

Running head: Classroom for the 21st Century

Classroom for the 21st Century

Mary Dora Smith

marydora.smith@verizon.net

4/11/04

Virginia Tech

Problem Statement

As a teacher in our public school system and as a mother of two teenagers who attend our public school system, I seek to discover what our children need in their classrooms to meet the needs of the 21st Century student. As I walk down hallways I see desk, chairs, chalkboards, an occasional white board, and a few computers. However, each morning as I walk through our office I see numerous worksheets being prepared for some of our classes. My topic is: what should I be viewing as I peer into these classes and as I walk past our copiers? Are our 21st Century students going to be captivated to the point of having a desire to learn when confronted with an onslaught of mundane worksheets? At recess and lunch I hear chatter amongst our students about all the media they are using at home and must wonder how captivating to these students is our white chalk and boards? So I must ask as my preliminary research question; what does a 21st Century Classroom need in order to provide exemplary instruction?

Literature Review

Based upon the availability of material that correlates to understanding the needs of the classroom for the 21st Century, it is apparent that I am not alone in the quest for an answer. Nor am I alone in noticing that education has become more than just a search for knowledge. Educators are no longer just responsible for helping the students acquire the basic knowledge they need for successful and productive futures but are also responsible for preparing them for the 21st Century workplace. Over the course of this paper I will share with you information from both primary and secondary sources but all which contained actual research.

With the impact of No Child Left Behind legislation, it seems educators are all concerned with the achievement of their students on their standardized test. As an educator it has become apparent that the focus is on the acquisition of knowledge needed to receive high marks on, in my case, Virginia's SOL test. We are also in the dawn of awareness that unless we seek to prepare our classrooms for the 21st Century our students will be prepared for their test but not their future. As indicated by one of our nations' top standardized test, the Iowa Test of Basic Skills, they warn that:

“No assessment method or instrument can supply the full range of information required to evaluate the entire school program, or even the complete academic curriculum. Since batteries like the ITBS can assess achievement in only a limited part of the total curriculum, scores from them must be supplemented by results from other forms of assessment if the relative success of the entire program is to be judged. Standardized test scores alone should not be used for this purpose because achievement batteries are not designed to cover the full range of objectives that make up the typical school curriculum.” (Dirr, 2003)

This isn't the only source that is recognizing the need to acquire 21st Century classrooms. The partnership for the 21st Century has included in their recent publication that:

“There remains, however, a profound gap between the knowledge and skills most students learn in school and the knowledge and skills they need in typical 21st Century communities and workplaces”. ([Http://www.21stcenturyskills.org/downloads/P21_Report.pdf](http://www.21stcenturyskills.org/downloads/P21_Report.pdf))

This same documentation brings up another very valid point that we need to address in order to prepare our rooms. That is that many of the skills needed in today's workforce are not measured by today's standardized tests. Furthermore, it should be noted that what we value is needed for our 21st Century student must be measured or it will not be taught. In other words, if we expect our students to leave our schools prepared for today's workforce then our assessment tools need to be aligned with our expected outcome. I ask, are the cognitive skills that our states mandate and push to be mastered, including reasoning abilities that have been proven necessities for our future work force? Do they include measurements for problem solving, interpersonal skills, technology aptitude, and positive attitudes? What role should technology play? It must play an active role due to its necessity in the modern workforce.

There are those who would state that technology should play no role at all and that it interferes with the students' concentration and learning. According to a study commissioned by the Department for Education, which this publication didn't provide access to, it could find “no consistent relationship” between computer use and pupil achievement in any subject at any age. (Clare, 2003) However, would the benefits that the technology would provide in the workforce be measured by pupil achievement in subject content? Mr. Clare received negative comments from one principal and proceeded to do his on case study from a very limited sample. He reported findings that were aligned with his earlier quoted statements. Were his observations

valid, was he biased, was he trained for the observation process, was one day of observing five different classes adequate observation time? It is my opinion that no verification of his qualifications for such research is provided and that his validity is in question. So why am I even commenting on his study? To show that there is a public out there with these feelings.

