended community. With so many choices available online, one of the hardest choices for teachers is to determine which resources to use and how to embed them effectively into their learning objectives.

Curiosity is an excellent first step toward participatory learning. It invokes a habit of messing around and experimenting with a resource. However, for participatory learning to be infused into the daily ritual of the classroom, curiosity requires mentoring —well-designed, creative professional development is needed to sustain teachers' curiosity and motivation, connect them

to others within communities of practice, and provide them with paths to the resources they need.

The working group has suggested a design guide for professional development in the 21st century. The design guide outlines five design principles that facilitators of professional development should consider when creating professional development (PD) experiences for teachers. Each of the design principles encourages a deeper probing of developing environments and practices that support and sustain participatory learning. The guide also identifies challenges and how to assess these new forms of PD for administrators to consider when selecting professional development opportunities for the teachers in their schools or districts.

DESIGN PRINCIPLES FOR PARTICIPATORY MODELS OF PROFESSIONAL DEVELOPMENT

What follows is constructed to inform the future design of professional development. Our focus on PD is not a consumer-based, push-out model made up of one-off workshops that have limited impact on a daily classroom's learning objectives. Instead, we seek PD experiences that encourage all to contribute, share their expertise and participate in professional learning communities for lasting influence in this professional domain. This set of design principles are technology agnostic and emphasize cultural practices and mental dispositions that adapt easily to changes in practices, resources and opportunities.

1. Engage in participatory design of PD

It is important first to make the design of professional development participatory. PD designers should reconsider coming to the PD teaching experience willing to let go of some control in order to respect the expertise teachers bring to the experience. The PLAY Pilot case study exemplifies this practice.

PLAY! facilitators refused to assume the position of expert by unilaterally teaching participants any given technology. They challenged participants instead to reflect on their discrete lesson's learning goals, identify tools that might help meet those goals, search for and locate those tools, learn how to use them through play, and incorporate or reject according to the tools' potential. When time permitted, facilitators also sat down beside participants and joined them as co-learners in the process of pursuit and discovery.

PLAY's Summer Sandbox was designed to honor teachers' identities and interests. During the week, teachers were encouraged to design mini-workshops shared in an un-conference style. From the workshops themselves, teachers benefited by exchanging tips and resources, engaging in the

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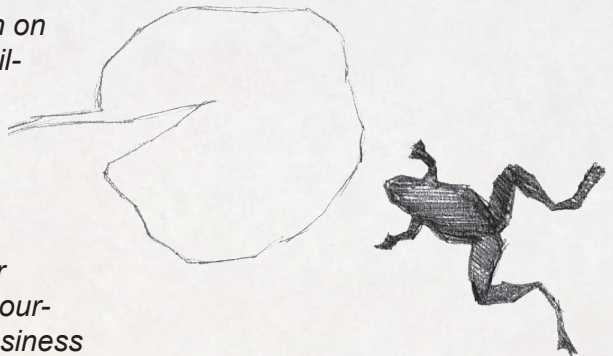
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dialogues that they cared most about, and basking in the respect that shared control implies. This means that inherent in the design of the professional development model are opportunities for participants to offer their insights, hear opposing views, and generally add to and glean information from the collective knowledge pool.

2. Model participatory learning in PD

A participatory learning environment often looks very different than a traditional learning environment. Often, when adults reflect on their past learning experiences, their memories of where and when learning occurred in their lives extends beyond the boundaries of their childhood classroom. In reflection, it is apparent that learning happens “anytime, anywhere” and what helps shape who we are is the interest-driven communities participated in throughout our lives. The Vital Signs case study clearly demonstrates the importance of non-traditional learning and the importance of stepping beyond the classroom and into the physical spaces of learning: the lakes, rivers and bogs that enable Vital Signs participants to embody the role of a scientist.

Many of the educators who sign on to Vital Signs are initially unfamiliar with teaching practices that support science learning that is outside, online, and connected to a community of practice. Educators must facilitate teamwork and communication, foster evidence-based reasoning, encourage play, and embrace the messiness of scientific practice. To help educators make these practices familiar, and to help them imagine their students learning science differently, the VS team models for them the learning environment they hope educators will create for their students. Educators are active participants in institutes. They learn by doing, experiencing, contributing, and playing in ways that translate directly into classroom practice.



It is important to model participatory learning in professional development and to support new approaches for teachers and students to co-learn in the classroom. We must close the gap between after-school and in-school, and build an awareness that participatory culture has a place in these long-established learning systems.

