

# The Use of Computer Technology in the Classroom: *“Relax! It’s Only a Change in the Tools.”*

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## **Key Issue(s)**

Since my arrival at the United States Military Academy, numerous professors have seemingly disparaged the use of computer technology in the classroom. Those individuals seem to share the same or similar view that computer technology is distracting and does more harm than good. From their perspective, their ancestors had it correct; all that is required to be an effective teacher is a textbook, a blackboard, and a piece of chalk.

For me, I find that belief provincial in its origins, and at times, even hypocritical. To this day, I vividly recall a briefing I attended at the outset of my tenure at the Academy, where a distinguished lecturer ranted and raved for what seemed like an eternity against the use of PowerPoint in the classroom, and then, to my absolute astonishment, had the gall to say, “Next slide, please.”

This somewhat widely held aversion to computers, certain comments, and my overall teaching experience had me thinking. What is the appropriate use of computer technology in a modern day classroom? What’s more, my mind began to run to my students. Who exactly are they? Who are we teaching? Are they very different from me, when I attended this college? And if so, what makes them so different?

Secondly, I couldn’t help but be curious as to what methods and means were available to me and to my colleagues to teach today’s students? Would PowerPoint have a role in my classroom? Would video clips, or discussion boards? If so, when? And for how long?

With all of these thoughts in mind, I have hoped to use this literature review to answer these pesky questions, perhaps discovering the best tactics, techniques and procedures to instill a respect for the rule of law in my cadets. I am, after all, a professor of law, and it remains my hope that my students will be empowered to solve legal problems with incomplete and sometimes contradictory information. In other words, I wish for them to be able to think critically within the context of the law, and so, these are the goals of this paper.

## **History of the Institutional Practice**

For reasons unexplained, and despite being participants in the 21<sup>st</sup> century, most college-level professors remain committed to the “chalk and talk” method of teaching. As Professor Derek Bok, former president of Harvard University, pointed out “...teaching remains one of the few human activities that does not get demonstrably better from one generation to the next.” What’s the reason for this institutional stubbornness?

As with so many questions, the answers are seemingly endless. Perhaps, institutional stagnation is directly attributable to the great emphasis higher education places on research, rather than teaching. One would be hard pressed to find a university professor, who is not familiar with the adage to “publish or perish,” for the death knell rings loudly for the instructor who remains “research inactive,” despite his or her prowess for teaching.

Perhaps, the stagnation is indicative of the way professors view their jobs. In other words, the resistance to change, to improve our teaching abilities, might not stem from the institution itself, but from its people. A well-known university professor in Great Britain famously wrote to the *Guardian*, a daily, British newspaper:

“I do not wish to be a teacher, I am employed as a lecturer and in my naiveté I thought my job was to ‘know’ my field, to contribute to it by research and to lecture on my specialism! Students attend my lectures but the onus to learn is on them. It is not my job to teach them.”

What a farce! Professor Ronald Barnett at the University of London was right, when he so eloquently stated the purpose of higher education: “to pass on the social, cultural, political and technological heritage to the next generation, who will test, reject, and recreate part of it.” His response clearly suggests that *teaching* and its methodologies must take into account the recipients of the information, namely the *students* and their learning needs. It is not enough to say that it’s the way we’ve always done business. Times change, and acknowledging that fact, who are today’s students?

### **Background of the Intended Recipients**

According to Professor Joan Catherine Bohl, today’s students belong to a group she terms “Generation XY” or “Gen XY.” They’re described as “digital natives,” where we, their professors, are “digital immigrants.” Today’s students approach technology with a certain intuition rather than a user’s manual. They are consumers, who have used computers and its associated technology their entire life. According to her postulation, it makes no sense to refer to their *access* to computers, since nearly every one of them has *used* computers since childhood; they know not a world without them. Computers remain an integral part of today’s students’ world. They’ve always played with, been entertained by, and learned from them.

What’s more, these facts have altered the expectations of this generation. Gone are the days of having to trek off to the library, with its strange feel and smell and shelves of books, in

order to conduct some late research for class. “Gen XY” expects the information to come to them! They have, what Professor Bohl, describes as a “passive relationship to information,” expecting to invest little time and effort in order to obtain it. Instant gratification is the name of their game, and even that fact is not enough. Today’s students want to be entertained, while receiving their desired content. How quick we can all learn! Yet, how do the today’s students best learn? With computers!

