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Growing Up Digital: Cultivating Learning And Life Skills In A Virtual World

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Abstract

The goal of a liberal arts high school education should be to prepare students to be critical thinkers, productive members of society, and to flourish in whatever they endeavor after graduation. Technology should not only be used to teach the life skills needed to function in a global economy, it should be used to create interest and emotional engagement in traditional subject matter. This paper introduces three topic foci that together follow the transition from high school to higher education, and considers the general lack of preparedness at the high school level for college-level online learning skills. The first topic focus, “Creating eLearners from Digital Natives,” examines how curriculum, teaching philosophy and technology can work together to create an environment where all students, of all abilities, can be successful.

Growing Up Digital: Cultivating Learning and Life Skills in a Virtual World

If I have any wisdom at this point in my life, it is certainly more the result of my experiences as a parent, student and educator than from anything I have read. Transitioning to a career path where the knowledge I gain will come primarily from studying the research of others will be an exciting challenge. Why would I want to do it? As an observer of people over time in the environments where they learn, there are topics that have become so compelling to me that finding my own solutions to these questions have become the basis for seeking a doctoral education.

To be honest, finding a “lens” with which to frame these topics has been a challenge. At the moment, I am more of an absorber of knowledge than I am a proponent of any school of thought. As I develop my subject knowledge it will become more important to establish a theoretical position in order to create constructs for my own work. Coming from a business background I tend to read things literally, looking more at what result is accomplished than any conceptual framework or learning theory. If I have a bias at all, it would be as a tech-geek: How can the technology we have at our disposal today benefit students, teachers and institutions? How is the makeup of students different today than in the past? Is a technological benefit determined solely in a grade-point average or cost benefit analysis, or are there life-enhancing skills that technology can help develop?

While this introduction provides an overall structure for my intended topic foci, each topic will be discussed in detail, presenting a framework for *why* the topic is so important, both from my own experience and from the questions I am trying to answer. I will then ask several questions that I hope to answer as part of own research into the topic. As a new doctoral student, I fully expect my research to uncover as many new questions as answer existing inquiries.

Finally, I will make a case for the interconnection of all the topic foci, as each successive focus will build on earlier topics.

Proposed Topic Foci

Problem	Foci	Questions (at present)
<p>What are the needs of today’s learners – particularly grades 9-12 – and how has their experience with technology changed their needs?</p>	<p>Creating eLearners from Digital Natives – people who have been raised in an Internet-accessible society.</p>	<ol style="list-style-type: none"> 1. Level of online experience received in high school 2. Do technology programs in grades 9-12 raise the bar for college prep? 3. Does technology use in H.S. level the playing field for disadvantaged students?
<p>Students completing online programs come from different locations, and they interact via electronic media. How can they develop a sense of cohesion or connectedness?</p>	<p>Overcoming the Cultural and Social Barriers to Learning that occur in a Global Education Community- what barriers to emotional engagement exist?</p>	<ol style="list-style-type: none"> 1. What are the social and cultural barriers to learning that occur in a global education community? 2. What tools and methods can be used to quickly create a sense of community in an online environment?
<p>Online programs must meet the needs of students with very diverse profiles; how can an online curriculum be adapted to meet these diverse needs?</p>	<p>Differentiation: Thriving in a Higher Education Global Marketplace</p>	<ol style="list-style-type: none"> 1. Can institutions create an anywhere, anytime educational model that personalizes learning? 2. Can online curriculum be designed for outcome-based goals, while creating a digital portfolio of work that will enable a rapid transition to employment after graduation?

My first topic focus is “Creating eLearners from Digital Natives.” This topic is born out of my own experiences with my daughter Becky, who was very Internet savvy but still unable to be engaged in the classroom. My hypothesis is that Becky’s biggest problem was the inflexibility

of the medium; trying to make a visual, artistic personality learn by traditional methods with printed material as the primary learning tool. While my research will be student-centric, my questions in this area have to do with whether there should be a minimum technology competency required of a student before graduation from high school, how technology programs affect the motivation to learn and most importantly, how might a technology program help level the playing field for people who are at a disadvantage to learn?

My second topic follows what happens as these high school graduates enter college. While many undergraduates will enter as traditional ground students (living on or near campus and attending classes as a synchronous physical presence), an increasing number are turning to online learning as a way to earn some, if not all, of their college degree (of course, my research will need to prove this). Once an institution offers online degree programs, virtual classmates can be from anywhere. “Establishing Social and Cultural Connections in a Global Community,” will take a curriculum-centric look at what tools and activities instructors can use to quickly reduce those initial barriers to learning that occur in virtual learning

Finally, based on what I learn as a result of the other two topic foci, my third focus will be looking at online education from the perspective of the institution. As more and more institutions offer fully online degree programs as a way to manage budgets and facilities (again, research will have to bear this out), competition for enrollments won’t just be regional; it will be global. My topic, “Differentiation: Thriving in a Global Educational Marketplace”, will examine how schools can present themselves as a unique educational experience for prospective students.