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3. Build community

A participatory environment reflects the community it serves. This means that we must build a community of participants who support, encourage, and engage with one another. Looking to the definition of participatory culture given by Jenkins et al. (2006), we can see characteristics of a community that supports participatory learning. Building a professional development community suggests that everyone contributing to the learning experience -- teachers, administrators, students, policy makers and parents -- needs to work together to foster participatory learning. When communities of learners pool their knowledge towards a common goal, they develop conventional academic knowledge in combination with newer networked knowledge such as the social skills, ethical values and cultural competencies needed to be full participants in today's rich media landscape. The quickening pace of technological change means that we can barely envision the actual contexts in which our students will use what they are learning in school. Reflected in the ScratchEd case study, the most important part of building community is offering a variety of situations for teachers to participate.

More than 5000 educators have joined ScratchEd in the first two and a half years since its launch in August 2009, and educators have shared hundreds of stories and resources, as well as asked and answered thousands of questions. To accompany the ScratchEd online community activities, there are face-to-face and online gatherings where teachers can gain a deeper understanding of Scratch and constructionist approaches to learning; these include monthly introductory workshops for educators new to Scratch, meetups for educators with some Scratch experiences, and webinars that are recorded and shared on ScratchEd. Finally, there are resources for teachers to use when introducing Scratch to students and when conducting workshops for their colleagues.

Many examples of professional learning communities show that establishing a digital network is an important piece of the experience. The online portion allows for user-generated content. But, the online network is only one part of a blended online / offline experience that should also offer a hyperlocal experience to professional development. Hyperlocal reflects the importance of geography and time. This gives teachers opportunities to meet fellow colleagues within their own school or geographical location for an on-the-ground support-system with peer mentoring and hands-on instruction. It also extends asynchronous sharing common in digital networks to real-time participation where physical cues from participants can shape unpredictable directions for deeper discussions and reflections.

4. Engage the “whole teacher”

Who enters the teaching profession for money? Passion for their students, discipline, and the sharing of knowledge drives people to become teachers. But too often, the pressures of high stake tests, lack of administrative support and an increase in student discipline problems stress teachers out to the point where passion begins to run on fumes. We believe professional development programs must engage the whole teacher, making sure not to create extra work, but design a model so that professional development becomes part of the work. Needless to say, this is a daunting transformation for schooling in general and particularly for teachers that are already heavily burdened. Economics, Government and Yearbook teacher Isabel Morales shares in her case study the importance of respecting teachers as professionals.

Professional development should not be painful, nor should it feel like a waste of time to its participants. Just as teachers have been encouraged to move away from the “banking method” of teaching, facilitators of professional development should also move towards a more engaging, participatory model. Both PLAY! and “California on My Honor” provide successful models of professional development that invite teachers to be active co-creators of relevant and creative learning experiences. Administrators and developers of professional development would be wise to follow the example of these successful programs, and should aim to create meaningful, long-term opportunities for teachers to share resources and support one another.

5. Be relevant while still innovating

As digital media, tools and resources are brought into the new socio-cultural and technological “loop,” humans are enabled to do new kinds of things, and in the process to develop new capacities. Professional development would be more productive and relevant to teachers if it were designed from an understanding of the inherent openness and diversity of human capacity.

Conventional views of learning and teaching have left teachers and students most comfortable with structured activities that present well-defined content that successful students can confidently reproduce on classroom assessments. And teachers are increasingly pressured to directly increase scores on standardized achievement tests, which often lead to dreary test prep and “interim” assessments. In most K-12 settings, the crush of heavy teaching loads limit the informal sharing and mentoring that most other professionals take for granted, and which facilitate prior transformations in most other information-based industries. But we are confident that this transformation of schooling will occur and in part due to researchers and practitioners pushing the boundaries of existing models. Daniel Hickey and Rebecca Itow’s case

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Design Principles for Participatory Models of Professional Development

Erin Reilly (CONTINUED)

study, for instance, illustrates this shift:

Our approach to participatory professional development has been shaped by what Penuel, Fishman, Cheng, & Sabelli (2011) labeled design-based implementation research (DBIR). DBIR highlights the crucial role of teacher-collaborators and classroom implementations. Through iterative refinement of the modules, we are producing a coherent set of resources whose features embody specific design principles across a range of topics and activities. By involving teachers in the process, we also create resources that real teachers can use in real classrooms. We are collecting evidence of achievement gains using rigorous designs and methods primarily to show that participatory learning can impact achievement. We are also using achievement measures to track increased impact as we go forward.