### **The Various Tools in the Kitbag**

No all-inclusive list exists to describe all of the computerized methods and means to teach this “Gen XY.” I have sought to merely highlight a few of the most common ones, namely those tools that my limited research and experience has lead me upon. In no particular order, they are: (1) PowerPoint; (2) e-mail; (3) blogs and/or discussion boards; (4) computer games; (5) web assignments; (6) multi-media clips; (7) and the all-encompassing course-management software. In discussing each of their associated positive and negative aspects, I have found it additionally useful to categorize each tool, as either a broadcast or communication technology in addition to a synchronous or asynchronous one.

By broadcast technologies, I simply mean to adopt Messrs. Bates and Poole’s definition of such technologies. Broadcast technologies simply move information from author to receiver. There is no two-way interaction between the parties, thereby relegating broadcasting tools to the transmission of information only.

Communications technologies, on the other hand, obviously afford two –way interaction and ensure equal communicative opportunities for all the participants. Their usefulness rests in their ability to allow the sender to clarify concepts, identify difficulties, and to discuss and argue.

Coupled with the broadcast/communication distinction, is the idea that computerized tools may be further classified as synchronous or asynchronous. The former intimates at a technology’s ability to allow nearly simultaneous participation; it is synchronous. The latter does not allow simultaneous participation.<sup>1</sup> In the final analysis, the choice of the tool depends primarily on the mission to be accomplished.

**PowerPoint:** Perhaps, one of the more widely-known computerized teaching methods available is Microsoft PowerPoint. An asynchronous broadcast medium, PowerPoint is, in essence, a presentation program with a great many obvious benefits. For one, PowerPoint greatly facilitates the structuring of a presentation. There exist numerous templates with the software from which to choose, thereby making it easy to select workable color schemes, the appropriate font sizes and types for that particular background, and even the correct placement of pictures or movie clips. What’s more, the program allows for easy dissemination. When printing out handouts or his or her slides, the user can include “hidden notes” as part of the

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<sup>1</sup> Synchronous communications, allowing for simultaneous interaction, are thought to foster a sense of community. Another way to consider asynchronous technologies, therefore, is that these mediums sacrifice the sense of community for the sake of flexibility and convenience of the parties.

printout, thereby creating a veritable self-study guide, and by careful mixing media within a presentation, PowerPoint can revive a stale presentation into a lively one, appealing to a more varied audience. Editing of a PowerPoint file is also very easy, and given Microsoft worldwide adoption, PowerPoint files are extremely portable, permitting a presentation to be given wherever the supporting technology is available or distributed. Still, it does have some critics, who are quick to point out its negative aspects, the most of being overuse. The danger of in a pedagogical setting lies in its potential to “turn-off” students. If the instructor were to make it a habit to making all of his or her slide available to the students, who would then become accustomed to receiving them, the danger indeed might be that those students might become passive, believing that they’ve already “got the notes” and thereafter “tuning out” of class. If properly controlled, however, PowerPoint remains a very powerful and flexible tool for teaching and learning support.

E-mail: It’s difficult to imagine anyone who would describe e-mail as an innovative tool. Electronic mail is everywhere. In industry terms, e-mail’s an asynchronous communicative tool, allowing for the simple exchange of digital messages. In lay terms, it’s how the digital natives and digital immigrants now speak to one another, and in some respects, carry on their lives. E-mail allows us to reach out and touch single individuals, a discreet sub-group of people, or nearly everyone that we’ve come into contact with through Microsoft Exchange. The medium constraints are few, in that at times, we are confined by the size of our attachments or existing rules of netiquette, which warn against the information overload of our recipients and/or the promulgation of unsolicited messages potentially laden with harmful software or viruses. In addition to these dangers, e-mail messages lend themselves to being taken out of context, lending credence to the adage that the message sent is not always the message received. Still, e-mail remains extremely difficult, if not impossible, to escape using, and in the classroom, when coupled with some imagination, this particular tool can be greatly effective.<sup>2</sup>

Blogs and discussion boards: Blogs and discussion boards are another useful tool for confronting our so-called “new breed of student.” It would do us well to distinguish between the two. Suffice it to say, the difference between blogs and discussion boards is their locus of control. While both media can be used to log or to post certain viewpoints, observations,