One might well be concerned that my quest for technology answers may preclude any concern for an educational model. As I organize my topic foci in more detail, it will become clear that I indeed have a concern for cultural and socio-economic factors concerning educational

technology – I am as much enamored with how learning theories form the foundation of curriculum design as I am with delivery methodology. All my topic foci relate to the electronic delivery of educational material; first at the high school level and then in higher education.

Of course, all of this is subject to change as I advance through the EDLI program. While my previous reading on these subjects has been more of highly opinionated pundits and critics than of researchers, my passion is to see everyone have an equal opportunity to learn and reach their personal potential. Technology presents the opportunity not only to make learning mobile, but also to make gainful employment mobile. This creates a gateway to self-sufficiency for many groups of people who are traditionally at a disadvantage in society. My hope is to be able to use the gifts I have been given to enrich life – even a virtual one – through advances in educational technology.

Topic Focus I:

Creating eLearners from Digital Natives

“The genius of the American high school has resided in its capacity to avoid internal conflict by absorbing all conceivable purposes without embracing too strenuously any single one.”

(Powell, 2003)

Background

My children were raised in the digital age, in the home of an early adopter - someone who embraces new technology ahead of the masses. Two of my children didn't seem to be interested in the beeps, whirrs and other noises coming from my Apple IIe but Becky, my second daughter, seemed to be as enamored with the technology as I was. As Becky grew older and as the Internet became a way of life, I could see problems brewing. The first storm occurred when I found Becky had been corresponding with a man who was describing himself to her in enough

detail for me to know they had never met. As frightful as this may be in the age of Myspace.com, the website where young people post their personal profiles, this occurred in 1996 when Becky was only twelve.

As Becky entered middle school, there were other issues. She was (and is) a very bright young woman. When she was in the first grade she was tested and found to be gifted but because of her *laissez-faire* approach to life and schoolwork, she was at best a mediocre student. Becky determined what was minimally needed to receive a passing grade and that was the extent of her effort. Determined to see Becky live up to her potential, I decided to home school her through middle school in the hopes she would develop more of a voice and be not be at the mercy of her peers, who seemed to hold a tremendous amount of influence over her.

For the next two years, I was privileged to see my daughter as a student – a lens many parents never see their children through. Seeing how Becky learned was a life-changing experience for me. Becky was bright but unmotivated. In a word, she was *bored*. I found Becky to be a very visual learner, which explained her interest in the Internet (as well as the fact that the Internet was something new and exciting). In an effort to get her more interested in learning I purchased an online curriculum, thinking it would make her more eager to do her schoolwork. Unfortunately, in 1999 online curriculum didn't amount to much more than scanning printed material and placing it on a web page; interaction wasn't part of the online curriculum designer's toolbox. The net effect was minimal at best.

When Becky went to high school, it was under the conditions that she would live up to her potential. By the time her sophomore year arrived, we were back to home schooling. This time there was a different approach: teach her the core classes at home and then let her attend the classes that seemed to interest her at school (particularly art, where Becky excelled). School

administrators were very complimentary of my efforts and said that they wished more parents were as concerned for the welfare of their children. Once Becky and I began this new arrangement, I could see why the administrators had that view.

High school in the new millennium is a scary place. I got to meet her friends in their comfort zone and see life inside a National School of Excellence. As classes would end and hallways would fill with students making their way to the next class, what struck me most about the faces on these young people was ANGER. I had never seen the look of rage on people so young.

Another thing I noticed as I waited for Becky was a particular student who seemed too old to be in high school. When I asked a teacher about the boy, I was told that the school was the site of four “turfs”, each with their own leader. The best that school officials could do was to maintain order and prevent any uprisings but they were basically powerless to eliminate the situation. That meant this boy, as well as the other three “leaders,” held more influence over the lives of students than the administration did. There was a delicate social balance that could have disastrous consequences if something upset the apple cart. Lest you think this was an inner city high school in Detroit or Los Angeles, where one might be anesthetized to this kind of situation, this school was in Madison, Wisconsin!

No wonder these young people were angry. They have to deal with “turfs,” fitting in, staying safe, making friends, being “cool,” and at the same time trying to negotiate a traditional system of learning that bores them. In Becky’s case, this was a recipe for disaster.

From Personal Experience to Scholarly Focus

At this point in the EDLI program I don’t know enough to speak intelligently on the political, policy, social and environmental climates that influence a learning environment like

this. What reading I have done leads me to believe there is no short-term remedy for what has taken over 100 years to create. My particular interest is in how a student can negotiate a highly-charged environment outside of the classroom and then be expected to learn with traditional teaching methods that may not be relevant to life as they know it. The issues I hope to address with this first topic focus are:

- Are today's teaching methods (delivery) culturally and socially relevant for students who live in a highly - charged, Internet society?
- Can the use of technology in the classroom and at home create a more engaging experience for students and equip them with the lifelong learning skills they will need as they enter college?
- Might changes in these areas level the playing field for students who may be at some disadvantage to learn?

