

Editorial: Make It a Two-Way connection: A Response to “Connecting Informal and Formal Learning Experiences in the Age of Participatory Media”

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The recent editorial “Connecting Informal and Formal Learning Experiences in the Age of Participatory Media” (Bull, Thompson, Searson, Garofalo, Park, Young, & Lee 2008) points out that social media exemplified in Web sites such as YouTube, Facebook and Wikipedia are built on the “cognitive surplus” and social networking of participants. Unfortunately, as the authors point out, formal educational environments pose barriers to their use. The hallmarks of the new technology—active creation of personalized online content and fluid communication networks—don’t fit well with authoritative control of learning objectives, lack of time, limited access to technology, and the general low level of effective use of technology in schools.

Gen-Y students are already producing content and using graphically rich social media in their lives outside of school, but their Boomer teachers are for the most part unaware of and not tapping into or using this activity to advance learning. To address this gap, the editorial calls for teacher educators and a new generation of teachers to work together to study and develop new knowledge and methods using participatory media and informal learning approaches in schools.

The editorial is thus calling for a new branch of research and development in TPACK (the integration of technology, pedagogy, and content knowledge in teaching) that would bring into schools the power of social media and informal learning tools, methods and content. This is a timely and important suggestion, which if supported with attention, time and resources would advance national priorities for education. However, the direction of “bringing informal media into formal education” is one way, from informal methods into formal classrooms.

It might be a good time to propose a second branch of research and development to allow the bridge to be two way. In the reverse direction, teacher educators and future teachers would work together and with others to unobtrusively bring formal education into social media and informal tools, methods and content without destroying the hallmarks of participatory media—personalized creation of content and fluid social relevance.

In this second branch of research, the focus would not concentrate on changing teaching, classrooms or schools, but instead would, in part, make the cognitive surplus products of informal learning contain evidence of what students know. While working on design projects within this branch, future teachers will build a special kind of TPACK – knowledge that enables observation of the technologically enriched enactment of 21st-century skills. This shift requires a rethinking of TPACK, which can be illustrated by an example of games and simulations.

TPACK is usually thought of as a framework for thinking about teacher knowledge and practice. At the risk of over-simplifying, “T” is primarily about some particular mediational technology; “P” is about its educative interactional affordances; “C” is about what one learns; and the emergent TPACK is about effectively bringing these all together for learning. TPACK, interpreted as a teacher’s skill, requires “a form of expertise different from, and greater than, the knowledge of a disciplinary expert (say a mathematician or a historian), a technology expert (a computer scientist) and a pedagogical expert (an experienced educator)” (TCPK, 2007).

Developing TPACK in future teachers includes modeling the use of technology in teaching content, helping them use ready-made technologies, and providing guidelines for appropriate and effective use of technology. By seeing models, reflecting on guidelines, and practicing new techniques, a teacher’s skill and TPACK grows.

Can a teacher’s level or maturity of TPACK become embedded in a learning environment created by the teacher? Very likely, yes. If it were impossible, then performance assessment of any student product would not provide evidence of what students know and can do. It seems that the issue is one of the degree and complexity of “TPACK embedding” into design products such as new lesson plans and the integration of technologies into teaching, not whether it happens.

Even though engagement in a design project is complex and time-consuming, it powerfully situates a developing teacher’s learning in a socially meaningful context that increases personal motivation and relevance. Think of the knowledge and skills needed to design an online-course, an educational film, or a Web site. These are learning environments with the potential to engage students in a content area, with an appropriate use of technology embedded in an effective educative process.

This helps shift focus from TPACK as a framework for teacher skills to TPACK as a framework for designing digital learning environments. Both views may be helpful. Consider the design of a digital game or simulation as if it were a complex assessment prompt for a developing teacher: “Show an example of a game or simulation you have made to teach a concept.”

