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April 2010 | Volume 67 | Number 7
Reimagining School Pages 48-53

High School at a Crossroads

Ed Coughlin

Will high schools become mere certification mills? Or will they redefine themselves as collaborative environments for developing 21st century skills?

April 2010

Changes are afoot in society that may redefine the role of schools, especially high schools. The traditional role of high schools as transmitters of content knowledge is already being overtaken by a process that I call *information emancipation*—the ready availability of knowledge in open-source online environments.

This availability goes beyond encyclopedic resources like Wikipedia. Knowledge is now available in formats that not only provide information, but also package that information and transmit it to learners using technology-based delivery systems that can emulate and even surpass those of our aging education institutions.

This leaves high schools at a crossroads. They may choose a path that would define them in the future as mere certification mills, verifying student learning that has taken place. Or they may redefine themselves as collaborative, relevant environments in which students build the expanded skill sets they need for success in a competitive, connected world. It is not yet clear which path schools will choose.

Bypassing Traditional Gatekeepers

In the past, a series of gatekeepers—schools, publishers, libraries, and the like—controlled access to knowledge and information. These institutions provided mediators, primarily teachers and professors, who determined how and when learners could interact with knowledge resources and who provided both pacing and support.

Digital media and technology are now diminishing the influence of the traditional gatekeepers by pushing information out to the public, enabling self-directed learners to become more and more independent. For most learners, however, the availability of this information has not yet caused much change. In the absence of some key learning characteristics— technological literacy, self-direction, the ability to organize information, and so on—most students still need the traditional mediators of knowledge.

But the technologies that deliver this knowledge are changing radically. Visual and auditory media are supplementing text resources to make the presentation of information more engaging. Interactive features provide pacing and individualization. Open-source movements are removing barriers of cost and access. These developments could easily make key elements of our current system superfluous and will certainly change the face of education.

Independent Learners

One result of the emancipation of information may be that capable students will do an end run around the existing system. Some independent learners are already doing so, even without the advantages of 21st century technology.

For example, consider the true story of Kevin, a student at one of the most highly regarded high schools

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ASCD's Top 5 Books

1. *Classroom Instruction That Works*
2. *The Art and Science of Teaching*
3. *Teaching with Poverty in Mind*
4. *How to Differentiate Instruction in Mixed-Ability Classrooms, 2nd Edition*
5. *Never Work Harder Than Your Students and Other Principles of Great*

in California. He was a bright learner with a low tolerance for busywork. At one point, Kevin was flunking economics, even though he had a 96 percent average on exams, because of his refusal to glue all of his assignments to the pages of a notebook to the teacher's specifications. Kevin's parents met with the teacher to try to intervene, but the teacher remained intractable. In the end, the assistant principal negotiated a grade of *C* in the class after Kevin won a silver medal at the state level in the California Academic Decathlon—in economics.

Kevin's goal was to attend the University of California (UC) San Diego, a school well known for its political science program. His parents repeatedly reminded him that with his grade point average hovering around *C*+, it was unlikely that the highly selective UC system would consider him. The saga continued. Kevin was denied access to an advanced placement (AP) U.S. History class because he missed a meeting. He was failing psychology for not taking notes while viewing weekly videos.

Through it all, Kevin would periodically ask for $80 to take another AP test. This seemed odd because he had only managed to talk his way into three AP classes, but his parents weren't really counting. They later discovered that instead of doing the homework assigned by his teachers, Kevin had been reading AP study guides in his room. In the end, he passed the exams in all three AP courses he had taken. He also passed the exams for 10 AP courses he had not taken. With the addition of a couple of community college classes, he entered UC San Diego as a junior, bypassing the grade requirements for admission.

New Resources for the Self-Directed 21st Century Learner

Kevin's path to higher education may not have been ideal, but stories like his may become more common in the coming years. Imagine a world in which a bright, motivated high school student can gain access not just to relatively boring study guides, but also to a video of an entire physics course at the Massachusetts Institute of Technology (MIT).

To enter this world, simply go to MIT's OpenCourseWare site at http://ocw.mit.edu/OcwWeb. There you will find Professor Walter Lewin's introductory physics class—one of 1,900 courses available on the site—featuring 35 videotaped lectures, lecture notes, assignments, and a wide variety of related materials.

If a student takes the time to watch all of these lectures and do the assignments— and can pass an AP physics exam—has he or she completed a high school AP physics course? How can a school certify this student? Should it?

