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NEW MEDIA AND THE PROMISE OF SCHOOL CHANGE

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Abstract
The proliferation of new media is rapidly changing literacy practices, yet formal schooling has been slow to utilize and leverage the capacity of digital tools and new media literacies for learning. Instead of integrating new media into existing school structures, this report argues that schools have a responsibility to create radically new educational systems that are designed to accommodate students' "every day" literacy practices. Case studies represent compelling examples for the use of cross-cultural social networks, data visualization, gaming, simulations and virtual worlds to support cross-disciplinary learning in informal learning spaces such as after-school, non-profit organizations and museums. As such, they provide "test beds" to inform innovative strategies for school change and improvement in formal learning environments. The research offers insights that can be used to create new visions for dynamic learning environments that take advantage of the full range of contemporary literacy practices both inside and outside the traditional classroom.

Keywords: data visualization, gaming, learning environments, new media, literacies, simulations, school architecture, school change, social networks, test beds, virtual worlds.

Resumen
La proliferación de nuevos medios de comunicación está cambiando rápidamente las prácticas de alfabetización, sin embargo, la educación formal ha sido lenta en utilizar y aprovechar la capacidad de las herramientas digitales y la nueva alfabetización mediática para el aprendizaje. En lugar de integrar los nuevos medios de comunicación a las estructuras escolares existentes, este informe argumenta que las escuelas tienen la responsabilidad de crear sistemas educativos radicalmente nuevos que estén diseñados para adaptarse a las prácticas de alfabetización "cotidianas" de los estudiantes. Los estudios de casos muestran claros ejemplos para integrar el uso de redes sociales interculturales, visualización de datos, juegos de video, simulaciones y mundos virtuales en el aprendizaje interdisciplinario en los espacios de educación

informal como, por ejemplo, las actividades después de clases, las organizaciones sin fines de lucro y los museos. Como tal, proporcionan el mejor "banco de pruebas" para mostrar las estrategias innovadoras para el cambio y mejora escolar en entornos de aprendizaje formales. La presente investigación ofrece una nueva perspectiva que se puede utilizar para incorporar nuevas visiones en entornos de aprendizaje dinámicos que aprovechen toda la gama de prácticas de alfabetización contemporáneas tanto dentro como fuera del ámbito de la clase tradicional.

Palabras clave: visualización de datos, juegos, entornos de aprendizaje, nuevos medios, alfabetización, simulaciones, arquitectura escolar, cambio de la escuela, redes sociales, bancos de pruebas, mundos virtuales.

New Media and the Promise of School Change

The design of educational systems and their relationship to emerging literacies echoes historical debates related to the social, political, cultural and economic contexts of traditional literacy practices and their relationship to schooling. On the one hand, literacy is assumed to be a pathway for enlightened personal growth, critical thinking, social capital, workforce development, civic participation and social justice. On the other hand, literacy has also been used throughout history as a form of social and political control, either through selectively offering literacy attainment to specific populations while denying it to others, or as a vehicle for values inculcation, censorship and propaganda. New media users routinely negotiate these conflicting purposes of literacy in informal learning environments, at home, with friends and in the community. But formal educational institutions— especially at the elementary and secondary level— have yet to develop widespread strategies for engagement with new media in a holistic and sophisticated way.

The marginalization and disregard of widespread literacy practices by schools is stunning. One exception is consensus around the need for educational technology, as defined by to physical access to computers, networked, broadband digital content and presentation tools. In theory, these efforts have produced significant results, with 99% of US public schools reporting that they have access to the Internet (Digest of Education Statistics: 2009).

On closer inspection, glowing reports about huge inventories of networked computers in schools reveal problematic gaps. This is especially true in rural areas. Although 68 percent of US youth between the ages of 12 and 17 use the Internet at school, it is unclear that their use includes the full range of literacy practices that they use outside of school. Furthermore, this figure implies that 32% do not use the Internet at all (Hitlin & Rainie, 2005). This may be the result of a combination of old equipment, inaccessible computer labs, slow networks or issues related to security and teacher training. Furthermore, once access is resolved, strategies for the innovative uses of technology in the formal education

sector remain confused and entrenched in established school systems and practices.

Concepts related to the integration of educational technologies often envision the uses of digital literacy tools in the same way that alphabetic literacies are used in the traditional learning environments—as vehicles for information and content delivery. But students' "every day" literacy practices go far beyond content delivery. In a 2002 study with a diverse set of US users aged 12-17, the majority students (78%) reported that they used the Internet and likened it to a locker, backpack, notebook, textbook and reference library. They expect unrestricted, high-speed access at all times; cross-platform access to content, the ability to both upload and download content, and more integration of digital media into their learning tasks (Arafeh, et. al. 2002). These restrictions have less to do with physical access and more to do with school rules and content filters, firewalls and other technologies that block user control of content. In a follow-up survey in the UK, students say that although they do understand the need for some control of Internet content, most feel that restrictive school policies go too far (Selwyn, 2006).