With the onset of the No Child Left Behind Delegation we are seeing less and less of the before mentioned study and more science based hard core research based information for a field that has relied far too often on personal opinions. For example, during the past thirty years there have been a large number of meta-analyses to examine the effects of technology on student outcomes. Overall, these meta-analyses have shown the positive effects of educational technology on student achievement.(Waxman, Lin, Michko, 2003) However, as noted by Waxman, Lin, and Michko, our current technology that is available in schools and classrooms is a totally different type of technology than was available during those past thirty years. Such changes in technology and the availability of technology in our schools would suggest that the current day impact is different today than when these Meta-analyses were compiled. There has been a continuation of using the meta-analyses to determine the use of educational technology in our classrooms that has been reported in peer-reviewed journals. Of these reports there has been a modest positive effect size on student achievement. Yet a negative effect size of -.40 has been reported on student attitudes. (Waxmen, et al., 2003) Based on these findings I would have to question if the technology itself creates the change or is there actually a change that occurs in the teacher course presentation due to the utilization of the technology. Therefore, this is certainly one research based primary article that supports the need for future research of my question.

Some classrooms are selecting to go paperless during this 21st century time of awareness. One such study and practice is being carried out by the American Society of Engineers. They

have created a paperless engineering textbook. This study began in 1999 and was the first of such studies to use cd's instead of books. The Cal Poly instructors hoped the new CD would enhance the learning of their course and be interactive. No final outcome is available. (Paul, 1999)

Some classrooms are trying to bridge the gap between the must teach curriculum and the needs of the 21st Century student by becoming a paperless classroom. One such classroom is the brainchild of Stephanie Sorrell at Eminence Middle School in rural Kentucky. Through grant research she has been successful using palms to completely eliminate the use of paper in her instruction. Each of her students has their own personal digital assistant that enables him or her to receive tests and homework via an infrared beam. (Frances, na) Surprisingly, the program is seen as a money saver due to the fact that she has saved 900 pieces of paper each week and has cut the costs of copying. However, this program isn't without its negatives. For example it does require a replacement and repairing plan. Perhaps the largest negative for this plan directly involves the students' future. Apparently it is difficult for the students to reacclimatize themselves to a paper environment when they move to high school. The program is currently continuing to run and act as a guinea pig for others.

