Individualized learning using multimedia tools

Introduction:

Today's culture is that of high-stakes testing and holding students and schools accountable to standards. I call this standardized education. I think it's a mismatch because when have you ever met a standardized student? In standardized education no attention is paid to a student's needs, interests, readiness, and especially not passion of any particular student. Standardized education assumes that they are empty vessels waiting to be filled, or objects on an assembly line. They must not have a free will to slow down our collective progress.

In response to this culture I decided to try to individualize instruction in my classroom, to offer students more choice, to actively ask for their input, to allow them to seek the answers to the unique questions they have. Similar to the Apple Challenge Based Learning projects, my students developed independent learning contracts, brainstormed topics of interest, and crafted essential questions. In short they responded to a call to have more control over their learning.

Many teachers have heard of using the KWL (Know, Want, Learn) Chart to establish a baseline of prior knowledge for a class and to explore some possible questions the class would like answered. I chose to utilize the KWL Chart on an individual level so that each student could report what he or she already knew about Romeo and Juliet or Shakespeare and brainstorm questions that aroused further curiosity about these topics. Because these were individual charts we did not establish a false sense of consensus about any level of knowledge. Students developed individualized contracts from their own KWL Charts and crafted three guiding questions from which to conduct and individual investigation.

Lit Review:

Introduction

The advent of Web 2.0 technology has made the use of computers, websites and other technology more popular in and out of the classroom, perhaps due to the highly interactive nature of Web 2.0 technology. This review of literature investigated the rationale for using these new technologies in the classroom, including the gains and drawbacks. Simply using computer technology in and out of the classroom is not a panacea for the various issues students may have with learning, especially with the motivation to learn. But teachers may find that using computers with a personalized approach to the educational experience increases motivation to learn for some students. Additionally, universally designed digital curriculum may better meet students' needs than traditional textbooks (Abell 2006). Teachers may also need to plan differently and organize the learning activities so that student may have more control of constructing their own knowledge.

Rationale for Inclusion of Web 2.0 Technology

Using Web 2.0 technology in the classroom has multiple positive aspects. Drexler (2010) suggested that a networked learning approach could support students' inquiry-based learning using flexible technology opportunities. For example, students may negotiate their own learning tasks and carry them out independently, with the instructor acting as consultant when needed, but students may also consult with others synchronously or asynchronously. Drexlerf further asserted that the opportunities for collaboration or consultation with others was a key component of the networked learning model, including the ability to consult virtually with experts in the field.

Student choice was also a key component of the networked learning model in Drexler's study, in that, the passion students feel for the topic may help them as they use the various Web 2.0 tools to investigate and synthesize their learning, so students chose topics of learning unrelated to any teacher-led or teacher-directed topic or unit. Petersen, Markiewicz & Bjornebekk (2009) stated, "Personalization is not only about new ways of distributing learning resources, but also about finding ways to understand the skills, resources and interests of the learner outside of the classroom" (p. 34). Miller (2007) found in his study that instructors tended to feel that the personalized approach led to better student outcomes due to the negotiation of learning tasks beforehand which led to greater student focus and strategy in implementation. Comparing the results of a more traditional, non-personalized learning approach and the online personalized learning approach, Miller found that the instructor noticed a positive difference in the quality of the creative products produced by the online personalized approach.

Using Web 2.0 technology in educational settings provides the possibility for students to collaborate, create and publish online. Tu, Blocher and Robertss (2008) stated that, "Web 2.0 technologies lead learners from Web content consumers to Web content creators developing more participatory environments . . . Web 2.0 technology aims to enhance mediated knowledge creation, information sharing, personalized structures, and, most notably, collaboration among users" (p. 256). For those educators seeking to allow students to participate more in their own learning, collaborate with others in the classroom or virtually anywhere, Web 2.0 tools have evolved to help those goals.