As I began my review of the literature, my expectation was to find article after article espousing the benefits of technology in the classroom and the effect on students. What I found was a Pandora's Box of heated debate, causing those involved to fall into two basic camps: those who believe secondary curriculum and teaching methods must include technology to train young people in life skills and those who know something needs to change but are concerned that compulsory technology education will undermine the very fabric of the high school experience.

Both sides of this debate have legitimate concerns. My goal in researching this topic is to present a balanced view of technology use in grades 9-12, with its implications for higher education.

Brief History of the Liberal Arts Tradition

By 1890, approximately 6% of American youth between 14 and 18 attended high school (U.S. Department of Education, 2001). These young people were more than likely from prosperous families whose ultimate goal was a college education. The high school system catered to those who were their constituents and curriculum was designed around a rigorous academic model in the liberal arts that included history, philosophy and mathematics. The Committee of Ten, a group of prestigious educators that included Charles Eliot (then President of Harvard University), was tasked by the National Education Association (NEA) to come up with a standardized national curriculum for American high schools that could benefit all students, cultivating a “mental power” to observe and to reason (Eliot, 1899). As high school enrollment exploded in the early part of the 1900’s, curriculum was seen as a preparatory education for *life*. According to the Committee, the goal of a liberal arts high school education was to prepare one to become a thinking, reasoning, productive member of society, with a lifelong desire to learn, even after coursework was completed (Powell, 2003).

By the end of World War II, high schools became less of a terminal education and more of a college preparatory institution. At the same time, post-war expansion created new job opportunities for which a college education wasn’t necessary. This caused a generalized curriculum track to be established in addition to the more rigorous academic program, with the intent of keeping those who weren’t college bound from becoming dropouts (Powell, 2003; Shanahan, Miech, and Elder, 1998).

In the 1960’s and 1970’s, electives were introduced into the curriculum that would be relevant and interesting, keeping teens in school but graduating them with almost no usable life skills. Reforms regarding changes in school curriculum and graduation requirements that began

in the mid 1980's are now readdressing the Committee of Ten report and moving not only to reintroduce more rigorous academics into high schools, but to boost the achievement levels of disadvantaged children (Bybee & Starkweather, 2006).

This seeming confusion of the goal of high school curriculum seems to be a key element in the current problems facing students in their preparation not only for college but also for life in general. High school may no longer teach our children to become critical thinkers, responsible members of a community or even competent managers of personal finances (Hughes, Wood, Konrad, and Test, 2006; Raven, 2005). According to the Colorado Department of Education, young people can finish high school in Colorado with no specific *state* requirements for graduation (this is governed by local school boards). Gose (2006), quoting the Colorado Commission on Higher Education Remedial Education Report (2005), says this lack of consistent state requirements creates an environment where almost a third of Colorado high school graduates need remedial college classes in mathematics, writing, or reading.

Can the use of technology, not only as an educational goal but also as a tool to make the learning of existing subject matter more engaging, level the playing field and assist *all* high school students in preparing for life after graduation? How does the teaching philosophy of the instructor affect learning, particularly when technology is incorporated into the classroom? Should technology integration be a collaborative effort between the school district, parents and the business community at large? As both sides of the debate are examined, my hope is to separate what is truly a barrier to implementation from that which is merely a pseudonym for a liberal arts education.

Table 1

Issues Facing Adopting Technology in High School Curriculum

Pro-Adoption

Against Adoption

Levels Playing Field	Physical Posture (particularly arm)
More Peer Interaction	Pressure to Perform
Better Able to Function in Society	Deterrent to Life Skills in Traditional Teaching
Motivation to Achieve	Not enough funds for Qualified Teachers
Learning Strategies Development	Challenge to Maintain Students' Attention
Assume More Responsibility for Learning	Misuse of Laptop in Class
Practice Presentation Skills	Lack of Internet Access at Home
Better Writing Skills	Variable Skill Levels of Students
Mentoring Parents	Lack of Responsibility with Laptop
More Parental Involvement	Maintenance of Laptop – Technical Issues
Attracts Better Group of Students	Teacher Inexperience with Technology
Electronic Portfolios	Plagiarism

The Case for Technology

Technology can help level the playing field for two types of disadvantaged groups: those who face a racial or cultural bias, and those for whom there is some type of learning challenge. Rose and Meyer (2002) have written extensively about the Universal Design for Learning (UDL) and its focus on methods which allow individual students with learning difficulties to use

processes that best fit their learning style. Their research includes an understanding of neural networks (Recognition, Strategic and Affective), and how no two learners process information exactly alike (Wolfe, 2006). They propose that learning best occurs when an emotional significance is attached to actions and objects, yet assert this aspect is given little emphasis in curriculum design (Rose and Meyer, 2002; Wolfe, 2006).