One of the geniuses of any design project is that a creator actively learns while making something for an audience. When the end product of the design project is a game or simulation, not only does the creator benefit, the audience gets a highly interactive experience too, affording the possibility of higher levels of knowledge building for both the creator and audience. This is less true for the audience experience of less interactive design projects. The audience of a typical film for example, watches the “C,” compared to the creator who searched, acquired, manipulated, enhanced and contextualized it. If “P” occurs it usually resides outside of the film watching experience, so the audience gets only a fraction of the integration that was the essence of the lived experience for the creator. The power of “epistemic experiences” (Shaffer, 2007) are realized by most creators in well-designed technology-enhanced design projects, but is best offered to and consumed

by audiences through more participatory media, as exemplified by games and simulations.

Producing a game or simulation, thus, requires a highly complex integration of technology, pedagogy, and content that must in turn be presented to an audience as an interactive experience. The requirement for audience interactivity in a game or simulation raises the bar for embedding TPACK into the product, because it captures the design team's (or individual's) level of sophistication in enlisting "T," "P" and "C" as essential elements of the activity's success.

This illustrates how the two-way bridge metaphor requires thinking about TPACK as both a professional practice knowledge base (e.g., a teacher's level of TPACK) and a characteristic of an educative experience (e.g., the combined effect of a TPACK-planned environment on a learner). For example, teaching with an overhead projector is different than with iMovie, a blog, or a video mash-up site, and at the same time, the student experience is co-constrained by both the teacher's knowledge and the affordances of the environment as an emergent product of TPACK. This dual role interpretation of TPACK as both a teacher skill and a specific characteristic of a learning environment provides a theory for the two-way bridge proposal and allows an explanation of how knowledge and practice can be embedded in highly interactive digital teaching materials, including games and simulations.

Large-scale digital games and simulations are becoming increasingly integrated, rich media contexts with multiple layers of social media (e.g., stunning graphical displays, data-rich environments, networks of players, ad hoc guilds, cheat sheet wikis, after-markets, virtual-world entrepreneurs). Research communities now emerging are beginning to analyze and identify the criteria for successful social playability at the intersection of games with other ubiquitous media to find elements underlying successful social games, as well as media services such as Flickr and Facebook (Mayra, 2008). At the same time, digital game-based learning research, still in its infancy, has indicated that a wide range of competencies and habits of mind are engaged during game-play (Aldrich, 2005; Galarneau & Zibit, 2006; Gee, 2004; Prensky, 2001; Shaffer, 2007; Squire & Jenkins, 2003).

The knowledge and skills entailed in game-based informal learning environments include some of the most difficult to measure and document, but they are, nevertheless, universally heralded as crucial to the success of formal education. A nation's global competitiveness in the 21st century, according to the emerging consensus, will depend on an education that fosters capabilities such as creativity, innovation, global awareness, critical thinking, problem solving, collaboration, initiative, self-direction, flexibility, and adaptability (Partnership for 21st Century Skills, n.d.). The three strands of social media, informal learning, and 21st-century skills merge at the center of the TPACK of games and simulations.

Social media, which bring together rich media and social networking applications, are part of the new "T;" informal learning is an underutilized "P;" and 21st-century skills are more complex than traditional "C." All three can be integrated and advanced in games and simulations that can remain resident in informal education while effectively enhancing school experiences. At the intersection of social media, informal learning and 21st-century skills sits the TPACK of digital games and simulations, in both the sense of how teachers select and use them, and the sense of the entailed content and pedagogy of the technology. Schools of education are well situated to help build the two-way bridge from informal to formal education by developing and nurturing the expertise needed to

enhance formal education goals with new game-based informal education tools, methods and content.

Since the bulk of student life experience is and will remain outside of schools, social media in informal learning settings hold a vast untapped potential for enhancing the goals of formal education. A one-way bridge that brings participatory media into formal education will dramatically improve classroom experiences and outcomes. A two-way bridge that also brings unobtrusive performance assessment information into formal education from participatory media will link informal learning to valued formal outcomes and enhance education by making clear the educative value of digital experiences outside of school.

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