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<sup>2</sup> Professors J.F. Chizmar and A.L. Ostrosky suggest using e-mail in a time-honored technique called the “one-minute paper.” Under this technique, professors simply ask their students to write about key point of discussion on that day’s lesson, or on an existing question relating to the content of one particular class meeting. For instance, the professor might ask, “What was unclear to you about today’s class?” In the alternative, the professor might solicit a comment on the most important piece of information the student purportedly learned that day. The question, whatever its form, is proffered to the entire class, or depending on the whims of the professor, it is distributed to a discrete subset of the class. What the students do is respond, via e-mail, to the question posed, spending only a few moments on it, hence the term “one-minute paper.” Thereafter, the professor shares the results at the next class meeting or includes them a subsequent e-mail. In either case, regardless of who is selected or how the results are promulgated, the “one-minute” paper provides the students with what they desire most, namely feedback from the professor. What’s more, these papers give students an incentive to relook certain material, while providing the instructor the opportunity to address any lack of understanding, while preserving that all-important class time. What are the drawbacks to the technique? If overused, it can be quite impersonal. Still, e-mail and the “one-minute paper” remain solid tools to instruct “Gen XY.”

opinions, and even experiences, as they relate to any given topic, one individual or a small group usually controls a “web log” or “blog.” In contrast, message or discussion boards are group resources; the control of content and value rests equally among all of the users. Regardless of who controls the topic, the benefit of these communicative, asynchronous tools seems manifest; they provide additional insight to students, while underscoring areas of confusion to the instructor. Carefully controlled, blogs and message boards can be useful in generating discussions and in teaching critical thinking. Their principal danger only lays in their loss of control, as blogs and discussion boards can quickly degenerate into pages of useless banter and commentary. It’s not surprising, therefore, that the subject matter, quality, and content varies so dramatically. Aptly termed “a revolution in academic discourse” as well as a “CB radio,” blogs and message boards are just another means to the new generation.

Computer games: People are said to learn through playing, and a common form of playing certainly is games. A video game, then, is just an electronic game that involves interaction with a user interface, generating visual feedback on a video device. Computer games are a communication technology, and unlike e-mail or discussions boards, they are synchronous. Depending on the group polled, there are clear supporters of computer games in the classroom; others remain adamantly against them. Those individuals, seeing their utility, cite increased performance on classroom assessments, the development of critical thinking, and an increase in motivation, attention and concentration. What’s more, the purported benefits do not stop with the students. Teachers themselves gain efficacy by packaging their material in a way that students understand and with which they are familiar. Critics cite a dearth in educational games, leaving only those with entertainment value and no educational benefits. What’s more, critics caution against their negative aspects, such as gender bias, aggression, and societal withdrawal. Still, as with any tool on the list, computer games are best used in moderation.

Web assignments: Yet another common tactic in teaching “Gen XY” is the use of the World Wide Web, frequently abbreviated as “www,” and commonly referred to as “the Web.” The Web is a system of interlinked, hypertext documents that is contained on the Internet. For our purposes, the web is a broadcast, asynchronous technology with seemingly limitless applications and potential. If e-mail is common, the Internet is ubiquitous, and its ease of access and availability remain its strength and biggest pitfall. As to the latter, the great amount of information it provides to the user can be difficult to decipher. As anything and everything is nearly a key stroke away, one may be undoubtedly certain that his or her students will use the Web. The question that remains is how the teacher will react to its presence.<sup>3</sup>

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<sup>3</sup> One of the simplest assignments using the World Wide Web is to direct students to visit a particular website and ask them to locate, and thereafter, explain the information they discovered there. In the alternative, a professor may also invite his or her students to discover information on a number of web sites, with the end state being to have the students judge the authenticity of the discovered data, compare it to a plethora of other data found, and synthesize their discovery into some coherent whole, thereby enhancing the students’ critical thinking and problem solving skill.

Multi-media clips: If selected properly, multi-media clips may serve well to illustrate educational content to today's digital native. Multi-media is simply media and content that uses a combination of different forms. It is asynchronous and broadcast technology that includes a combination of text, audio, still images, animation, video, and other interactive content forms.<sup>4</sup> Multi-media clips typically enhance the user's experience, for example, making it easier and faster to convey information. If a downside exists, it is simply that multi-media requires additional preparation time, challenging even those professors with a great familiarity of the World Wide Web.

