TECHNOLOGY ASSISTED COLLABORATIVE AND PROJECT-BASED LEARNING; OF BLOGS, WIKIS, AND NETWORKING

By

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ABSTRACT

Throughout America today, public schools are struggling with issues surrounding standards and educational relevance and effectiveness. At the same time, a technological and social evolution is taking place outside of the school building. Students are developing new methods of inquiry and information gathering. If the educational system is to remain relevant in a rapidly evolving global society, it must begin to utilize the tools of communication and collaboration that are becoming commonplace in society. The ability to make use of this new technology is often hampered by security software found on virtually all school computer systems. This article will examine the effectiveness of collaborative and project-based teaching and provide suggestions as to how to address the restrictions by suggesting innovative solutions without jeopardizing school security. Suggestions will be provided as how to establish a learning community that will include students, teachers and parents in a dynamic new system of collaboration. There will also be an exploration of the new open source software such as blogs, wiki's and social media tools in regards to their application to classroom learning.

Key Words: Project-based Learning, Collaboration, Social Networking, Neo-Millennial Generation, School Filtering.

INTRODUCTION

With the expansion of technology, particularly open source and social networking software, there has been a renewed level of interest in technology-aided collaboration. It has been suggested that the way in which students learn and gather information is a dynamic process of change. Dieteroe, Dede and Schrier (2010) have proposed a system of cognition titled the "Media Based Model" and have coined the phrase "Neo-Millennial Learning Style".

Educators need to recognize the impact of these emerging technologies. For some teachers, recognizing the technologies and then their potential value is a great start, but the ubiquitous (anytime, anywhere) nature of communication, collaboration and information greatly impact on how our "digital natives" or "millennial students" learn, communicate and spend their recreational time. This immediacy, the instant nature of modern communications and information access is immensely powerful. This paradigm shift serves to alter how students may look at the world; it taints and changes their outlook and view.

According to Vygotsky (1978), students perform at higher intellectual levels when they work in collaborative learning situations as compared to solitary study. Likewise, Bruner (1985) has stated that this gain is specifically evident in the areas of critical thinking and problem solving. In a research study designed to measure critical thinking skills. Gokhale (1995) concluded that students engaged in collaborative learning performed significantly better on measures of critical thinking and problem solving and at least equally as well on standard objective assessments.

Much of the work in collaboration has taken place in the 1980's and 1990's. With emergence of open source collaboration software and web-based applications, research into collaborative learning is making a resurgence.

This article will begin to explore how public education can better engage students in the educational process. There

must be an evolution away from "sit and get" classrooms that are increasing irrelevant for today's neo-millennial students. This article will look at emerging strategies for collaboration using the existing technologies of Social Media, open source software and at the same time consider some of the obstacles that may exist for their implementation in the current public school environment. Using a case study approach, the authors will look at one practical method of implementing social collaboration in the K-12 classroom culture.

Project-Based Collaborative Learning

According to Dieteroe, Dede and Schrier (2010), many students today have come to expect increased levels of constant mental stimulation. The authors' further claim that a paradigm shift is occurring among their student populations as they are increasingly exposed to technological wonders such as video games, TVs, cell phones, iPods, and computers. This shift represents a fundamental change in the manner in which students gather and process information. Students have increasingly turned to tools such as FaceBook and YouTube for information, collaboration and communication. Due to the shear volume of information sources, today's students also have a greater risk of becoming distracted and unfocused. As a result these "digital natives" (Prensky, 2001) do not want to be taught in the traditional "sit and get" lecture manner. Most students today enjoy contributing to their learning process and driving their own inquiry.

Project-based learning allows students to follow their natural inclinations when working on assignments. According to Bell (2010), "most projects include reading, writing, and mathematics by nature and many inquiries are science-based or originate from current social problems." Teachers provide guidance and supervision during all phases of the project and students can elect to work in groups, thus fostering collaboration and communication skills. In addition, project-based learning supports critical-thinking skills, as students brainstorm to determine the course of action that needs to take place and leverage their inductive and deductive reasoning abilities in order to bring projects to fruition.

The need to utilize emerging new collaborative technologies in an effective manner to expedite this form of learning is a critical component of preparing students for life in the 21st century.