To create this emotional significance, they suggest technology as a way to aid the learning process. Text to speech software, books online in adjustable-sized text and multimedia libraries are only some of the tools available that help disadvantaged students customize learning (in fact, I was able to have the .PDF journal article I used for UDL “read aloud” to me through Adobe Acrobat with no additional software). A key concept of UDL is the use of outcome-based goals, as opposed to goals that focus on a specific process to completion (McGuire, Scott, and Shaw, 2006). If a learning outcome is to demonstrate proficiency in a particular area, then how the proficiency is demonstrated can be left up to the individual student (Hitchcock, Meyer, Rose, and Jackson, 2002). Detractors to this type of learning claim that a personalized learning program would have to be developed for each individual student, taking far more time away from teaching. Rose and Meyer suggest using a toolbox of aids and allowing students to direct much of their own learning. This creates a love of learning and builds skills that can last a lifetime. The end result is that some students who once may have been considered “special needs” can perform at or near grade level if the correct aids are identified and used, including everyone in a common curriculum (Blamires, 1999).

For minorities and those who are culturally disadvantaged, the use of technology, *particularly if that technology is available at home*, can level the playing field for students. Hoffman and Novak (2000) of Vanderbilt University (now at University of California –

Riverside) determined if minority students had Internet access at home, their usage rates over time come to mirror that of White students. They used CommerceNet/Nielsen Internet demographic studies from 1996-1998, where eligible respondents were at least 16 years of age and chosen randomly. Respondent weights were adjusted so that marginal weighted distributions of education, gender, race and age were equivalent to Census estimates for the US and Canada. Their study results were based on these weighted analyses.

What the study revealed shouldn't be surprising. More White households have Internet access and own home computers than any of the other groups (African American, Hispanic - where there was enough statistical evidence to be reliable). Median income was also higher for white households. Web users generally had higher levels of education, regardless of race.

The study also revealed that African-Americans may have a price-value perception of the Internet that is different than their White counterparts, finding more value in TV and satellite (or cable) access than Internet access. While they may not have access at home, African American students are more likely than Whites to have used the Web from places other than home, such as school, work and wireless "hot spots." If they do have access at home, students using the Internet have a tendency to teach other family members (particularly parents) how to use the Web, increasing Web usage in general.

Students also tend to bring a personal level of comfort to technology-enhanced learning at school, based on what they have available at home. If they have access to a personal computer and the Internet at home, they are more likely to use those same tools at school (Fishman, 1999).

What are the implications for technology usage in school? Much of what I read was mind-numbing; everyone has an opinion of what needs to be done: create safe schools (Bucher & Manning, 2005); have a universal curriculum that includes everyone while allowing for personal

voice (van Garderen & Whittaker, 2006); make technology use compulsory (Joël, 2004); and give everyone a laptop (Windschitl & Sahl, 2002). If these are only a few of the issues facing education today, then *everyone* is at a disadvantage to learn because most schools are in need of improvement and there isn't a consensus on which method works best. Minority and culturally disadvantaged students need the same things all students need: to have learning personalized as much as possible by instructors who are committed to creating an environment where students can construct knowledge and obtain skills that will make them employable once they leave high school. This is particularly important for minority students because of their disadvantage in the job market (Rosenbaum, Kariya, Settersten, and Maier, 1990).

Technology is being used in wonderful ways in the classroom, both as a means to some goal and as the goal itself. For example, in Denver High School in New York City has shown that a bias-neutral medium like videoconferencing can open up a whole new world of collaboration in the arts. Denver High School is a large comprehensive school with over 3500 students, with over 70% of the population Black and Latino/a. They majority are eligible for free or reduced-fee lunch and had a graduation rate of 50% in the 1999-2000 academic year, with a 19% dropout rate and 31% who do not complete high school in 4 years.

The school is known for its music program, which is well established and has a collaborative relationship with a music conservatory that established videoconferencing as a distance education music program. Students at Denver High School (twenty-four in total) were chosen to participate in the program based on their age, musical interests and talents in the areas that were the focus of the program (classical, jazz and percussion music). Three video conferencing sessions were scheduled (one each for opera, jazz, and percussion) with two formal interview sessions.

Authors Knight, Dixon, Norton, and Bentley (2004) describe their study results through a “multicultural feminist theoretical framework” (p.101). They describe the distance education program as motivational to students but repeatedly used the term “banking model” to describe what they considered an inattention to the multicultural nature of the high school. In their opinion, the predominantly White conservatory instructors were insensitive to the language, emotions and culture of the Denver High School population. The students in the study were told to, in effect, lose the hallmarks of their culture for the study. In videoconference sessions, students had to adhere to a prescribed method of behavior that included no hats, gum or small talk during the session, as all actions were being recorded.