Course management software: Course management systems (CYS) are the final tool and are really just a collection of software tools that empowers a faculty member to conduct his or her class. In essence, CYS enables a professor to organize and present content, communicate synchronously and asynchronously with students, assess student performance, record and report grades, and manage class materials and activities. CYS incorporate many of the vehicles already discussed above, such as blogs, discussion boards, movie clips and links leading to the World Wide Web, and some of the more common names of CYS systems are WebCT, Blackboard, Prometheus, and CourseTools.

As far as their primary benefits, CYS can greatly facilitate several administrative duties, to include quiz administration and grading. As for students, a 2003 study by EDUCAUSE at the University of Wisconsin claimed that CYS increased their synchronous and asynchronous interaction with professors. Unfortunately, like so many computer-based, pedagogical solutions, its limiting factor is cost; the outlays associated with licensing and support systems of CYS have only skyrocketed in recent years.

### **The Lesson to Be Learned**

Like it or not, computer technology in the classroom is here to stay. For those professors who use computers regularly in their personal lives, yet resist the transition to their public life, I now say that, "It's time to greet the 21<sup>st</sup> Century!" The professors, who do remain reluctant to adopt computer technology in their classrooms, do so presumably because those individuals have not been trained to use it. Computer technology remains somewhat unfamiliar to many of them,

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What's more, permitting uncontrolled use of the Web translates into missed opportunities for professors. By incorporate web assignments in a course syllabus, professors may further inform the students about sound research skills with respect to the web. For instance, students may be taught how to recognize academically sound web sites and how to correctly cite the information discovered there, if used. Primary sources will always remain important for research, and professors who shy away from the aforementioned learning opportunities risks the use of popular secondary sources, such as the general encyclopedia, *Wikipedia*.

<sup>4</sup> Recognizing that class time remains at a premium, it often makes little sense to view or listen to an entire multi-media clip. So, many professors will and correctly should excise the irrelevant portions, leaving only a particular, relevant segment to establish or emphasize a particular point.

and they have not had time or the desire to learn about it. The effect of fear is that they then begin to engage in post, ad-hoc rationalization. Those fearful of incorporating technology in the classroom begin to believe in its absence, arguing that that computer belongs strictly to the students. To that point, I would suggest it's time to change one's mindset, take a risk, and acquire the requisite training. As Mr. Gilberste Furstenberg so aptly said it, "Technology will reach its full potential only when we see it as a tool." In the final analysis, computer use in the classroom will never replace the pencil, textbook, or blackboard. It will remain simply another tool available to an instructor to help his or her students learn. So, accept it!

I've developed a habit of creating hypotheticals in my class, involving various members of my immediate family. I can't count the number of times my beautiful wife has been made the protagonist, if not the chief aggressor, in various scenarios, at times pummeling or bludgeoning her poor husband for a comment he never should of made regarding her spaghetti. The students laugh, thinking of the image while taking away its learning point. I've reached them. They understand, and they understand because I sought to understand them. Computer use in the classroom is really just a recognition of whom today's students are.<sup>5</sup>

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<sup>5</sup> As for my part, in instructing undergraduates in constitutional and military law, the best variation of computer-based teaching I've discovered was proffered in a reading by Professors Millikin and Barnes. In essence, they suggest a hybrid model, combining many practice variations of the practice variations mentioned above, and it is aptly termed the lecture/workshop format.

Simply put, a twenty minute lecture is followed by a short workshop of equal duration. During the lecture portion, the instructor is free to use PowerPoint, conveying information in bullet format and interspersing those bullets points with illustrations, diagrams, and movies. Throughout each lecture are also "thought bubbles," which in essence introduce the prompts that will be presented for discussion during the workshop. In that workshop, the students address realistic scenarios in a group environment, thereby enabling them to interact with each other as well as the teacher. The benefits accompanying variation seem mangiest. For one, it has a clear structure and organization. The teacher will also have a legible, definite set of notes for future reference, that can be readily called up for review and can help standardize multiple class sections by ensuring there is less of a chance that the instructor will miss important points. What's more, while it is clear supposition, it does seem reasonable to assume that the teacher's students will appreciate the lecturer's clear work that was put into class preparation, which shows his or her definite commitment and contribution to their development, and because the method is so dynamic, students, for their part, should be more willing to attend class, knowing well what to expect on a given each day. Why the course and lesson objectives are placed on an accompanying CYS, to which the students have access. The downside I envision is that the workshop might to cause some uneasiness in students, as it is left to largely to them to largely to gain something useful out of the workshops. This increased workload on the student makes sense, however, when one considers that, in the final analysis, they are ultimately in charge for their own learning.