A 2009 study by the US-based Project Tomorrow surveyed nearly 300,000 US students, with 24percent reporting that they were "advanced tech users." The study also surveyed parents, teachers, school administrators and pre-service teachers. Results indicated that educators and students have different views of the value of digital media in schools. Only 10 percent of teachers said that they would like to include Web 2.0 technologies in the classroom, compared with 35 percent of students. Two-thirds of the principals reported that they thought their schools prepared students for jobs in the future, compared with fewer than 25 percent of the students. Respondents identified school blocks and filters as the major obstacle to their use of technology in schools. The study points to more opportunities for the use of mobile devices, gaming and online learning in the elementary and secondary learning environment (Prabhu, 2010, Project Tomorrow, 2010).

The divergence between the uses of digital media in formal and informal learning environments point to a system out of sync with its students' informal and participatory literacy practices and the public's expectation for relevant educational goals along the lines of personal growth, workforce preparation and civic participation. Julie Evans, CEO of the organization Project Tomorrow expresses the sense of urgency to leverage contemporary literacy practices in public schools to address a "crisis of relevancy":

> ...today's classroom environment, for must students, does not mirror the way they are living their lives outside of school or what they need to be prepared for future jobs, and that this disconnect is actually creating a relevancy crisis in American education...while we may not have all of our "ducks in a row' right now, we can no longer afford to wait until the stars are aligned to enact transformative polices and programs. (eShool News, 2010, p. 28).

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From Technology Integration to Literacy Integration

The proliferation of new media challenges existing educational systems to navigate new tools and texts (Bauer & Kenton, 2005), yet educators are only beginning to understand that access to communication tools is only the first threshold to literacy. Opportunities to leverage the social capital attained through literacy begin with harder philosophical questions related to areas of consensus about the purposes of both education and literacy.

> Although traditional school settings increasingly offer media programs with access to digital networks and production equipment, they do so within the constraints of established school culture of routines, regulation and control (Cuban, et. al., 2001).

As students engage with new media tools and texts in the wider social sphere, schools have come to represent rigid and entrenched factory models of efficiency for traditional literacy practices, school schedules and pedagogies. Tired assumptions about education's mission as an expert-driven, disciplinary, content delivery system are so entrenched, that the "educational" brand, as seen in qualified terms such as educational technology, educational games, or educational video, repels more students than it attracts. As a result, schools and publishing companies rush to create educational apps for emerging technologies – with mixed success.

Students who are experienced with new media prefer learning opportunities that challenge, provoke, create patterns of risk, promote problem solving and allow them to engage with both experts and their peers in participatory learning environments. As a result, they are increasingly bored and frustrated with the traditional learning environments.

Elliot, a sixteen-year old high school student is an avid gamer who is learning to create his own games in an after-school and summer program at the Miami Museum of Science in Florida. He is adept at using Maya software to create simulations and as part of the program, he regularly visits the Teen Second Life virtual world to learn about climatology, oceanography and other science concepts. He is animated when explaining the science concepts and technology skills that he learned at the Museum and wants to continue on to college to learn more—the first person in his family to do so. He is resigned to the routines of schooling and understands the benefit of formal education. When asked about the uses of educational games at school, he says:

> I'm used to games where you gotta think critically, like make sure every action comes with a reaction. Like, in *Call of Duty*, you've got to think quick, because if you shoot the guy in the head, and you miss his friend, his friend can kill you! And you've got to start all over... Believe it or not, you got to trick me into playing an educational game, before I actually know it. I mean, after a while, I'll catch on

> and if I like the game, I'm not going to stop playing just because it's educational. There's nothing wrong with that. But if you say, "Would you rather play an educational game, or an RPG game, or an action-adventure game, I'll pick the action adventure game before I pick the educational, because as soon as you say it, educational doesn't sound at all exciting. It sounds boring. Like listening to a teacher lecture or something.

In the culture clash between pop culture and school culture, the impact of digital media on school change is palpable. A more sophisticated approach goes beyond educational technology access and focuses on tools as only one design element in support of contemporary literacy practices. Instead of the focus on "boxes and wires," this approach moves from "technology integration" to "literacy integration," a concept that embraces a wider spectrum of reading and writing that includes new media analysis, production, viewing, representing, data visualization, assets management, programming and design skills (Tyner, 2003). It offers an opportunity to re-tool and refresh concepts of schooling that meet public expectations for a relevant and rewarding educational experience for every child.