Impact on Student Motivation

Use of Web 2.0 technology may even increase students' sense of engagement and enjoyment of a class. Barbour (2008) found in his study that students were satisfied with their virtual course experience, when compared to their face-to-face classroom courses. Barbour studied secondary students from rural areas taking online courses. For most students, the online course was the only way to take a particular course; nevertheless, most students in this study reported being more satisfied with their virtual school experience than their traditional courses, which is somewhat surprising since 50% of the students regarded their online courses as more difficult than their traditional classroom-based courses. In another study, Chang and Ho (2009) found a link between learner-control and self-efficacy; a learner feels more confident in his or her abilities to complete tasks when given more control over the sequence, for instance. In their study, language learners were pre-assessed on their perception of their own locus of control.

One group was instructed in a more traditional teacher or program-controlled web-based course, and the other group was instructed in a more learner-centered web-based program. The results showed a positive relationship between belief in internal control and achievement. Further, the findings of the study support the idea that student control of learning activities, or even the perception of control, has a positive impact on both motivation and achievement.

The student responses to a reflective survey in Drexler's study showed mostly positive opinions of their more independent investigations of their chosen topics, and most students felt more confident in their ability to study other topics in this same manner (p. 381). It is important to note, however, that nearly a third of the students explicitly expressed a need for the teacher to be available to answer questions as needed, implying a shift in the teacher role from that of expert to that of consultant.

On the other hand, several studies have challenged the assumption that students will be intrinsically motivated to engage in learning activities more through computer technology than in the traditional classroom. Williamson's (2007) study reflected that 22% of students do not believe computer games should be used in a school lesson, and others said in exit interviews that the experience was "demotiviating . . . on the basis of lack of interest and familiarity with games overall" (p. 103). Further, students may not be open to the increased responsibility of a tech-supported constructivist/ networked approach to learning. Drexler (2010) stated, "Imagine the potential frustration that self-regulated learning holds for students who are quite comfortably accustomed to specific teacher directions with finite expectations" (p. 370).

An increase in student motivation may not necessarily translate into greater student achievement. Wu and Huang (2007) found that although students reported greater feelings of confidence, less anxiety and more positive feeling about using computers to learn than the teacher-centered control group, their test scores did not vary significantly from their counterparts in the control group. The students in both the control group and experimental group were sorted according to their achievements and the results of the study implied that the achievement gap widened more with a student-centered approach. In fact, with low-achieving students, the teacher-centered approach of the control group may benefit them more and the student-centered approach of the experimental group may benefit medium to high-achieving students more. Wu and Huang pointed out other factors that may help close the achievement gap, such as paying particular attention to student seating, since students tended to ask each other for help in the student-centered approach. The authors also pointed out the limits of the study do not indicate students' motivation to learn science in the future: will an increased positive attitude now lead to further study and achievement in the future? Given the current political climate with the emphasis on educational reform and fiscal responsibility, it may be an unpopular stance to support enjoyment of learning for its own sake without clear causation of increase in test scores and other measureable results.

Teacher Expectations and Role in the Classroom

When using Web 2.0 technology as an education tool, it is important for educators to check their expectations and perhaps shift their role within the classroom. Williamson (2007) stated that even with careful planning, processes could take more time than originally planned. Also, the students' level of expertise in technology skills may not be easily predicted, as Williamson's research has found that students' abilities did not progress along a predictable path, as from novice to expert; rather, the students experienced "spikes of expertise" (p. 104). Technical issues were reported as the chief problem in Barbour's (2008) research with secondary school students, followed by lack of time and difficulty understanding the objectives of the course (p. 362). But it is unknown if the issues were truly technical problems or simply a lack of student expertise in using the various Web 2.0 technologies: virtual classroom, email, discussion forums, interactive items, file transfer protocol, audio clips, chat, and video clips (p. 361).

It can also be difficult to support learning tasks with a student-driven constructivist approach (Hawryszkiewycz, 2007). If every student is creating and following an individual learning plan, keeping track of students' progress can be difficult for the teacher. Suggestions include scaffolding the learning through software that can suggest learning paths based on learner profile, allowing students to choose, and then supporting those choices with Web 2.0 tools such as blogs, wikis, podcasts among others, and synchronous communication such as instant messaging, video conference, and mobile texting (Drexler, 2010). Additionally, a digital personalized approach may also better enable teachers to suit learning activities according to the learning style of the individual students (Abell 2006). Generally, after diagnostic phases, complex algorithms gear the materials presented to the student specifically for that student. Abell (2006) called for further research into the various models and advocated the development of those that create pedagogical tags to better match content for the individual learner. So, as the intelligent technology is developed and studied, classroom and online teachers will be better able to move from possibility to implementation.