We believe shifts in professional development are already underway. The signs are everywhere; they can be seen in teachers' increasing friendship-driven and interest-driven professional networks (e.g., Greenhow, 2007; *Classroom 2.0*, *Digital Is*, *ConnectedLearning.tv*), increasing online teacher education programs (Dede et al., 2009) and the growing pool of [open education resources](#): digital materials available through an open license to be re-used for teaching and learning (OERs, such as *PLAYground*) and open-source content management systems (e.g., *Moodle*, *Wordpress*, and *Sakai*). Simply put, schools cannot remain the only information-based industry that is not transformed by the way that knowledge is created and shared in digital networks.

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6. PD must be flexible

Given the affordances of an information age, where we can easily access and process data on a need-to-know basis, the learning that needs to happen today is more conceptual and reflective. Teachers benefit more from flexible structures that offer time and space for bringing new types of learning, such as gaming, into the classroom. Take for example Antero Garcia's case study that highlights how, Ask Anansi, an alternate reality game (ARG) that allows students and teachers to role-play by investigating real-world challenges based on classroom curriculum can be used in PD as well.

Ask Anansi seeks to inform teacher professional development via direct interaction with students and student expertise. This participatory model draws on Salen and Zimmerman's (2004) definition of Transformative Social Play:

Transformative Social Play forces us to reevaluate a formal understanding of rules as fixed, unambiguous, and omnipotently authoritative. In any kind of transformative play, game structures come into question and are re-shaped by player action. In transformative social play, the mechanisms and effects of these transformations occur on a social level. (p. 475)

It is important to note that the shift in focus that occurs via transformative social play occurs for both student and teacher. Through teacher collaboration, discussion, and group provocation, teacher PD moves from rote lectures to participatory development. Likewise, Ask Anansi is rooted in Youth Participatory Action Research (YPAR) as a method of shifting teacher PD from adult-driven to adult-facilitated.

This is an example of a mix of face-to-face and networked interaction for teachers and students to learn from each other based on their own level of development and preparedness rather than teachers structuring everyone's progress into a fixed sequence. Offering game play in professional development allows teachers to take on different roles. For teachers new to the experience, it offers a chance to legitimately observe and participate peripherally as they assess the opportunities and give them time to better understand the new situation, acclimate to the community and find a space where they feel they can contribute (Lave & Wenger, 1991).

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7. PD must be sustainable

Professional Development would also be served if it was situated within communities where time can extend beyond the traditional structures of a classroom, influence and belonging can extend beyond the local and shared knowledge can allow for remixing and building upon others' knowledge rather than re-inventing and working in silos. Many of the case studies exemplify sustainability by incorporating online communities as part of their activities. But critical to the success and sustainability of participatory models of PD is the ability to be part of the larger educational conversation happening.

Critical to the success of Vital Signs PD is an intimate understanding of the present education landscape in Maine, and an awareness of the opportunities and challenges facing educators. GMRI's involvement in state policy conversations and relationships built with classroom teachers and state education leaders make Vital Signs especially relevant to Maine educators.

Not only does participatory models of PD include being part of state and national policy discussions, about it also includes involving external partners in the program. Each of the case studies represented in this anthology provide good representation of inviting information, skills, and experiences that mean something in the "real world" into the learning experience. Vital Signs connects teachers and students to actual scientists who use data collected in their research. The ScratchEd model encourages locality with replication of meet-ups and ScratchEd conferences throughout the world. Dan Hickey and Rebecca Itow's research offers an interdisciplinary collaboration with assessment researchers, curriculum developers, and high school English teachers coming together to make change. And an extension of the Summer Sandbox, PLAY! invited community partners to participate in the PD. Teachers could choose to participate in at least one of three [PLAY On! programs](#) held after-school and/or on Saturdays as an extension to the one-week intensive.

These types of extensions for teachers makes professional development participatory, builds sustainability, encourage a sense of community and makes transparent the vast knowledge and expertise available throughout the learning ecosystem.

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Future Directions for Research and Development

Rebecca Herr-Stephenson

Conclusion

Henry Jenkins

Future Directions for Research and Development

Rebecca Herr-Stephenson

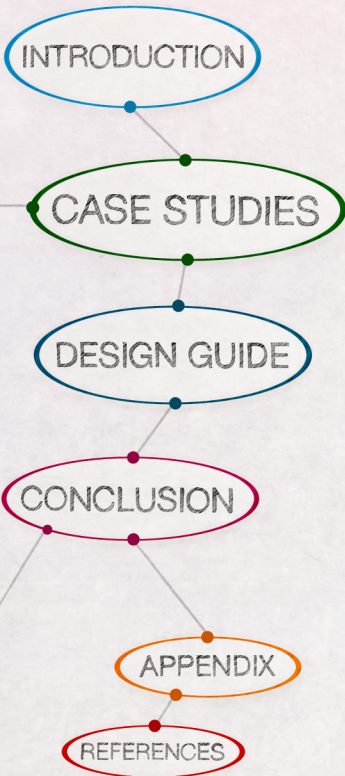
The participatory model of professional development builds upon previous work around teacher training and mentorship, as well as work on integrating media into learning environments. At the same time, it represents a substantial shift away from traditional models for adult learning. In addition to raising questions about *how* to do professional development, the participatory model also pushes the question of *why* do professional development—what are the desired or anticipated outcomes of participatory professional development, and how do they differ from those of traditional PD?