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### Annotated Bibliography

Anderson, Terry, Varnhagen, Stanley & Campbell, Kathy (1998). *Faculty Adoption of Teaching and Learning Technologies: Contrasting Earlier Adopters and Mainstream Faculty*. The Canadian Journal of Higher Education, Volume 28, pages 71-98. Despite the potential for improvement in higher education through the application of computer technology, its use remains largely inconsistent and ineffective. These authors sought to find out why. Of particular interest in the study are its included figures and diagrams. For example, Figure 2 addresses the self-assessed level of competence with respect to existing information technologies. Over 90% of faculty surveyed rated their skill at novice or higher at word processing, electronic mail and library database searching. Internet skills, such as browsing or e-mail also had over 90% reporting “some use.” Yet, the number of users reporting their skills at the excellent or good level dropped below 50%, in the end perhaps suggesting that faculty members are not truly accustomed to using technology. Figure 3 concerns the faculty’s perception of advantage to be gained by information technologies, and the results suggested that the faculty interviewed rated only those technologies relating to research as advantageous. Finally, Table 1 showed that 44% of faculty spends few than three hours per day on the computer. Taken together, these facts suggest that, although information technologies have been adopted by faculty for research and professional communications, computer use to teaching and promote learning remains behind.

Bates, A.W. & Poole, Gary (2003). *Effective Teaching with Technology in Higher Education*. Jossey-Bass. The authors focus their book on three main parts. Part I of the hardback concerns itself with the fundamentals of educational technology. Part II deals with course design, development, and delivery of educational technology, and the last part, Part III, addresses the change and stability of teaching with technology. Of particular moment to this paper was the authors’ categorization of the methods and means of computer technology. Specifically, the authors defined technology in classes, i.e., as either broadcast or communication technology and synchronous or asynchronous technology. Broadcast technology is described as one-way communication, with easy examples being a lecture, radio or T.V. broadcasts. Communication technology, on the other hand, purportedly allows for two-way communication, the participants having equal access to the discussion, so to speak. In this vein, once consider the telephone or an e-mail in a Microsoft Outlook in-box. Further delimiting the categories of technology, the authors separate computer technology into synchronous technology, where all the participants

have equal access at the same time and asynchronous technologies, which the communal element for flexibility and convenience, truly allowing the parties to communicate, but at their whim.

Bohl, Joan Catherine (2008). *Generations X and Y in Law School: Practical Strategies for Teaching the “MTV/Google” Generation*. *Loyola Law Review*, Winter 2008. This article explores the defining characteristics of today’s undergraduate students, attaching the moniker “Gen XY” to them. Today’s students, the author suggests, came of age in a time where everyone accessed computers. Face-to-face conversation and even a telephone call seem antiquated and outdated to many of them. As a result of being born into the digital age, today’s students are understandably impatient, expecting their information immediately. In a sense, they want instant gratification. Yet, at the same time, today’s student’s want to be entertained. For these folks, it makes no sense to reference distant library and stacks of books or paper. Information lay only a few keystrokes way.

Professor Bohl also discusses the expectations of “Gen XY” in the classroom, centering her presentation on six core characteristics. First, she suggests that today’s students need to feel engaged; they need to see the immediate usefulness of the information they are receiving. Second, they *demand* respect. Today’s students seem to learn best in a collegial environment, rejecting any authoritative method of teaching. Third, “Gen XY” works best in a collaborate atmosphere; “we can all learn from each other” might be their mantra. Fourth, the professor would do well to show how the information being proffered fits in their past experiences. In other words, according to the author, there must be some connection to the existing mental scaffolding. Fifth, “Gen XY” students clearly learn by doing. They are a hands-on generation, unlikely to retain information simply presented to them in a lecture. Role playing, clinics, externships, etc. remain the high points in their memories of their learning careers, and finally, the student’s of today’s student expect frequent opportunities of evaluation. If those opportunities are not provided, today’s students are more prone than their predecessors to challenge their grades and highlight their effort, in the end averring, “I really tried hard,” or “I never received such a low grade.” After all, why should *they* change?