Informal Learning Environments as Testbeds of Innovation

In the absence of relevant programs in public schools, students who want to improve their digital literacy skills gravitate toward US museums, and non-profit institutions in the arts, humanities and sciences. These organizations increasingly offer after school and summer programs that are focused on the creative uses of new media for learning, the arts, media production, workforce development, and community involvement. Informal learning environments of this type build on students' "hunger" to use their literacy skills and to learn more with peers in low-stakes, project-based and social spaces. As such, these informal learning spaces are also important "test beds" or "proof of concept" laboratories that provide information about the impact of new media that could be integrated, scaled up and adopted in the context of public schooling. For example:

> In 2008, US non-profit El Cilantro worked with Chicago-based Open Youth Networks, a non-profit that helps youth activists use technology for civic involvement, education, art and activism to create Our Map of Environmental Justice. Young people across the globe collaborate locally and online to use Google Maps, online video and data visualization techniques to map and create online videos about the environmental landscape in their neighborhoods. In the process of identifying and mapping the toxic, green and social sphere, they can overlap demographic data related to environments around the world (El Cilantro & Open Youth Networks, 2008).

> The Miami Museum of Science works with underserved teens in Miami, Florida to teach issues related to climatology, earth science and the academic pathways for careers in science in programs such as Digital WAVE and Youth Expo. In these after-school and summer programs, teen learn to create game attributes, simulations and objects using Maya software. The technology skills they learn

> transfers to the creation of virtual world simulations in Teen Second Life. Working with their peers in Second life, their avatars can manipulate objects and data to visualize science concepts using a "hands-on" approach to learning. In the Museum programs, they engage with real-world scientists, visit Second Life sites of national science programs, and work with a cross-generational team that provides the design and context for rigorous science, engineering and technology learning. (Miami Museum of Science, 2009).
>
> GirlStart, a non-profit organization in Austin, TX, recognizes that girls and women are underrepresented in career and academic programs. They use a wide hybrid combination of digital tools, including mobile devices, web portals, gaming software, and global social networks to promote learning about science, engineering, technology and math (GirlStart, 2010).

Across the US, "knowledge labs" of this type offer opportunities for students to engage and interact globally and digitally with experts, tools and peers to create and critique motivating, creative, playful and fundamental learning forums. In the same way that research provides insights into the impact, best practices and lessons learned through digital literacy practices, research into the uses of digital media in informal education programs can be used to inform and shape the learning environments in formal educational institutions.

This is happening through partnerships with public school systems. For example, Quest to Learn, a 6-12th grade public school program opened in New York City in Fall 2009 in one prominent example. The school uses game-inspired methods to teach both traditional and critical 21st century skills and literacies. Created by the New Visions for Public Schools and the Institute of Play, a New York City-based not-for-profit organization that leverages games and play as transformative learning tools, the program is based on insights learned from gaming programs in informal education spaces (Institute of Play, 2009, Robison, 2009).

Emerging Trends and Challenges

Emerging trends in public education demonstrate the impact of digital media practices on school change. Digital media tools and resources are forcing changes in the concept of schooling that are directly related to: a) teacher certification; b) design of the learning environment; and c) school schedules.

Each year, The New Media Consortium and Educause, professional organizations for university members, engages in dialogues with hundreds of technologists from industry and academia to publish the *Horizon Report*, an annual report on emerging technologies relevant to higher education. Published in several languages, the *2010 Horizon Report* predicted four key trends that will drive technology adoptions for the period 2010 through 2015 (The New Media Consortium and the Educause Learning Initiative, 2010):

> 1. The abundance of resources and relationships made easily accessible via the Internet is increasingly challenging us to revisit our roles as educators in sense-making, coaching, and credentialing.
>
> 2. People expect to be able to work, learn, and study whenever and wherever they want to.
>
> 3. The technologies we use are increasingly cloud-based, and our notions of IT support are decentralized.
>
> 4. The work of students is increasingly seen as collaborative by nature, and there is more cross-campus collaboration between departments (p. 3-4).

The *2010 Horizon Report* goes on to state that .."we are far from seeing digital media literacy as a norm. This challenge is exacerbated by the fact that digital literacy is less about tools and more about thinking, and thus skills and standards based on tools and platforms have proven to be somewhat ephemeral (p. 5).

Still, major obstacles to the integration of contemporary literacy practices in the formal education environment remain. Advocacy to prioritize digital literacy in state and national standards-based education and policy document over the last decade have shown progress, yet demonstrated mixed success in stimulating media literacy practices at the classroom level (Baker, 1999; Klipp, 2008;). On the national level, a 2010 National Education Technology Plan proposed by the US Department of Education calls for more customized, relevant and flexible learning environments that are designed around digital literacy practices. However, as an indication of its importance to policy makers and politicians, the plan calls for radical changes at the state and local level—with no designated funding stream (eSchool News, 2010, p. 1; US Department of Education, 2010).