Keefe (1991), states that learning styles combine affective, psychological, and cognitive influences that impact the way learners recognize, distinguish, and react to their learning environment. In the collaborative model, as students work collectively to complete their projects, they are encouraged to incorporate and use the learning style that best fits their needs and personality (e.g., visual, kinesthetic, and auditory). For example, students learning about the various conflicts in the Middle East may create a presentation regarding the views of the various groups who live in the region. The students may organize a mock peace conference. Utilizing social networking technology, it is entirely possible that they conduct interviews with individuals living in this region. Other points of views may be explored through the eyes of service men currently stationed in the region. Student ingenuity combined with social technology allows for the creation of unlimited possibilities.

The principles of project-based, collaborative learning have been practiced for decades. Bas (2008) cites research by Foshay stating that in the early 1920s, "William Heard Kilpatrick, a professor at Columbia University Teachers College and colleague of John Dewey, advocated project-based instruction. His notion was that such instruction should include four components: purposing, planning, executing, and judging." Further, he states that project-based learning methods are based on constructivist theory. According to Wang (2009) "knowledge is actively constructed by learners based on their prior experiences, rather than directly delivered by the teacher. Learners are active knowledge constructors, rather than passive information receivers".

John Dewey (1938) wrote of the benefits linking experience and education. He "emphasized the need for a sound philosophy of experience" He also noted that one of the main functions of teachers is to be aware of the experiences and environment that lead to student maturation. He stated that educators should know how to use the physical and social environment to promote

positive and worthwhile experiences for their students. Technology enhanced project-based learning opportunities provide an avenue for his ideas to be administered.

The evidence also shows that collaborative learning opportunities provide additional benefits for students. Mitchell, Foulger, Wetzel, and Rathkey (2009) cited studies noting that students who worked on projects were better able to understand concepts in diverse learning conditions. Researchers also found that these students had higher self-esteem and positive temperaments. Collaborating provided students with emotional support as they worked together to accomplish a common goal. Furthermore, researchers found that as students realized that they were responsible for their work they learned to negotiate better with one another using appropriate emotional cues and responses. As their feelings of competency increased, they developed an enhanced sense of confidence and self-worth.

Collaboration Technology Presents Unique Challenges

Many educators turn to the Internet for lessons and enhancing their curriculum. Project-based learning benefits from web sites created by fellow educators and students are given targeted web sites instead of searching the entire Internet. When educators research and preview online resources this helps students stay on task and reduces the probability of trying to access a web filter blocked or inappropriate web site. Secondary schools who are federally funded must comply with the Children's Internet Protection Act (CIPA) by creating and approving an Internet Security policy (FCC, 2009, p. 1).

A school district's Internet Security Policy lays out the setup and procedures of the web content filter which determines what sites are allowed or denied based on categories, Uniform Resource Locators (URL), file types, key-words, application types and others (M86 Security, 2010, p. 1). CIPA has a minimum requirement that all school filters to block adult content and material deemed harmful to minors by United States Federal Law. Another requirement is that schools have their Internet Security Policies and technologies in place before they can receive Federal funds (FCC, 2009, p. 1).

One important part of the Internet Policy is the Acceptable Use Policy (AUP), which explains the instructional goals, and general practices in the school district. Proper student and staff behaviors and consequences are detailed for technologies such as email, web access, local network access, and copyright of materials used in the schools. To help students and staff protect themselves online schools are required to offer Internet Safety programs and training such as i.Safe.org. These Internet safety programs should also be directed towards parents and community members.

Web content filters can be as helpful or frustrating depending on how each school district configures theirs. The instinct of schools is to block almost everything and to filter every category possible for fear of something inappropriate getting through the filter. Manzo (2009) examined several school districts and school-related web sites and several indicated that schools are being too aggressive on what gets blocked. Schools are missing out on the true power of the Internet and what it offers when all of the sites and tools students and teachers need are censored. The technology staff needs to work with school administrators, school board, parents and community to demonstrate what the good uses of the Internet are and how it serves an educational value. Being overly cautious will keep teachers from offering the best of the world to their students. Teachers and students are frustrated about what web sites are blocked when doing research on topics such as gun control, drugs, religion and other controversial topics.

McDonald (2007) wrote about a research survey that found in 2006, 71% of parents thought that Internet safety is the responsibility of the school. This is a major concern, as students do not have any web filters at home, which makes them most vulnerable to sites they should not see. Parents are an important part of keeping students safe online. The concern over online safety is why schools need to recommend web sites and programs that are educationally appropriate and safe.

