The New K-12 Model

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LT 712

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A new model for K-12 schools is emerging in response to the ever changing global economy with the intention of better preparing students to compete in the work force. One of the mandates of public education is to help students become productive members of society who are able to contribute economically to the nation, while also ensuring their own financial success (Jukes, 2007). It used to be common for a person to spend their entire life without ever experiencing a career change. Now, according to the Bureau of Labor Statistics, kids today can expect to have 10-14 distinct careers (Jukes, 2007). According to Manning, from the Independent News Analysis & Commentary:

> The effect of job globalization is the suppression of wages in the United States. 57% of reemployed displaced workers earned less in new jobs than in the jobs that were lost from outsourcing. 34% of those displaced workers saw earnings reductions of more than 20%. Brookings Institute recommends that outsourced reemployed workers recover 47 cents of every dollar that they used to earn (Manning, 2008).

Students in the future are going to require new skills sets if they wish to remain competitive. Some educational theorist and economist contend that education needs to shift its current philosophies to better meet the upcoming needs of the 21st century learner. To paraphrase Daniel Pink, "The old school method of memorization, routines, and standardizations are not aligning with the countries best interests… We need to do work that is hard to automate and outsource... Schools need to help students focus on left brain activities (Pink, 2008)." To meet these needs the new model for K-12 schools moves away from traditional teacher lead instruction to an approach to learning that is student-centered; combining philosophies of cooperative teaching, collaborative learning, educational progressivism, and constructivism.

Progressivism is based on developing individual character traits, where the subject matter plays a secondary role. Instructional strategies favor cooperative learning over competition, where students learn to work together and respect opposing viewpoints. Celestin Freinet summed up the objectives of cooperative pedagogy with the following elements:

 Learning as an induction process, critical analysis of reality, taking charge of oneself, taking charge of a group… the use of tools and work techniques – which are always perfectible – allows the student to become personally and collectively autonomous and acquire knowledge. It is based on experience: children learn by doing (Bertrand, 2003).

The new K-12 model is a combination of cognitive theories, mainly constructivism, where learners construct their own meaning through experiences of problem-solving, and learning community theories such as progressivism discussed above.

What would the new roles for teachers and students be in this new K-12 model? The progressive educational philosophy would begin in kindergarten while continually challenging students to solve problems on their own as they progress through school. The teachers are responsible for assessing and attending to learners' developmental needs, providing guidance, identifying academic givens, monitoring each learner's academic and social growth, and leading each into new areas of understanding and competence (Bertrand, 2003). Teachers should concentrate their efforts on creating a balance between learner-centered and knowledge-centered environments. According to Bransford, Knowledge-centered environments intersect with learner-centered environments when instruction begins with a concern for students' initial

preconceptions about the subject matter… Knowledge-centered environments also focus on the kinds of information and activities that help students develop an understanding of disciplines (Bransford, 2000). As problem solvers, students would take on roles that develop skills such as; critical thinking, decision making, leadership, communication, organizational, negotiating, stress management, and time management (Jukes, 2007). The role of the student is to become an independent thinker.

My interpretation of the new K-12 model is that the context in which an activity, project, or problem is presented and the processes used to solve them are of greater importance than the actual content. Put simply, the learning is in the process. The process builds on learning skills such as: teamwork, information literacy, technical reading and writing, and multimedia applications just to mention a few. Building a strong foundation in the process of problem solving will better enable 21st century workers to adjust, adapt, and learn on the fly in a rapidly changing global economy.

This new model is exciting to me because I teach in a one-to-one computing environment and the theory lends itself well to the science disciplines. There has been outstanding administrative support as it relates to incorporating technology into my classroom and creating multidisciplinary units. The focus is still on problem solving but now the context in which that can be done has been greatly expanded due to the fact that each student has a tablet. The technology now allows the flexibility to create labs outside of the classroom, at the lake, football field, ice rink, weight room, the options are endless. Communications between classes,

neighboring schools or even students in another country are all possible. Simulations that allow

students to manipulate a variety of variables in the design stage can be used to reinforce

conceptual concepts. Even digital game-based learning (DGBL) has come to the attention of

some educational theorist.   The positive effects of DGBL seen in experimental studies can be

traced, at least partially, to well-established principles of learning as described earlier (e.g.,

situated cognition, play theory, assimilation and accommodation) and elsewhere by others (Van

Eck, 2006). Educational methodology can even allow for games, simulations, and theater

(Bertrand, 2003). I going to wait until more research is done to support DGBL before I ask the

administration to fund it.

To fully emerge the new K-12 model into my classroom I would utilize the 4 Ds of problem

solving presented by Ted McCain; Define, Design, Develop, and Debrief (Jukes, 2007). The four

step process requires the students to define what the question is, design a plan, put the plan to

action, and allows for regular student feedback. The debrief stage is where I plan to focus my

attention. It can be difficult to assess collaborative projects. One research study has shown

that to have students participate is not as easy as it would seem, that two or three students in a

class of 40 control half of the interactions, and that four or five students are at the origin of 75

percent of all interactions in a class (Bertrand, 2003). I also like the action verbs and examples

presented in the revised version of Bloom's Digital Taxonomy. It helps provide the initial

framework to curriculum designer by detailing a continuum for high order thinking skills for the

21st century learner. Bloom's digital taxonomy addresses the new objectives and activities

presented by the emergence and integration of Information and Communication Technologies

into the classroom and the lives of our students (Churches, 2008). The design phase of our curriculums should be approached by first looking at what skills the 21st century learner will need to succeed in the future. According to Wiggins:

> Our lessons, units, and courses should be logically inferred from the results sought, not derived from the methods, books, and activities, with which we are most comfortable. Curriculum should lay out the most effective ways of achieving specific results… In short, the best designs derive backwards from the learning sought (Wiggins, 2005).

To fully implement the new K-12 model and equip our students with the 21st century skills one major obstacle must be addressed. The largest hurdle to overcome is the high stakes, standardized testing required by the No Child Left Behind Act (NCLB) that is driving school curriculums across our country. Until the federal government and policy makers realize there is more to learning than regurgitating facts, school administrators, concerned with making Annual Yearly Progress (AYP), will continue to support traditional educational philosophies. However, I am hopeful the educational pendulum will swing back with the new administration now in the White House; granting more autonomy to educators wishing to teach students to be creative, independent, technically savvy, problem solvers.

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