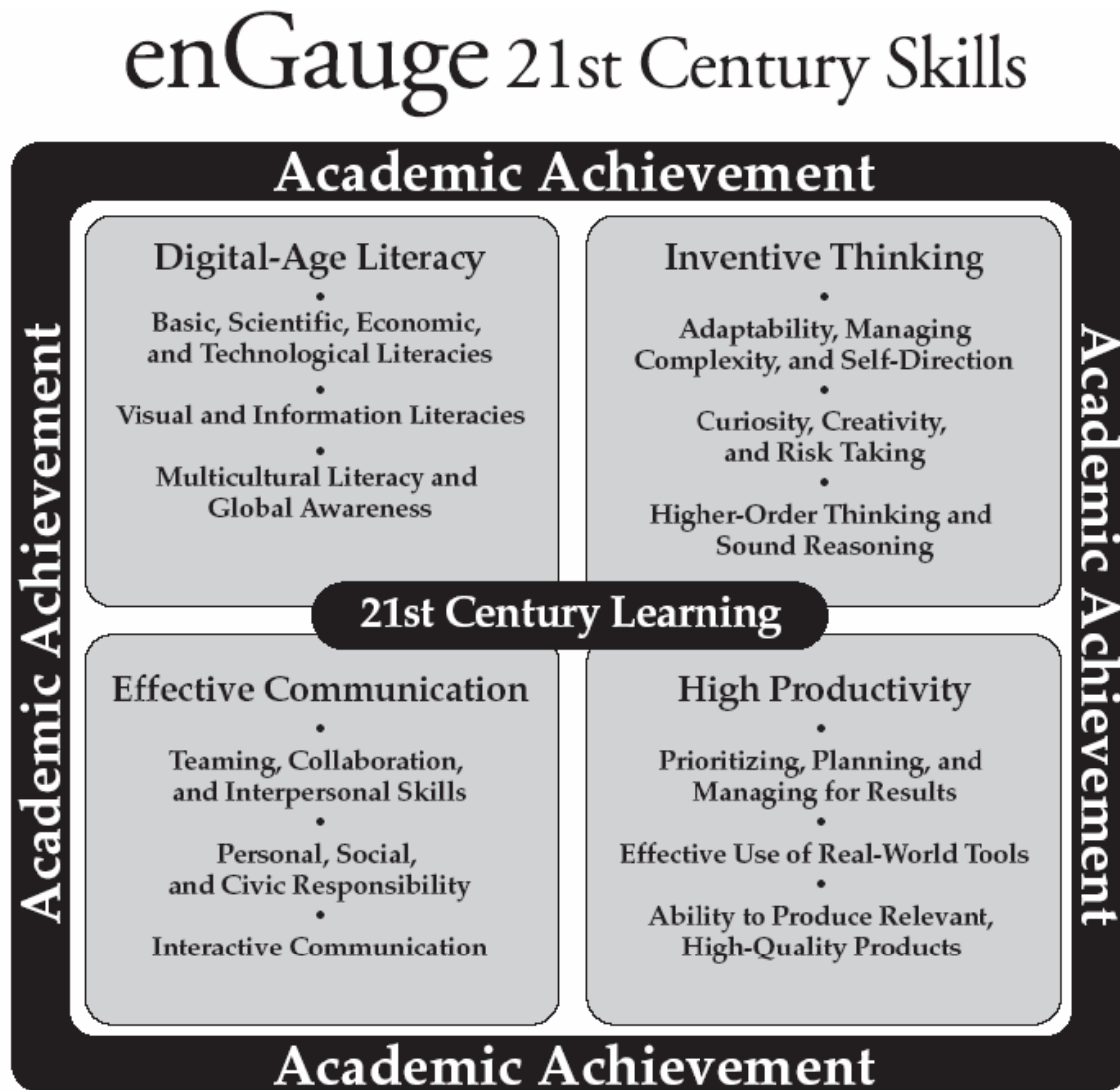
Ms. Sorrell isn't the only paperless environment I was able to unearth. According to Dean Tony Paustian he estimates that over half of the campus of Des Moines Area Community College's West Des Moines campus is paperless. As this was the estimate for the year 2000 it could quite possibly be paperless in totality by this time. Not only does this campus have its own wireless infrastructure but its faculty uses smartboards, students download notes to their handhelds, all data is kept on the school's storage area network and can be synched with their home computer system as well as accessed via the Web. The Dean said, "We are heading

toward a world where, instead of reading a bunch of Bill Gates' quotes, you want to have a video clip of him actually speaking that quote.”(Dean, 2002) Instructor Jay Nickelson said the switch from paper to digital takes a little getting used to. “It’s just a matter of shifting your mind-set a little bit and becoming less reliant on a piece of paper.”(Dean, 2002)

Perhaps I should ask. How should we train our staff in order to better integrate their abilities and creativity into a seamless merge of information and technology for the 21st century classroom? A book obtained from a secondary source and by the title *A New Vision For Staff Development*, explores these issues. This text is based on three main ideas...result-driven education, systems thinking, and constructivism. Certainly training of this sort would lead our educators to a spot that would have us testing what students actually know and what they can do as a result of what they have been taught as opposed to what they score only on one standardized test.(Sparks, Hirsh,1997) In addition we would produce students who are more than recipients of knowledge but creators of their own knowledge. Certainly these are necessary skills for our future work force. Although it is my opinion that this work appears to be primarily opinion based on current trends.

This isn't the only source that recognizes the need for our educators to be better trained to accept and initiate 21st Century learning. From a Scandinavian Journal of Education Research you can find an article which explores the knowledge teachers will need. This article suggest, “... several ways to change the perception of pedagogical knowledge, school curricula, and school structure, proposing that teacher-education curricula include “core” and “periphery” aspects.”(Hayon, 1998) Another early article supporting this same theory is *The Promise of Technology* also from 1998.

Perhaps one of the better guides for what a 21st Century classroom should look like is described in the following graphic taken from www.ncrel.org/engauge.