Every web filter has different features, abilities and limitations just as any program. There are web sites and collaboration tools that are easier to unblock and allow in

the schools and at home than others. If a teacher wants to create a blog for their class a site that uses a single URL domain is Edublogs. A teacher can create a customized web site name they choose and all images; pages and other resources will remain under that name. The school web filter can then allow that unique URL to pass through the network to students and other teachers. Edublogs is based of the popular WordPress blog tool and has a very similar feel and available software.

If a teacher wants a microblogging tool such as Twitter that is educationally friendly they can use Edmodo which requires a password to join groups and allows teachers to send short message bursts as well as calendaring, grade books, file sharing, polling and more. A teacher can set up an account and create custom groups. Parents, students, teachers and others may then join these groups even without having an email account. The only requirement to use Edmodo is web access. This makes it a great tool for communicating with parents, community groups, and school clubs.

Teachers want to be able to access and share video and audio files with students. YouTube is very popular but again not educationally appropriate in most cases. Single videos on YouTube can be unblocked but that is more work for the technology staff to unblock possibly hundreds of videos. YouTube also has a video time limit of ten minutes when uploading a file. A safe and feature-rich web site for educational use is TeacherTube. Large video files, audio files, photos and documents may be uploaded and viewed that are educationally appropriate in most cases. Technology staff may unblock TeacherTube easily.

Many states and international standards boards, such as the International Society for Technology in Education (ISTE), call for the teaching and use of social networking and using collaborations tools because almost any job of the future will require the worker to be a connected and participating member of society and the workforce. Administrators and technology staff need to be ready and testing web tools that best fit with their needs and meets technology standards and empowers teachers and students through project-based learning.

A Case Study - The Case of a Middle School Social Studies Class

One of the greatest struggles faced by middle school instructors surrounds the presentation and instruction in topics that are deemed as irrelevant by the students. One such subject area is that of History. Many students today find a discussion of history as being irrelevant to their current lives. In the case to be highlighted here, the students were 7th year students in a behavioral management class. As the instructor, I dreaded teaching about World War II from a history text. I needed to make the experience alive for the students. As a result, a project learning approach was undertaken. Students were told that they were part of a news team. Technology was provided to the students including computer hardware, digital voice recorders, blog and wiki spaces and discussion board areas for collaboration. Using digital voice recorders, students interviewed members of their families who had lived through WWII. The interviews were posted on discussion boards and wikis to be shared with members of the project teams. Students then sorted the topics into War Stories, Life at Home, A Generation of Sacrifice, and Points of View. As the students posted and shared their stories, a great level of interest developed and the groups started using the Internet to expand their knowledge of this period. Higher level thinking started to emerge spontaneously. The "news teams' started to construct stories based upon their findings. Other students used their artistic abilities to begin illustrating the stories, scanning them and editing them using Photoshop and other graphic software programs. A secondary event started to emerge. Parents began reading and posting private little stories to the electronic bulletin boards. One grandfather invited the class to visit the Soldiers and Sailors Retirement Home where the students expanded their interviews and listened for over three hours of stories from the people who experienced this period in history. Students began to explore the cause and effects leading to the war, the outcomes of the war based upon a particular point of view and how the war affected peoples lives both here and internationally. Finally, the students prepared a bound journal of their findings that was donated to the school library. The Art teacher helped the students to create a mural that still hangs in the schools

hallway six years later. Recently, while visiting his old school, one of the authors encountered the younger brother of one of his old students who related to him how his brother still speaks of this lesson. These students learned history from the viewpoint of the historical participants. They were able to utilize writing skills, technology skills, communication skills, higher level thinking skills and research skills in a project that they remember years later. This was all possible because of the infusion of collaboration technology as a tool for student growth.

Implications and Recommendations

The education system needs to remove barriers for teachers to effectively perform their critical work with students and allow them the freedom to teach beyond standardized testing. Project-based learning teamed with appropriate technology tools and support can help students to gain a better understanding of what they are learning. Students can create and expand their own comfortable learning environment and learn more effectively if given the right set of variables such as open learning space, practical applications of what they are studying and an open technology infrastructure that allows for free flowing communication and sharing of ideas.

Teachers must be encouraged to work in concert with their technology department, administration team and students and parents to design the most appropriate classroom uses of technology. One important note to remember is not to rely on the cutting edge technology too much. Just because a technology tool is available that does not mean there is not already a better method already being used. If a teacher feels that they don't see a good fit for their classroom then that is alright. We must trust the classroom teacher as an expert in their field and that they can identify the best resources for their teaching.