According to the authors, the glass at Denver High School was “half-empty” because students had to conform to a prescribed behavior in order to participate. I may not yet be able to join the ranks of serious scholars but I see the glass as “half-full.” A generation ago, this kind of collaboration would have been extremely costly, if not impossible. The structure of the study may have made for a “banking model” but the technology is sound and opens up global possibilities for collaboration with underserved student populations.

Laptops as Developmental Tools

In their study of a two-year laptop program, Windschitl and Sahl (2002) describe their results through an ethnographic lens. The program was in an affluent parochial middle school in the Northwest, where all sixth and seventh grade students purchased laptops. The goal of the study was to answer questions about how teacher’s instructional methods change with the introduction of a laptop program. The study revealed that teachers tended to collaborate more with other teachers, creating a technology “community of practice.” Also, no matter what preconceived instructional pedagogy the teachers had at the beginning of the program, the use of

technology caused a more constructivist teaching method to develop. One could reason that using technology in the classroom made the teacher more of a facilitator, allowing students to work according to their own preferences.

Researchers have also found that where classes were more structured, having a laptop in class produced better collaboration for team projects. Students were better able to share information and links and were more involved in their work. Structuring the class involved the planning for technology in the curriculum through the use of spreadsheets, presentation software, word processing software and Internet research sites. These activities kept students more motivated, engaged, and allowed them to use the same programs and techniques they would be using after high school. They also assumed more responsibility for their own learning, as the teacher became more of a learning facilitator. Students involved in technology programs also seem to have better writing skills through the use of word processing software. Their work was neater, their spelling was better (through the use of spell check) and they were better able to organize their thoughts into a coherent whole (cutting and pasting text as needed).

Demonstrated Competencies

Complementing the Universal Design for Learning is another school of thought, championed by Roger Schank, who has had a long academic career in artificial intelligence, learning theory, cognitive science, and the building of virtual environments. His theory of goal-based scenarios (1996) proposed many of the same principles that UDL later proposed with regard to identifying outcomes. Schank also describes the process as one of learning by doing, much the same way children naturally learn outside of school. He proposed the creation of scenarios, where students learn the same skills in the completion of the goal that someone doing the task outside of school might learn. The skills in this case are the outcomes to be attained. He

describes, for example, the teaching of a current events or history class by actually having the students produce a nightly news broadcast where they have to learn about the topic, format the copy, present the copy on tape and edit the broadcast. There are a number of processes that one who was actually a journalist would encounter in their professional life, thus making the attainment of these skills actually useful to the student. In addition, they study the subject in a manner that is relevant to them.

More recently, Schank (2006) has taken this theory of curriculum design to its next iteration: Story Centered Curriculum (SCC). This method of curriculum creates a scenario where the student is a participant in the unfolding of a story, creating a deeper level of engagement than regular classroom lessons. The SCC is also goal-based, completing a series of activities along the way. While he mentions high school curriculum as a target, the example Schank gave was very personal to my academic life. He describes a project he was involved in regarding a graduate e-Commerce program at a leading university. The program, which was a joint effort between the business school and the school of computer science, offered the traditional classes one would expect to find in an e-Commerce program. Schank proposed something a little different as an SCC, where all the essential processes were mastered as part of an unfolding story, equipping students with skills they would undoubtedly use after graduation:

- Run an e-commerce company
- Transform old company to new e-commerce company
- E-commerce consultant
- Manage application development in an e-commerce company

This example was relevant to me because I graduated from a traditional (if there is such a thing) e-Commerce Master's program. We learned all the right subjects but they were disjointed and never involved us in a bigger story. As a result, my fellow graduates and I were ill equipped for the e-Commerce world because we had never actually *done* it. Schank's version just makes more sense.

Another technology implication for demonstrated competencies in education is the formation of a digital portfolio of student work. If more assignments are completed electronically, a digitally permanent record of a student's achievement can be recorded. In the past, this type of record has been typical for visual arts students who need to have a ready portfolio when applying to art colleges. Now every student can create a portfolio of project work, to be used not only for college entrance but also for professional job interviews. When clear learning goals and graduation requirements are established, purposeful portfolios can be created where students can track their own progress, comparing their work with outcome rubrics. Even teachers can use the portfolios to adjust their teaching focus if portfolio work shows a common problem area (Niguidula, 2005).

Technology as a Distraction

Clearly, some are not happy about the integration of technology into the traditional classroom setting. These people generally agree that something needs to be done to improve education but they aren't confident technology is the all-consuming answer. They generally regard technology integration as a band-aid solution to a much bigger issue.

First of all, the Internet is largely unregulated. Technology detractors claim that Internet usage can barely be controlled within school boundaries. Whose responsibility will it be to teach responsible usage to students when they leave school grounds?

While even the detractors agree that Internet-based technologies form the backbone of our current economy, there isn't a consensus as to whether our Internet-charged society has improved our quality of life. One only needs to look at violent crime, racial and economic inequality and the impressionability of young people to wonder if technology is an expensive distraction from finding solutions to society's problems (Chapman, 2000). Others claim that educational software manufacturers design software with the interests and abilities of white, middle class users in mind, which may exclude usage by the groups that need the software most (Knight, et al., 2004).