High schools need to be ready to address these issues because open-source Web content is proliferating. For example, the Monterey Institute's National Repository for Online Courses (NROC; www.montereyinstitute.org/nroc) provides access to an entire online high school curriculum free of charge for the individual learner. The repository's offerings include both a standard curriculum and a set of AP courses. The Annenberg Foundation's Learning Math series (www.learner.org/resources/browse.html?discipline=5), originally designed for teacher training, is increasingly being cited on the Web as a resource for independent student learning.

Individual educators, too, are getting into the business of developing free learning resources. Many blogs are providing links to the AP Biology site created by Chris Halloran, supervisor of science and technology for Hackettstown School District in New Jersey (www.users.nac.net/challoran). Eric Burnett, a teacher at the Singapore American School, has created a comprehensive support site for AP World History that provides all the content a student would need to know to prepare for the AP exam or to pass a state assessment in world history (www.mrburnett.net/apworldhistory/APWorldHistory.htm). Teacher Keith Hughes at McKinley High School in Buffalo, New York, is videotaping and audiotaping lectures for his U.S. history and AP government course and posting them to the Web with a host of other support materials (www.buffaloschools.org/webpages/khughes/index.cfm).

As these examples illustrate, students today have access to a wealth of free learning resources that were unimaginable just a few years ago. And this access is increasing exponentially. Online courses, podcasts, and video libraries are being developed daily, and the quality of information available on the Web has improved dramatically.

But there are new gatekeepers guarding access to this information. Today's gatekeepers include technology expertise, broadband access, and most important, 21st century skills that enable students to take responsibility for their own learning—such as the ability to locate and evaluate information, the ability to plan and organize learning activities, and strong self-evaluation skills (Southern Regional Education Board, 2003).

It pains me when people refer to these skills as "soft skills." They are anything but. Research on such 21st century skills as collaboration (Marzano, Pickering, & Pollock, 2001), critical thinking (Halpern, 1989), and self-direction (Dweck, 2000) suggests that these skills may be more directly related to student achievement than many of the traditional "core" content skills.

One Possible Future: Certification Mills

If the role of high schools in our society remains that of transmitting academic content to students, schools will find themselves in direct competition with the growing universe of diverse, engaging resources such as those described here. If students can master the content outside the classroom, the

role of the school may simply be to certify that mastery through assessments and to provide remedial services to students who are unable to work in these new environments.

Under this scenario, the supervisory role played by high schools today might take place in community learning centers where students are supervised by professional staff with low levels of responsibility for academics (and likely low salaries). In such centers, students would be able to access online learning resources of their choosing and gain some social benefits of the high school environment while they move through the curriculum at their own pace. As online learning technologies providing high levels of scaffolding and support continue to multiply, such centers could attract not only the most able learners but also those with less self-direction.

These community learning centers would likely leave the traditional high school with two roles. The first would be to certify that students have mastered the academic content that the high schools previously taught. A model for this certification, one that I find unfortunate, is the current AP test. As Kevin's story so clearly demonstrates, once you rely on a test as the sole instrument for certification of learning, the methods and context of that learning become subordinate to the test. Schools could easily develop similar tests to measure mastery of today's regular high school curriculum. Even current high school exit exams might serve that purpose.

A second function of future high schools might be remediation and support. According to surveys involving thousands of students that my colleagues and I have conducted in schools across the United States and in Canada (Metiri Group, 2009; Texas Center for Educational Research, 2009), approximately 30 percent of students may lack the self-discipline or learning acumen to take advantage of even highly supportive online tools and environments.[1] These students may need a more traditional classroom. Many of them—although not necessarily all—would be low-achieving students in today's high schools. If the research on the harmful effects of tracking on low-performing students is any indicator, the outlook for these students would be fairly dismal. And the prospects of teaching in such a classroom, populated largely with the most disinterested and undisciplined students, would strike most teachers as dismal, too.