As the case studies presented in this paper demonstrate, professional development that embraces participatory models of learning is hands-on, creative and critical, and relevant to the interests and needs of the learning community. Done well, professional development is an essential tool for recognizing and fostering teachers' expertise—not just delivering information about specific content or methods, but providing mentorship and support. Crucially, it treats teachers with respect and recognizes the wealth of knowledge and experience that each teacher possesses.

In addition to the examples represented in this collection, a number of other initiatives exist across the country to provide training in participatory learning for pre-service and in-service teachers; these initiatives tend to focus on empowering teachers to design and use digital media and technology in their classrooms.

For example, the [online Masters of Arts in Teaching](#) program run by the Rossier School of Education at the University of Southern California (MAT@USC) provides a hybrid approach to pre-service teacher training. Students from across the country complete coursework toward a MAT degree through a combination of self-paced online work and live face-to-face meetings with faculty and classmates via group video conference. These hybrid interactions in the MAT@USC program contribute to its participatory nature. In contrast to other online courses, which rely on text-based, asynchronous communication between student and instructor, the MAT@USC program uses media to support participatory learning.

For in-service teachers, the [DTC Lab](#) run by New Visions for Public Schools and supported by the Ford Foundation provides participatory professional development by bringing teachers, designers, and technologists together to collaborate on creating innovative digital tools for learning in and outside of school. Their three-step design process—ideation, concepting, and prototyping—exemplifies co-learning, relying on the unique strengths of each



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Rebecca Herr-Stephenson (CONTINUED)

participant and treating everyone in the group as both an expert and a learner. Future research and development around participatory models of professional development should continue to focus on how to provide innovative and meaningful PD opportunities within varying educational contexts. This will involve facilitating community building in co-located, online, and hybrid spaces in order to better understand how factors like interdisciplinarity, longevity, or interest-driven learning can affect the outcomes of participatory professional development. In addition, future R&D should make sustainability of professional development a top priority; for example, it should consider alternative strategies for funding and scheduling professional development, in order to improve opportunities for long-term, meaningful participation.

One of the key concerns raised by teachers in the present project and in much of the literature on professional development is time--how to fit experimentation and exploration with new methods and media into an already overloaded schedule. Considering ways to balance efficiency in training and implementation of new practices with the often messy and iterative nature of participatory learning is, therefore, of primary importance in future research and development. As the cases presented in this paper demonstrate, professional development that speaks to the "whole teacher" by valuing and leveraging practices that are already a part of their teaching and/or everyday media use, can be much more valuable and empowering than professional development that attempts a total replacement of existing practices.

In addition to these practical questions about how to engage more teachers in participatory professional development, future work in this area should also continue to attend to questions about *why* professional development is important. For instance, research investigating teachers' needs in relation to participatory learning at different points in their careers could provide important insights to shape a philosophy of professional development. Similarly, research related to differences in participatory learning at various points in a students' K-12 experience--thinking about how developmental and socio-cultural factors shape students' beliefs, abilities, preferences, etc. at different ages--could assist in understanding and designing for teachers' specific needs from professional development.

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As we look to the future of professional development, participatory models will transform the core aspects of our current educational model. We will move from a model of “teacher training” to the model of co-created, co-facilitated learning. This new model will respect the challenges teachers face as they bring new media literacies into the classroom and overcome the demands that constrain their ability to perform their jobs or block them from sharing meaningful insights specific to the lives of their students. Despite precarious employment as underfunded schools cut programs to stay in operation, despite discouragement from collaborating across disciplines or opening their doors to a larger community, despite the fear of students using school computers for joining networks, this new model will enable teachers – and students – to engage in the core practices of a participatory culture.

Some might want to blow up the schools and start over, but those who work in schools do not have that option. The new model will help teachers find ways to make schools work for themselves, for their communities, and for their students. And this means that, for the short term, they may have to work under conditions that are far from perfect. To make a difference, we must bring this new model to educators in ways that respect what the teachers themselves bring to the process, even as we propose new ways for reshaping familiar practices.

