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Web 2.0 Tools and K-12 Challenges

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Much of the debate about the mainstreaming of Web 2.0 tools in K-12 education here is in the United States centers on the challenges the kind of delivery of instruction required would face. That is, while we remain fairly rigid in how instruction is delivered and the idea of teacher-driven models, the use of Web 2.0 tools will always be marginalized.

Daniel Willingham, in a 2008 response blog commentary in this debate, pointed out that teachers prefer easy-to-manage, direct instructional methods to the project-based approach that is more suited to the use of Web 2.0 tools. Additionally, Willingham suggested that the need for additional technology and additional training means that teachers will not feel empowered or effective in using these tools and, for those reasons, will more often choose to teach without them.

Steve Hargadon argued, however, that most of the current students already use these tools, and, while their parents may still be in a Web 1.0 world, students use Web 2.0 social networking tools and other authoring tools regularly. He continued:

"But I believe there are more positive, less alarmist, reasons. In fact, I think the inherent characteristics of Web 2.0 are so aligned with significant educational pedagogies that we are going to have to dramatically rethink our educational institutions and expectations because of them. Even though the benefits of Web 2.0, like those of a liberal-arts education, resist easy assessment methods and therefore present a challenge to how we measure educational success, I'm optimistic that they will ultimately prove so valuable as to require that we rethink teaching and learning."

System Changes

Certainly, employers of new college graduates usually comment on their need for employees who have more highly developed "employable skills," rather than having only content knowledge about specific academic areas. A recent skills-gap report from the National Association of Manufacturers/The Manufacturing Institute (Eisen, Jasinowski, & Kleinert, 2005) found that a majority of American manufacturers are experiencing a serious shortage of qualified employees. In a 2004 poll of employers conducted for Achieve Inc. covering some 400 employers from sectors across the economy, employers

expressed some dissatisfaction with the job that high schools are doing to prepare their graduates for several workforce skills, saying that they are dissatisfied with graduates' ability to read and understand complicated materials (41 percent of employers dissatisfied), to think analytically (42 percent), to apply what they learn to solve real-world problems (39 percent), and to communicate orally (34 percent) (Hart Research Associates & Public Opinion Strategies, 2005, p. 6).

It would seem, then, that as well as preparing students with knowledge about life, it is important for schools to begin the process of developing students with skills for life and work. As Hargadon suggests, this may require a rethinking of much of the system but, nevertheless, this should happen. Systems of education should always allow for changes but new technology requires those systems to be more aware of the speed at which some of those changes are taking place and what resources are needed in terms of teacher preparation and funding. Most teachers would not reject the idea of applying new technology in their classes as much as they reject the ideas of random access, inadequately resourced classrooms and lack of teacher support. Most teachers are also aware that their students already possess technology skills that they do not possess but remain unclear as to how those skills can be integrated into their specific instructional discipline. While the larger issues of funding and teacher resourcing will continue to be very real challenges we must face, I would suggest that teachers should focus not so much on the technology skills their students already possess, but on the transferrable life skills that these technology tools can develop in students when handled well by teachers within instructional contexts. In other words, students, regardless of their technical ability, still require teachers to be hands on with their instruction and informative about various higher level skills that they will need to be successful higher education students and employees.

Learning To Collaborate

One such skill is collaboration--not to be confused with cooperation. While the latter is a useful skill as well, developing collaborative skills is something very desirable for future employers. That is, students who know how to evaluate a problem or situation; assess what information and resources are needed and what others have and can contribute to the challenges; maximize all of the resources and build on what is available to meet and address; and, hopefully, solve the problem or challenge posed.

Parts of this process are cooperative and critical to the overall success; however, the latter stages of maximizing what is available and/or "known" or to explore and gather additional information and resources and to build on those is ultimately the full success of collaboration.

Web 2.0 tools provide easily accessible forums or contexts within which this kind of collaboration can take place. For example, a group of students working on a community project or social awareness project, could use either a blog to journal and record stages of action and project development or a Wiki to work through their collective ideas in exploring their plan of action or project design. In other words, rather than starting from the individualistic position that is conventionally the case, the entire project can be socially constructed, cooperatively managed and collaboratively empowered. All of these are highly transferrable skills and in no way diminish the course content or course learning outcomes for any student. In fact, by involving more input from the start, more students are likely to feel they are part of the solution and, therefore, that they are a valuable member of the class.