In a student-centered approach, the teacher is less of an expert presenting direct instruction and more of a guide or consultant. One method of ensuring students control more of their learning is to focus on essential questions for a particular topic or problem (Tanner, Bottoms, Feagin & Bearman 2003) (Singleton and Newman 2009); essential questions are larger in scope and have many possible answers. Essential questions challenge students to think through the many facts or factors and synthesize a cohesive answer or solution. Rather than passively receive information, students actively seek and categorize information, debate conflicting information, internally or in small groups, make conclusions, revise questions as necessary, and plan and share what they have learned (Apple, Inc. 2009) (Tanner, et al 2003).

Several studies showed a need for instructors who utilize web-based learning to clearly define learner goals and outcomes. Barbour's research with secondary students showed that over a third of the students experienced some difficulty understanding the goals or objectives of the course; also, almost 89% of the students ranked the need for clear objectives as important or very important (p. 362). McKenzie (1999) stressed the need

for teachers to scaffold the learning process so that students are neither unfocused, nor marching in lockstep. Scaffolding includes: clear direction/ reduces student confusion; clear purpose; structure and clear pathways of learning; clear expectations; incorporates feedback and assessment; models of exemplary work; rubrics and other guides for success; multiple routes to success (McKenzie 1999). Clarification from teachers will certainly need to be ongoing as students conduct their work. Nearly a third of the students in Drexler's study (2010) indicated they still need teacher support, even though they felt confident in leading their learning in the future.

Conclusion

The educational culture today emphasizes standards and increasing test scores, with little consideration to students' individual needs and motivation. Some research strongly suggests that a learner-centered approach to classroom instruction may increase student motivation and student learning, but it is not necessarily a panacea. Considering the strong emphasis on test scores and the teacher-centered direct instruction that has been emphasized in many schools as a result, both students and teachers may be ill prepared for a switch to a student-centered inquiry-based multimedia approach. Students may have some frustration adjusting to their increased responsibilities. Teachers need to plan for their supporting role, to communicate and clarify expectations and keep track of individual progress; eventually, computer software may be widely available to help teachers with the management of individualized, computer-assisted education. Despite the difficulties in adjusting to a new paradigm, the payoff may be that students are motivated through choice and perhaps even passion, learning to create, collaborate and share their newfound knowledge and skill.

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Methodology:

In class students first wrote down everything that they knew about Shakespeare, about Romeo and Juliet, and Elizabethan Era England. After reading Act I together in class, the students wrote down questions they had, things they were curious about in the Want to Know column.

The questions were diverse, as you can imagine. Some students wanted to know about the cause of the feud between the Montagues and the Capulets. Some students wanted to know if the events were inspired by actual history. Others wondered about the lovers choice of suicide (Shakespeare lets us know that the lovers take their lives in the prologue). Still others were curious about general lifestyles and social norms of the Elizabethan Era. Some wanted to know about love and the brain, what scientists today know about the chemical and biological interactions that happen when people feel they are in love. Some other students interested in becoming medical professionals decided to investigate what medical knowledge was developing in and around 1595, inspired by the

character Friar Lawrence who creates a potion for Juliet. Three students, fascinated by the pains to which Romeo, Juliet, and Friar Lawrence took to keep their marriage secret, decided to investigate crime and punishment in the Middle Ages, specifically torture. Four others decided to research medieval sports. They were curious what they might have in common with someone from 400 years ago.

Many students had more than one topic or tangent of interest. To build on their curiosities, students were asked to select one basic topic from their Want to Know questions and flesh it out by creating a learning contract. The students proposed a general topic and three essential questions to guide them as they researched to find out the answers to what they wanted to know.