Some students have access to rich, diverse communities that reward their participation and support their learning. Many lack access to the technologies that might allow them to enter such communities outside of the equipment provided by schools and public libraries. Many lack access to adult mentors who understand the challenges of the online world, who can help connect them to valuable resources and experiences, and who can help them connect and mobilize what they are learning outside of school so that they can perform better in the classroom. Any move to embrace participatory practices in the classroom must start with recognizing the uneven opportunities for students to participate in the new model. Educators have a vital role to play in helping everyone acquire the skills they need for future participation.

Approaches to participatory learning (for teachers and students) need to be grounded in core social skills and cultural competencies, not tied to specific tools and platforms that shift from year to year. The focus should be on the collaborative production of culture, not, say, Second Life, which has followed the ebb and flow of other digital platforms. The focus should be on helping young people think through the challenges of networked communications. At the same time, professional development programs should be designed so they can be appropriated and remixed by teachers so they can be inserted into the context of their working lives. PD should not be an added burden; PD should help teachers rethink the tasks they are already performing.

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Time – The activities and approach proposed here must work in relation to the temporal structures of current teaching. They can demand no more classroom time than those they are replacing because teachers have no more time to give. They should be taught in ways that are connected to the work teachers are already doing and should unfold on a schedule that is humane and doable. Professional development is ideally experienced as a break in routine – a chance to enter into a new kind of mental and social environment that refreshes and renews educators’ commitments to their profession.

Place – Again, the approach must be flexible enough to be incorporated into a variety of school settings. It should acknowledge the teachers’ understanding of their own environment best and how to adopt what they learn to the local and particular needs of their students. The approach should also recognize that the digital world represents an opportunity to extend the borders of the classroom, to bring new resources into the pedagogical process, to connect learners and teachers into new kinds of networks and communities. The goal should be to blur the lines between physical and online interactions in order to extend the points of contact and the variety of contacts between teachers, mentors, and learners. There should be multiple pathways into participation for teachers – from fandom to gaming – which will offer multiple goals, multiple modes of success, and multiple forms of engagement.

Identity – Many traditional forms of “teacher training” threaten the teacher’s identities as professionals who bring a life time of experience to the professional development process. Teachers need the support of a community that respects what they already know as it offers them a chance to broaden their pedagogical repertoire and expand the models of learning they deploy with their students. Teachers need emotional support, to realize they are not shedding their professional identities as they empower their students to find their own expertise and take greater control over their own learning. Before they can embrace this new role in their classroom, they need to experience the classroom environment as learners. If we can provide that impetus, we can better help them embrace participatory learning practices. They must be able to make core decisions that help identify their own learning goals, to share their own experiences and passions, and to shape the outcomes of a process that fits their own working experiences.

New media literacies should not be viewed as an added subject but as a paradigm shift that changes the ways we think about the entire curriculum. The pay-off of such a dramatic change should not be short term nor transitory; it should be integral to professional identity. Those who are in the business of reimagining pedagogy need to work together, as we have in this project, to identify core principles and best practices that can help guide the process of transition.

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Mary Hendra	Facing History and Ourselves
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Having received multiple awards, such as Cable in a Classroom's *Leaders in Learning*, Erin is a recognized expert in the development of resources for educators and students and conducts field research to collect data and help shape the field of digital media and learning. Erin was Research Director for Project New Media Literacies at MIT and also has conducted classes as a Visiting Lecturer at MIT's Comparative Media Studies Department and Harvard University's Project Zero Summer Institute.

She is most notably known for co-creating one of the first social media citizen science programs, *Zoey's Room*. Her current research-design projects include *PLAY!*, a new approach to learning that refers to the value of play as a guiding principle in the educational process both in informal and formal spaces and *Flotsam*, a transmedia play experience that is exploring joint media engagement between children and their caregivers.



Reilly is a graduate of Emerson College and has her Master of Fine Arts degree from Rockport College, a subsidiary of the Maine Media Workshops.

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Ioana graduated summa cum laudae from Middlebury College, with Highest Honors in Film and Media Culture. She has been inducted into the Phi Beta Kappa academic society, and awarded the David I. Goldman Prize for excellence in the study of film and media. Her professional background is in implementing digital storytelling curricula and media literacy campaigns in international contexts. She has taught filmmaking and social justice curricula to children in India, Uruguay, Romania, and the Dominican Republic, and, prior to starting her doctoral studies, she worked as the field coordinator of The Modern Story digital storytelling program, a grassroots project aiming to bridge the digital divide by introducing media literacy and filmmaking workshops in government schools in India.





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