Digital Literacy Development Networks for Teachers

One of the major obstacles to new media literacy integration across the curriculum is the low priority and narrow range of literacy practices and technology skills offered in teacher preparation and professional development programs. Even though new teachers graduate with the same digital literacy practices as their peers in other areas of study, the uses of digital media in the classroom is stunted by traditional classroom pedagogies.

Institutions of higher education are still experimenting with the place for media education in pre-service teacher credentialing programs. Laptops are ubiquitous in college classrooms and there are many supportive programs for technical proficiency across the university. It is not as if content retrieval and delivery are not useful skills. But courses for

tomorrow's teachers are too often modeled on anachronistic audio-visual courses focused on proficiency with educational presentation tools, or other methods of transparent content delivery and information retrieval. In an analysis of US responses to a 2001 survey of media educators, researchers noted:

> Whilst media production appears to be gaining credibility [in public schools] in terms of the skills and competencies required in such work, the quality of production and the amount of production continues to be inhibited by the limits of teacher education (Domaille & Buckingham, 2001).

The 2010 Horizon Report concurs:

> Digital media literacy continues its rise in importance as a key skill in every discipline and profession.... The challenge is due to the fact that despite the widespread agreement on its importance, training in digital literacy skills and techniques is rare in teacher education programs (5).

Given the diversity and global reach of individual youth media efforts, a number of reports suggest that teacher capacity can be bolstered through strategic partnerships with professionals and practitioners from local institutions and industry, as well as through collective knowledge networks of teachers who can collaborate in a team-approach at the school site and online (eSchool News, 2010, p. 1; US Department of Education, 2010).

Pedagogies for a Relevant Education

More importantly, the culture of schooling is often in direct contrast to the kinds of collaborative, experimental and innovative literacy practices seen online, in popular culture, and even as a mainstay in contemporary public spaces ranging from cafes, museums, shopping malls, mass transit systems to government buildings). As a result, young people seek compatible outlets for relatively unfettered use of their digital literacy skills with friends, family and networks, beyond the traditional classroom. They prefer to use new media to actively engage in the social sphere, reinforcing norms of *participatory culture* (Jenkins, et. al., 2006).

The 2010 Horizon Report identifies the way that new media have altered the role of the academy and its ability to prepare students for their "future lives":

> It is incumbent upon the academy to adapt teaching and learning practices to meet the needs of today's learners; to emphasize critical inquiry and mental flexibility, and provide students with necessary tools for those tasks; to connect learners to broad social issues through civic engagement; and to encourage them to apply their learning to solve large-scale complex problems"(p. 4).

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One pedagogical trend has been called *design curriculum*, a concept with roots in the studio-based approaches, apprenticeships and critique processes found in fine arts colleges and professional artistic practice. In public education design curriculum reinforces the importance of creativity and extends the concept of studio practice for individual artists to the kind of collaborative group projects found in workplaces in the creative technology sector.

In the process, design curriculum addresses the collaboration and challenge in participatory culture while at the same time providing a resource rich environment for the uses of new media in hands-on, project-based work (Mathews, In Press). More radically, design curriculum embraces the expanded concepts of time and space that are provoked by the ubiquitous presence of new media and provokes changes in architectural spaces and school schedules.

Design curriculum values portfolio assessment and rigorous critique that call into question the over reliance on standardized tests as the sole form of assessment in many US public schools. As such, it requires a creative, modular, flexible and customized vision for the use of physical and virtual space. The concept works best in the "built world," of physical, architectural spaces when as desks, auditorium seating and spaces designed for silent group instruction, give way to the needs of teamwork, talk and motion.

Digital, collaborative, and project-based work of this type also calls into question the need for historic school schedules based on the 8-hour workday and the nine-month school year, based in agricultural practices from the last century. Instead, digital media provides and opportunity to customize student curriculum for any place, any time learning. Although schools may serve as a social hub in the community, their role as a rigidly scheduled meeting place could be decentralized to involve other sectors and space in the community. New visions for formal education see these environments as open centers for community involvement, digital access and social engagement with experts, internships and customized curriculum that enable students to work with the whole community to design their own curriculum, time frame, and pathways (Dillon, 2010).

A confluence of factors demonstrate a window of opportunity for a more radical approach to school change. The widespread uses and access to tools in every sector of society is one factor. But other debates about the need to improve systemic issues related to school time, student assessment, customized curricula, and teacher certification offer opportunities to approach these with contemporary literacy practices as the central organizing principle.

Each successive generation grapples with the meaning of literacy and the best way to teach it. In a 1981 paper, ethnographer John Szwed calls for more research into the "social meaning of literacy," stating that "... the stunning fact is that we do not fully know what literacy is. The assumption that it is simply a matter of the skills of reading and writing does not even begin to approach the

fundamental problem: what are reading and writing for?" (Szwed, 1981). A new generation of students is eager to engage with the question of literacy in all of its complexity. It is their turn to try.

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