Learning How To Manage Content

Students who can learn how to look for helpful information and organize that information into meaningful content are developing knowledge management skills that are vital to future success.

- **Knowing what to look for:** Random and irrelevant Internet searches are not sufficient in this context. Internet searches that are based on specific (teacher-provided) criteria are important. Students who understand that knowing what to look for is more than half the challenge will also become more efficient in their management skills.
- **Capturing relevant data:** Having retrieved the data that are important and relevant, the information must be captured in some meaningful manner--textual references, screen captures, or media objects. Of course, all of the resources should then be referenced correctly for continued use.
- **Organizing data effectively:** Additionally, the outcome of the project dictates how the information should be organized so that is easily accessible to readers and/or viewers, adequately referenced for clarity, and presented in a relevant framework for recognition.
- **Reproducing data in a relevant context:** The final presentation for review and grading should always provide a relevant context of project plan, project participants, and project outcomes--all of which should be clearly integrated into the final presentation or production.

Understanding and Maximizing Authorship

The idea of students as authors is not new to conventional education, however, what is new is the scope of the audience to which those student authors can write or produce. No longer does student authorship mean only for teachers or local schools or even school communities, rather, to the world. Students can now maximize the notion of airing their own work both creatively and academically via Internet tools in blogs or podcasts or even via social networking tools. Additionally, while student work could be displayed for a short while on the walls of rooms, it can now be captured and displayed without limits. Perhaps the main benefit is that their work can also receive feedback and criticism from a wider audience and, therefore, they discover the realities of accountability to a field of study or a professional industry. Through this kind of exposure, students can learn early in their career that knowledge exists socially and that ideas must be worked through a community of learners in order to find legitimacy and relevance.

The main challenges to all of this are existing limits that are put on students through network firewalls and parochial lines of ownership. While Internet security is a very real challenge for schools and individual students, these challenges should be thought through and connections pre-set and protected, so that students can connect freely with other students around the world as well as organized professional critics. Therefore, students are not opened to the Web in a chaotic sense or a dangerous sense, but within relevant contexts of learning and development that still go way beyond the confines of the conventional class group. Much work was done in this in the early Web 1.0 days in establishing communities of learners through academic or professional collaboration for the purposes of educational research. It seems, however, that much of this good work has not been retained in terms of relevance in overall schooling.

Skill v. Content

Additionally, teachers must be aware of the differences in developing skills and developing content. One is essentially active while the other is passive. Most of the conventional schooling I experienced was of the passive nature. Not only was content pre-set, but my reactions and commentary to that content were also pre-set and valued only when those existing parameters were acknowledged. Much remains the same in schools today. While it is important to recognize a legitimate body of knowledge and to train students in that knowledge, if we do not develop students who can think critically, challenge existing parameters, and creatively and innovatively plan new designs, new projects, pose new questions, etc., we not only fail to use the available technology effectively, but more importantly, we fail to develop the kinds of students who are being looked for by employers and ultimately society itself. While skill in the conventional sense is also problematic in that often in the past, "skill-based learning" was also referred to with a diminished scope and lack of critical analysis, the kinds of skills required in today's workplace and higher education fields of study are transferrable and global and more complex.

Students must be multi-layered in terms of their knowledge and understanding of their fields and its place in the global community. Students who see only tasks and how to please teachers successfully in their course content requirements will find themselves increasingly irrelevant in today's workplace. Students, however, who have been trained to question, analyze, synthesize, apply, and transform, will always be in needed both academically and technologically.

Therefore, while we discuss how teachers are going to become better prepared to use and integrate technology in instruction and while we discuss how appropriate funds will be acquired, let us continue to explore the kinds of changes in mindset and approach that are also required if today's students are to be adequately prepared and fitted for their future. Conventionally, academics and applied technology skills have been separated, but it can no longer be that way. Indeed, in my own learning history, back before the personal computer, I was not permitted to take typing classes because I was an "academic student" and, as such, "... would never need" those skills.

Who knew?

Rather than developing students in categories that worked in the past, teachers must lead the way in challenging the status quo and expanding those parameters to better reflect the challenges facing our students today. We need a K-12 system that is relevant and global, inclusive and applied, academically rigorous, and fully skill-based.

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