A Better Future: A Metacurriculum of 21st Century Learning

There is a different possible future, one that is being developed today in a few cutting-edge schools across the United States. These schools realize that academic content is only part of the curriculum, albeit an important part. They explicitly focus on a second curriculum called the *metacurriculum* (Perkins, 1995)—a complex program of learning facilitation, skills training, and cognitive development that floats above the academic content. Whereas the academic curriculum focuses on the knowledge that students must master within the content areas, the metacurriculum focuses on the learning skills, habits of mind, and life and workplace skills students will need to be successful in a competitive, shrinking world. Several key beliefs support this approach:

- Important 21st century skills, such as critical thinking, innovative thinking, and self-directed behavior, can be explicitly taught, applied, and assessed (For some of the research supporting this belief, see Coughlin, Garcia, & Reifsneider, 2009; Dweck, 2007; Zimmerman, Bonner, & Kovach, 1996).
- 21st century skills are not "soft skills" but important qualities that may contribute more directly to student success in future education, life, and careers than many academic skills do.
- Students can most effectively develop 21st century skills in the context of rich, authentic academic learning opportunities that closely mirror the type of work done by professionals. Although all learners must build academic knowledge and skills, we should give all learners frequent opportunities to apply that knowledge and those skills in meaningful contexts.
- Schools and parents share joint responsibility for helping all students attain these skills.

What might an explicit focus on the metacurriculum look like in practice? I had an opportunity to observe a learning experience in a Pennsylvania high school that illustrates the integration of curriculum and metacurriculum in the context of rich, authentic learning.

A Glimpse of a Better Future

In a science course studying ecosystems, the teacher was facilitating a three-year project aimed at transforming a local wetland. Each successive class over the three-year period would contribute to the project. This wetland was close to the town center, but human activity had transformed it into an eyesore, devoid of life and beauty.

I observed the project in its first year. To begin the work, the teacher had talked with students about the academic standards that the unit would address and what they would know and be able to do as a result of their participation. The teacher asked students to reflect on how the skills and knowledge attained might help them in the future. Although this might seem like casual conversation to many observers, it was actually a scaffold for an important aspect of self-directed behavior. This teacher knew that self-directed individuals are goal oriented—they tend to spend more time up front thinking about what they

are trying to accomplish. By having purposeful conversations like this, the teacher was both modeling goal-oriented behavior and promoting it in his students.

Rather than planning the project completely in advance and simply informing the students what their activities would be, the teacher involved students in framing the problem. Together, they discussed the function of the wetland and the benefits that it might bring to the surrounding environment as well as the negative impacts, aesthetic and otherwise, of a damaged wetland. They then created a statement describing those lost benefits and negative impacts. Next, the teacher involved the students in planning the project after explicitly teaching them a relatively simple planning process consisting of seven steps: define the problem, collect and analyze data, redefine the problem, research and propose solutions, evaluate and select solutions, implement solutions, and evaluate results.

The first year of the project focused on data collection. Students worked in five teams exploring cartography, botany, soil, chemistry, and hydrology. Each team was charged with collecting data within its specialty area and analyzing those data for evidence that might help define the problem. The hydrology group, for example, looked at water sources and flow rates and created hydrographs—charts showing the relationship of water level to ground surface. The soil group looked at soil textures and other indicators of soil quality and consistency. Each team created a set of findings for its area of specialization that contributed to the final report. The students conducted this work using the same tools and processes that professionals would use for similar fieldwork.

Students were not simply assigned to groups without preparation, though. The teacher worked with them on strategies for effective group work and skills of collaboration. At the end of the team process, the students completed both self and peer evaluations of their effectiveness in applying these skills.

The final project for the first-year class was a report to the local water governance board making the case for the next phase of the project—the development of a plan to repair and transform the wetland. If the board approved it, the next year's class would develop the plan.

Once again, the teacher explicitly taught and assessed the metacurricular objective—in this case, the critical-thinking skill of making an effective argument. The class discussed the role of premises and conclusions and the differences among opinions, reasoned judgments, and facts. Students reviewed scientific papers and assessed the quality of these papers' arguments using the same rubric that would be used as part of the final assessment for the project. For this final assessment, each student submitted an individual report on his or her team's results, which the teacher evaluated in terms of not only scientific knowledge and content but also effective argumentation.

Powerful Possibilities

This example suggests powerful possibilities for the future of schools. We can envision the future high school as a place that involves students in rich, authentic, collaborative work; that takes responsibility for building 21st century skills; and that uses a diverse program of assessment to document students' growth in such skills as well as academic content knowledge. Rather than ignore the rich knowledge-transmission technologies that are becoming increasingly available, these schools would embrace them, leveraging them both to help students learn content and to free up time for rich, authentic work during the school day.

Schools like this could make the certification mills obsolete before they exist. The schools that will be successful will be those that transform themselves from transmitters of knowledge and information to orchestrators of a complex program of learning facilitation and cognitive development.

Will yours be one of them?

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Endnote

[1] These numbers represent the percentage of students whose mean score on the Metiri Group's Self-Directed Learning Inventory was below 4 points on a 7-point scale.

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