If one considers the basic tenets of a liberal arts education, one is to give students lifelong learning skills that they can rely on once they leave high school. What educators need to realize is that *life* has changed; the outcomes need to be the same but the methods need to be different. In taking another look at the Universal Design for Learning, educators still want students to be able to demonstrate proficiency. Does it matter whether it is delivered in a ten page handwritten report or delivered in a multimedia presentation on a DVD? Will students become less critical thinkers if they use technology to learn? If anything, it would seem critical thinking has become *easier*. Students can critically think out loud – globally – through the use of web logs, or blogs, which is basically an online journal.

Chapman (2000) presents a balanced perspective on the need for technology versus the problems it presents. While finding technology-savvy teachers isn't the problem that it was when he wrote his study, finding technology-savvy teachers that can stay ahead of students is another story. Many teachers feel intimidated when they don't know more than their students and they feel that they will lose control if they admit their students can teach them something. If teachers know less than their students, how can teachers maintain their student's attention during a class

period? Again, there needs to be a rethinking of how curriculum is presented, particularly when students are just a year or two away from graduation. At that stage learning needs to become more collaborative, with each side imparting knowledge to the other. How can teachers warn about the dangers of MySpace.com, if they don't know it exists?

Cyberethics

Another misuse of technology is in the area of plagiarism. While the problem has always existed, now it is just a matter of copy and pasting text from the Internet into a document. Academic integrity will always need to be taught to students. As someone who works in higher education, plagiarism is a real problem. What is interesting is the viewpoint some student's have: if they took the time to find the source, they should be able to use it without citation (Baum, 2005). Where did they get that idea? If they aren't learning responsible research skills in high school, where will they learn it? In a survey of incoming freshman taking English at the State College of New York (SUNY) – Morrisville, 26% of the total freshmen responded regarding high-school computer training. Of those who responded, 46% of freshmen said they received no computer training (Weiler, 2001). Other interesting aspects of the study were the number of responding students who believed if information was on the Internet, it was correct (29%) and those that believed information on the Internet was better than information at the library (56% said it was the information was different; the majority of those said it was "better" due to "speed" or "currency").

Whether or not one believed these concerns are legitimate, there are aspects of technology use in the classroom that can't be ignored. One study documented increased posture related pain, particularly in the arms, of the people consistently using laptops. The syndrome isn't new but it might have implications for children whose bodies aren't fully developed.

Another legitimate concern is for hardware. If computers remain at school, they are easier to monitor and maintain but laptops present a different situation. The mobility of laptops makes them more repair prone – not to mention theft-prone. From a business perspective, there has to be funds appropriated for maintenance and replacement parts, as well as for some kind of theft-deterrent micro chip. Additional staff would be necessary to format drives, install programs and monitor updates. As yet, I haven't found sufficient useful information about how school districts that have successful technology programs manage this. Some additional questions I have in these areas are: Are the laptops bought or leased? Is there a contract required between student, parents and the school district regarding usage and who will be responsible for repairs or replacement? At graduation, what happens to the laptop? Is the student able to purchase the laptop at a reduced rate?

Alternatives to Traditional Classroom Integration

While the debate rages as to whether to integrate technology into traditional classrooms, there are alternative high school models that are using technology very successfully as the backbone of their education model.

In Florida, there is William T. McFatter Technical High School, a school of choice in the Broward County Public School System. This high school has a rigorous curriculum that is technology focused, as opposed to the comprehensive (general track) high schools that are common in the district. School administrators and members of the business community collaborated on the model and “agreed that the traditional approach of “dabbling” in technical areas did not produce a return in investment...that is, it did not bring forward a substantial increase in Broward’s mid or high-level workforce, nor did it adequately prepare graduates for rigorous postsecondary study” (Blasik, et al, 2003).

The success of this school is due, in part, to the fact it is run as a separate facility in parallel to other schools in the district. There was no integration into an existing system; teachers were hired specifically for this program. Aside from teaching faculty, there is an advisor who works individually with each student to develop a postsecondary plan. Admission to the school requires only a 2.0 GPA and a proficiency in reading and math. Another aspect of the school's success is the population size: There are only 150 students per grade (600 total). Students complete a primarily core curriculum for the first two years, selecting a technical program at the end of their sophomore year. All students have access to a computerized grade book system, accessible via a password protected Internet site and must enroll in one online course as a requirement for graduation. By the time a student graduates, they will also have earned certifications from any of seven schools of study, which will enable them to be gainfully employed after high school.