Here you can readily see what skills are needed for our future work force. That leaves the question what is needed in our classrooms to provide these skills. The answer appears to be, available technologies lead and integrated by highly motivated and skilled educators.

Summary and Conclusions

Based upon my literature review, I would summarize that there is a larger percentage of research available than I initially thought. However, there seems to be a tremendous amount still needed in the area of what is needed in the classroom for the 21st Century student. I do feel that the research results found in my review address my preliminary research question? These reviews pointed out some of the needs and skills that our students will need in the 21st Century workforce as well as some attempts at providing ways to accomplish these goals in our classrooms. These reviews also pointed out a significant realization that whatever is in the classroom or the instruction of the courses must be fully and seamlessly integrated by a skillful educator. Yet each responded to the need for our students to use technology in ways that are true to the workforce and as a means to problem solving and higher orders of thinking. In addition, these articles revealed the need for our measurements to correlate with our students' needs. If we expect them to acquire the needs as shown in the graphic picture then we must measure their success on these tasks or they will not be taught. However, the reviews that I compiled focused on what was needed for the 21st Century student and little could be found on how to provide a solution. Although some progress is being made in this area of research much further investigation is needed.

Revised Research Question

What does a 21st Century Classroom need in order to provide exemplary instruction? This was my original research question. However, after completing my literature Review I would like to revise my question. There seems to be an unstated consensus that technology is needed for our future workers therefore it must be made available in our classrooms. What we need are educators better equipped to bridge the gap between what must be taught and what must be learned. I would therefore reduce my question to a simpler form to begin this process. My new question would state: What skills and abilities do our educators need to be able to facilitate our 21st Century classrooms? A second question I would then seek would be: What measurements need to be implemented in order to insure the teaching of 21st Century skills in our classroom?

References

- Burkehardt, M. M., Valdez, C. G., Dawson, C. L., Coughlin, V. T., Martin, et al. (2003). *enGauge 21st century skills*. North central regional educational laboratory of the metiri group.
- Clare, John. (2003, February 5). *Why study when you can surf?* Daily Telegraph (London, England). Feature.
- Dean, Katie. (2002, August 6). *Who needs paper? Not iowa college*. Retrieved 4/10/2004, from <http://www.wired.com/new/school/0,1383,53747,00.html>
- Dennis Sparks & Stephanie Hirsh (1997). *A new vision for staff development*. Association for Supervision and Curriculum Development, 115.
- Dirr, Dr. Peter J.. (2003, December). *Measuring the impact of technology on classroom teaching and learning*. Appalachian technology in education consortium. Policy and planning series #108.
- Eisner, ElliotW.. (Spring, 1995). *Preparing teachers for schools of the 21st century*. Peabody journal of education, Vol. 70, No.3.
- Francis, Ryan. (NA). *The paperless school of the future is here now!*. Retrieved 4/11/2004, from http://www.educationworld.com/a_tech/tech059.shtml.
- Kleiman, Glenn M.. (2003). *Myths and realities about technology in k-12 schools*. The center for online professional education at education development center, inc.
- Kremer-Hayon. (1998, December). *Teaching and teacher education:a glimpse into the future*. Scandinavian journal of educational research, Vol. 42, No.4. 377-3888.

Lee Sherman. (Spring, 1998). *The promise of technology*. Northwest Education, Vol. 3, No. 3: 2-9.

Lya Kremer-Hayon. (December 1998) *Teaching and teacher education: A glimpse into the future*. Scandinavian Journal of Educational Research, Vol. 42, No. 4: 377-388.

Partnership for 21st century skills. (2002). *A report and mile guide for 21st century skills*. Retrieved 4/11/2004, from <http://www.21stcenturyskills.org>.

Paulson, Karen. (2002, January 1) *Reconfiguring faculty roles for virtual settings*. Journal of Higher Education.

Waxman, Lin, Michko. (2003). *A meta-analysis of the effectiveness of teaching and learning with technology on student outcomes*. Gov. contract number ED-01-Co-0011.

Weckler, Paul. (1999, November 1) *The 21st century classroom*. Engineering & technology for a sustainable world. HighBeam Research 584479.