Through research, experience and practical application the authors have learned that some of the biggest influences on successful education systems are support and flexibility of administrators, well defined administrative and technology policies for appropriate student behaviors, and a can-do attitude of the technology department.

Conclusion

Schools across the United States and around the world are facing a crisis. In some urban American schools, the high school dropout rates continue to rise, in some cases, beyond the 50% level. Part of this phenomenon may be due to a disconnection between what and how curriculum is being taught with what is deemed relevant to students. Increasing neo-millennial students are becoming world citizens. The information that is received though social-media channels are far outweighing what is presented in the classroom. While it can be argued that much of this information is fragmented, not specific and may be suspect in regards to accuracy, it is a fact that it is having a profound impact upon the values and attitudes of students around the world. The attempt to protect and, to some degree, control access to this media in schools is becoming a losing proposition. Most students continue to have access through smart phones, the WWW and out of school social networking activities.

What is really required from schools is to be educators, demonstrating to students a proper use of these tools. Also, students need to be taught how to filter their world, including the world of social media. By engaging the technology in a meaningful manner, and at the same time, permitting students the freedom to become active participants in their learning through the implementation of collaborative project-based learning, students and teachers can become partners in this growth. Most importantly, students and faculty can join together in the process of becoming citizens of the world. In so doing, this approach can once again find relevance in the lives of the students through dialogue and collaboration.

The authors submit that three of the most important skills for the future include: Information analysis and discrimination, effective communication (both personal and virtual) and the ability to work as part of a team effectively utilizing the skills of collaboration. In such an arrangement, the strengths of each individual can be combined and brought to optimal effectiveness.

References

[1]. Bas, G. (2008). Implementation of multiple intelligences supported project-based learning in EFL/ESL Classrooms. Online submission.

[2]. Bell, S. (2010). Project-based learning for the 21st

century: Skills for the future. *The Clearing House,* 83, 39-43.

[3]. Bruner J. (1985). *Vygotsky: An historical and conceptual perspective. Culture, communication, and cognition: Vygotskian perspectives,* 21-34. London: Cambridge University Press.

[4]. Dewey, J. (1938). *Experience and education.* New York, Touchstone.

[5]. Dieterle, E., Dede, C., & Schrier, K. (2010). "Neomillennial" learning styles propagated by wireless handheld devices. In M. Lytras & A. Naeve (Eds.), *Ubiquitous and pervasive knowledge and learning management: Semantics, social networking and new media to their full potential.* Hershey, PA: Idea Group, Inc.

[6]. Federal Communications Commission. H. (2009, September 21). *Children's internet protection act.* Retrieved from http://www.fcc.gov/cgb/consumerfacts/cipa.html

[7]. Gokhale, A. A. (1995). Collaborative learning enhances critical thinking, *Journal of Technology Education* (7,1) retrieved 6/30/2010 from http://scholar.lib.vt.edu/ ejournals/JTE/v7n1/gokhale.jte-v7n1.html

[8]. Keefe, J.W. (1991). *Learning style: Cognitive and thinking skills.* Reston, VA: National Association of Secondary Schools Principals.

[9]. M86 Security. (n.d.). *Security issues | web 2.0 security.* Retrieved from http://www.m86security.com/solutions/security_issues/application-control-web-2.0.asp

[10]. Manzo, K. K. (2009, September). Filtering Fixes :District leaders make changes to offer greater online access to students. *Education Week,* 29(2), 23, 25. Retrieved June 27, 2010, from Research Library. (Document ID: 1858556831).

[11]. McDonald, D. (2007, November). Educating Students to Protect Themselves in Cyberspace. *Momentum,* 38(4), 88-89. Retrieved June 27, 2010, from Research Library. (Document ID: 1415389421).

[12]. Mitchell, S., Foulger, T.S., Wetzel, K., Rathkey, C. (2009, February). The negotiated project approach: Project-based learning without leaving the standards behind. *Early Childhood Education Journal,* 36(4), 339-346.

[13]. Prensky, M. *Digital natives, digital immigrants. On the Horizon,* NCB University Press 9(1): 2001.

[14]. Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes.* Cambridge: Harvard University Press.

[15]. Wang, Q. (2009). Designing a web-based constructivist learning environment. *Interactive Learning Environments,* 17(1), 1-13.

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