Students used multimedia to seek answers for their questions. Students learned to use not only paper sources, but also Internet sources and reliable educational videos to get their answers. Students also kept track of their sources to be included in a bibliography. Students were given their choice of methods to take notes from their varied sources in an organized manner. Students were able to use two days class time in the library to conduct their investigations, but many also worked from home or stayed after school to complete their research.

Students chose how to share their newfound knowledge with the class. Students were not required to use Web 2.0 technology or school software to report their research findings, but many chose to do so: they created movies, presentations, virtual posters called Glogs. The students who did not choose to use computer technology to report their research results, gave live demonstrations and skits. All students were asked to post their projects and/ or a brief description of their project on our class Edmodo site; it was then possible for the classmates to view the digital projects again before giving feedback.

Results:

In my diverse- ability average-level class, some students struggled to choose a topic of interest. That shouldn't have surprised me since our district chooses textbooks and forms curricula, realigning every summer, of course, and then the students are informed what is expected of them at each level. Choice is minimal before the students reach my classroom. So, an independent curiosity project is just a foreign concept to them. On their initial polls, many students felt confused and overwhelmed. They were confused because they had never been given so much academic freedom before and were not sure where to begin. Eventually, we developed a class list of possible topics of interest for the students who were really stumped. Several students mentioned needing more clarification in the post survey, so again, I think it really did puzzle them for quite a while.

Of the positive responses, most said they enjoyed choosing how to share what they learned. Many students chose a PowerPoint presentation and ended up reading from their slides too often perhaps due to nerves. But there were a few really creative choices. One was a magazine about fashion, gossip, style, almost a Cosmo magazine for the

Middle Ages. Another was a movie summarizing a few longstanding and bloody feuds from across history. Another was a "live" demonstration of the one of the popular torture devices of the middle ages to show us the possible reason why Romeo and Juliet and the Friar kept their marriage a secret; the student had built a scale replica of the rack and showed how the cranks would work to dismember a Barbie doll.

This project was not the panacea for the motivation issues in class. The kids who generally don't do much work, still didn't and had time and opportunity to distract others. The post surveys were anonymous, but the kids who didn't do this project admitted it. Thirteen students were positive about the experience and thought the students next year should have an opportunity to do this type of project, but nine students were emphatically against this project-- one even included an expletive but also said he'd rather be at home smoking weed. But of the nine kids who responded negatively to the project, three say they learned from their classmates.

In my two honors-level classes, the students seemed open to more choice in education, but in the post-survey, the comments reflected some frustration with the process. Students were simply not used to the idea of choosing a topic to investigate for themselves; I believe even my social studies colleague asked them to choose from a list. Many students commented on the post-survey that they would like a list of topics to make it easier; but a few mentioned they liked the challenge of coming up with a "good topic" that they and their classmates would find interesting. They were also apprehensive about choosing a product/ solution to convey all that they discovered. The students almost all agreed this would be a good project to do with next year's students but many mentioned unclear expectations from me as being a frustration. They simply didn't know what to do, how long it should be, and so on. The comments mentioned structure specifically and a feeling of discomfort with ambiguity. One student actually disliked the "amount of freedom" given with this and another mentioned this was the "exact opposite of learning in other classes" and it was difficult to get used to. Yet another student mentioned if changed the way he viewed teaching.

They were happy with the products and enjoyed learning from each other. Many students agreed they could learn from each other and liked the variety of in-class and posted sharings on our Edmodo website. The comments they left on the Edmodo website were generally supportive to enthusiastic. I wish I had asked them to rate the feedback they received from peers and I also wish I had built in more formative feedback from myself.

Conclusions:

I feel I need to try this again. Giving kids the freedom to make educational choices seems necessary, even though it is problematic at times for us to adjust to new roles. It is

expected that some kids would resist some added responsibility (Drexler 2010) and unfortunately the kids were unused to much academic freedom, which is probably a by-product of the intense pressure on schools, teachers and students to perform well on the mandated tests.

But given the feedback about students being confused, I feel I need to examine my instructions and improve upon them, perhaps including suggestions and minimums. Perhaps in trying to give them freedom, I was too vague and should better define the guidelines and minimum level work expected. I also need to plan for the scaffolding that may be needed just because this is a bit of a culture shock.