Whistling Past the Cemetery [With the Common Core State Standards in Mind: Caveats and Opportunities]

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The Common Core State Standards (CCSS) and The Next Generation Science Standards (NGSS), developed by The National Research Council (NRC), the National Science Teachers Association (NSTA), the American Association for the Advancement of Science (AAAS), and Achieve may hold some potential for bringing about promised changes in our education system but anyone who believes that plain old fashioned high achievement test scores based on received knowledge will not continue to be the driving force for the foreseeable future needs to examine the history of all previous efforts of standardizing schools and learning. In addition to the profitability of the prepackaged curriculum industry, these tests are just too convenient to administer and score, lucrative for the companies that peddle them, and they offer the comfort of administrative tidiness to the bureaucratic bean counters that are always looking for convenient ways to judge our schools. And, of course, they are useful to the relators who have school district scores listed from high-to-low on their clipboards as they show couples with children around the suburbs. Anyone who advocates school reform proposals without realizing the role that traditional achievement tests will play is simply whistling past the cemetery.

Finding a Balance

But there is a glimmer of hope for at least some increased attention to the development of cognitive skills as a result of the process standards being emphasized in the CCSS. We have finally arrived at a point where thinking as well as memorizing has crept under the schoolhouse door! To achieve this hope, however, we must first figure out a way to balance the historical obsession with measuring received knowledge with the now almost universally accepted belief that the curriculum must put more emphasis on developing the cognitive skills necessary for higher education and the 21st Century workplace. The secret to achieving this balance lies in helping teachers learn how to blend received and analyzed knowledge rather than simply randomly stuffing work sheets on thinking skills into the curriculum. And we now have the tools to do this because of changes that have taken place in technology.

Dramatic changes in technology have the potential to make formal learning an essentially different process than it was a decade ago. Today's young people are digital learners and active or up-and-coming masters of interactive media technology. Traditional ways of learning, even under the best of circumstances, cannot compete with students who find texting under their desks more engaging than listening to their teachers and professors or memorizing material for a forthcoming test. We can capitalize on the use of students' new skills with technology and drastically reduce classroom boredom when we examine some of the ways that the availability of

and fascination with technology plus a greater concern for the development of thinking skills can be integrated into the learning process.

Technological Advances

Three technology-related issues have brought about these changes. The first is the availability of low cost interactive multiple media devices. A majority of American students have a computer or one or more hand held-devices at their disposal and it will not be too long before an iPad dock or similar devices will be as common in school work places as inkwells were on school desks in days of old. Inexpensive smartphones and tablets are available to most students, and more innovative educators are beginning to encourage rather than prohibit the use of cell phones and other hand-held devices in the classroom.

The second and perhaps most significant development for formal learning is the almost unlimited amount of information that is now available through the Internet. Thousands of free course-related materials are easily assessable through organizations such as the Kahn Academy, which has produced more than 4,000 videos on topics across all grade levels and several curricular areas. The Massive Open Online Courses sponsored by some of the best-known universities in the country, including MIT's Open Courseware program and Coursera, have produced thousands of courses that can be widely accessed without cost. Computer generated student profiles that assess achievement levels, interests, learning styles, and preferred modes of expression are now being used to match high engagement resources in ways that personalize learning and enhance thinking skills. The same software allows teachers to review, select, and infuse into any and all curricular areas highly interactive enrichment activities that make learning more engaging and enjoyable. And teachers can now prepare and upload their own lectures and assignments for student use anytime and anywhere through the application of easy-to-use screen casting software. Technology is actually changing the roles and responsibilities of teachers to give students the motivation and technological know-how to pursue and use knowledge in ways that go far beyond merely acquiring and storing information.

A third development is the substantial increase in teacher training related to the use of technology that has taken place in recent years and is fast becoming part of the repertoire of all teachers and professors. What was once considered the province of "the IT teacher" has now become a skill that is required for all teachers-in-training and is increasingly being provided through professional development for teachers already in the classroom. These changes are leading to a complete reexamination of the traditional learning theories that have for so long dominated education, and more importantly, the ways that we use class time. We can now deliver the received knowledge that traditionally was provided through lectures, in-class media, and print material through out-of-the-classroom electronic means—at home, during study halls, or listening and watching as students ride the school bus or are home for a snow day!

Transforming Student Roles

Our major goal in this approach so far as classroom activity is concerned should be to promote high levels of engagement and cognitive development by transforming the roles of students from passive lesson learners and receivers of information to active participants in the

learning process. Class time can become a place where students can engage in debates, discussions, simulations, role playing, working on projects, and lab activities by using received knowledge exactly the way professionals use information as they go about their work. By realizing that received knowledge only has value when young people apply it to problem solving situations, decision makers are finally recognizing the balance that is necessary to develop the analytic and creative skills that are the *modus operandi* of almost all people who work outside of schools. We can get young people to think, feel, and do like practicing professionals (even if at a more junior level than adult scientists, artists, writers, and engineers) by making the application of knowledge standard operating procedure in classrooms. And we can help students realize that in addition to prescribed knowledge, technology now allows them to access just-in-time knowledge in much the same way as practicing professionals.

We have lived through a long and mainly unsuccessful effort to reform schools by focusing on highly prescriptive content, Skinnerian approaches to learning, and a mind numbing test preparation approach for determining accountability. By using the now available technology to deliver received knowledge, we will be addressing the omnipresent need to show growth in traditional achievement test scores, but we will also be teaching our students how to think. Picture for a moment the superintendent who can say to his or her school board, "Our students are doing great on both their achievement test scores and their measures of cognitive growth." We can now have it both ways. By using available technology to deliver received knowledge, we can address the omnipresent need to show growth in traditional achievement test scores and teach our students how to think. Isn't that the point?

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