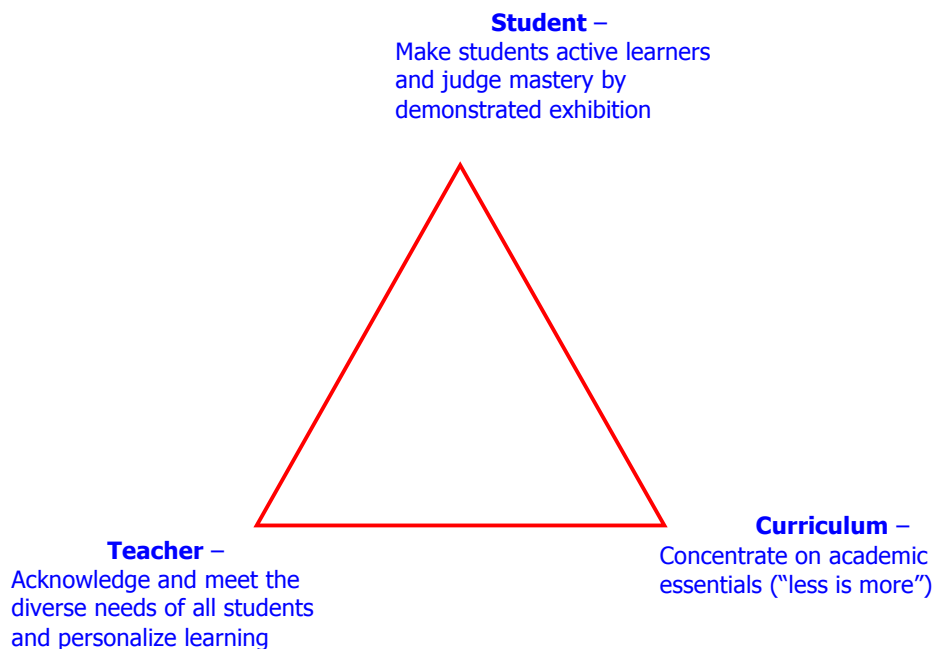
Does the model work? In the 2002-2003 school year, math students in Grade 9 outscored their district counterparts by 23% in the Florida Comprehensive Assessment Test (FCAT); they outscored in Reading by 25%. In the same year, grades 9 and 10 had 73% of students reaching Math level 3 or above, compared with 31% of students for the district and 32% for the state of Florida. Is it possible this model works because of rigorous curriculum, dedicated staff that teach what they love, and small school size? Maybe this can't be the case in every district, but even the concept of a "high school within a high school" following this model is worth researching further.

Another alternative model is to offer high school classes entirely online. The State of Utah currently has 50,000 students earning high school credit this way. The program, which began in 1993, enables students to attend summer classes or to make up credit. While it is

possible to earn a high school diploma entirely online, it isn't promoted as a replacement for traditional classroom time.

Conclusion

As someone who isn't familiar with the current state of education reform, it is difficult to have an opinion that would hold any weight in an academic setting. My observations of what I read lead me to believe that curriculum and school size are contributing factors in how students learn and whether they find what they are taught relevant to their lives. It also appears that as a student gets older, curriculum and teaching philosophy needs to move from a behavioral to a constructivist model, with instructors who are more willing to be mentors than lecturers. One of the better models I studied was that of the Coalition of Essential Schools, of which McFatter Technical High School is a part. The philosophy seems simple enough: make the "triangle of learning" a school's priority:



The model seems reasonable but oddly enough, it is *teachers themselves* who create the biggest barrier to implementation. Politics, defending turf, resistance to change – this is all part of a bigger reform issue for which there is no historical precedent (curriculum has been taught in basically the same way for 100 years). Current school reform issues could take years to implement; what needs to be done now is to use an outcome-based curriculum for new schools and schools that serve disadvantaged populations. There are a lot of visionary “players” in reform: The Coalition of Essential Schools (mentioned above), The Big Picture Company and Socratic Arts, the company Roger Schank founded. Going forward, some kind of outcomes based standard will be essential, as more organizations develop customized learning models.

If there were gaps in the existing knowledge base for technology-enhanced education, it would be in the areas of physical stress and financial planning for technology. What I read led me to believe there may be a propensity for repetitive stress injuries in students who use laptops consistently but I was not able to find any documentation on the subject. Also, while there were brief statements on how school districts worked with parents and the business community to implement a laptop program, there weren’t enough specifics to create a useful template for how projects of this nature are proposed and funded.

Roger Schank (2001) made the prediction, “The coming years will see the creation of educational technologies by those few people who understand both computer science and education.” I would like to think I am one of those few people who have an interest in both curriculum design and delivery. My belief is that everyone can learn; it is just a matter of how they learn *best*.

Do technology programs benefit students? Some children perform just fine in traditional school settings and show no interest in technology but even these students can experience

enriched learning through the use of multimedia resources, video conferencing and digital portfolios; there needs to be some baseline level of competency with technology before a student graduates. If the purpose of a liberal arts education is to instill lifelong learning habits in the lives of students and help them to be productive members of society, then some sort of technology education is essential to that task, for all students of all abilities. Technology *is* relevant to life in the new millennium and as educators it is our responsibility to incorporate technology education into the liberal arts curriculum.

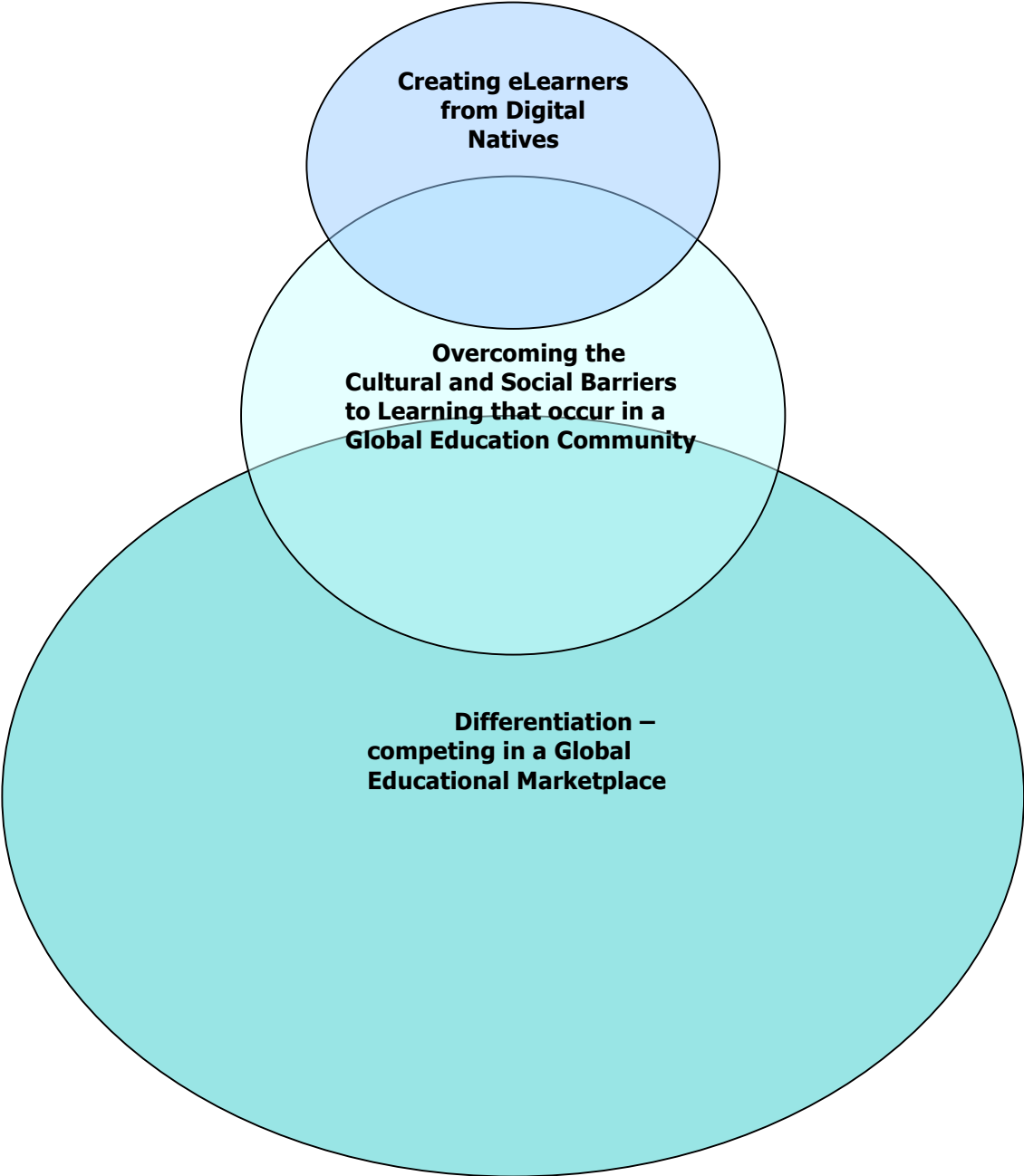
Reflections and Future Work

My professional life and work are in the online delivery of higher education curriculum. In looking at the focus of technology-enhanced learning in high school, it was with the goal of preparing students for the rigors of online postsecondary work. As I researched this topic, I began to see that this one focus could be an entire doctorate program: technology, inclusion, diversity, urban schools, national testing, etc. The more I read, the more mind-numbing the process became. No wonder education reform is the topic of such hot debate. Still, I am convinced that if students don't have the relevant life skills in technology by the time they graduate high school, they will be at a disadvantage to learn once they reach college - regardless of their color or cultural background.

By my first annual review, I hope for two things: first, to be able to intelligently discuss matters relating to how curriculum and teaching pedagogy can be changed in order to make high school relevant to students and second, to be able to effectively find resources to make support my case in a writing style that is publishable and useful to the scholarly community. I anticipate needing a research and writing course to help me explore my topic foci and develop a quality portfolio of publishable artifacts.

Appendix

The Relationship of Topic Foci



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