EDUCAUSE Center for Applied Research (2003). *Faculty Use of Course Management Systems*. At first, here is a bit about the author. EDUCAUSE is a non-profit association, whose self-described mission is: “to advance higher education by promoting the intelligent use of information technology.” As the title of its study so aptly states, this particular article addresses Course Management Systems (CMS) and how faculty members perceive their usefulness. The study was driven in large part by Dr. Glenda Morgan, who focused her efforts on the University of Wisconsin for over eight months. She discovered that many professors tend shy away from computer programs, falsely believing their students prefer their instructors not use such

programs. When the students were asked, however, they generally liked the programs; in fact, sixty percent of them stated that such programs actually increased their interactions with their professors. What's more, the students seemingly enjoyed the transparency associated with CMS. Specifically, the enrolled students cited the on-line grade book and being able to view their current assessment. While, according to EDUCAUSE, there exists little evidence to show that course management systems actually improve pedagogy, the study's findings do suggest that the systems have positive secondary and tertiary effects, as CYS cause even tenured professors, at a minimum, to rethink their course instruction, architecture, and environment. In this way, CMS facilitate and encourage better course organization and standardization. Its shortcomings come as no surprise. They remain costly, and many of the programs' restrictions nearly forbid customization.

Furstenberg, Gilbert (1997). *Teaching with Technology: What is a Stake?* ADFL Bulletin. Volume 3, pages 21-25. Although the author orients this article towards training foreign languages with computers, he underscores the cause behind the general reluctance among professors to incorporate technology in their classroom, stating in fact that many instructors have not been trained in technology. What's more, those same teachers may not have had the time or desire to learn use computer technology. The author suggests that professors press past their initial inhibitions and dare to see a use for computer technology in the classroom. IN the final analysis, it remains just another tool in a professor's kitbag, which was never intended to replace existing tools such as chalk, the blackboard, and the textbook. Certainly, computer technology is not a panacea, but it remains medium that allow a student to better observe, analyze, question, and synthesize presented material.

Goffe, William L. & Sosin, Kim (2005). *Teaching with Technology: May You Live in Interesting Times.* Journal of Economic Education. Volume 26, Issue 3, pg 278. This article and its authors discuss teaching with computer technology, specifically its implications for student learning. The article does so by citing specific examples of use, in the end addressing one critical problem with computer use among students: "cyber-plagiarism." What's more, computer technology is described as "just one more basis tool in the...instructor's toolkit." The article discusses the widespread use of computers among today's students, pointing out specific statistics regarding their availability and use. In the end, the article addresses seven specific tools of computer technology: e-mail; web assignments; computer games; course management software; mailing lists; bulletin boards; and multi-media. Each one is discussed in turn, along with its positive and negative aspects.

Jones, Allan M. (2003). *The Use and Abuse of PowerPoint in Teaching and Learning in Life Sciences: A Personal Overview*. Bioscience Education E Journal, Volume 1, page 2. This author discusses the widely-known presentation program, Microsoft PowerPoint, while proffering its advantages and disadvantages. In support of program, the author refers to its ability to facilitate a presentation's structure, and in doing so, allows for easy distribution as handouts. What's more, by carefully mixing media inside a single PowerPoint presentation, the program can help the user appeal to many different learning styles, thereby stimulating more persons about one topic. The software remains extremely easy to edit, and its files remain portable, given the wide-spread adoption of Microsoft programs. Evenhanded in his treatment, the author concludes by discussing the common risks associated with PowerPoint, to include supporting equipment failure, file corruption, and even lack of appropriate training in the user. In the end, he proffers some guidelines, i.e., pedagogical strategies for PowerPoint use in the classroom. According to the author, PowerPoint will remain a very powerful and flexible tool for the classroom.

Lowman, Joseph (1995). *Mastering the Techniques of Teaching*. Jossey-Bass. The author confines the bulk of his discussion on computer use in the classroom to out-of-class assignments. Still, the author takes some time to discuss "electronic aids" in the classroom, including movies, slides, and multimedia presentations.

As to movies, the author generally makes short shrift of them. Yet, he clearly understands their dramatic effect and wide appeal of among students, suggesting that correctly chosen movie clips may be beneficial, assuming of course that they do not absorb too much class time.

As to slide use, regrettably, the author discusses the use of antiquated 35mm slides. Still, many of his points regarding this outdated medium translate well into the use of Microsoft PowerPoint. For instance, the visual quality of slides, regardless of their form, still ranks superior in comparison to handwritten notes or overhead transparencies. What's more, slides are easy to use, assuming that the overhead projector is working well and properly. While some might argue that slides require additional preparation, they remain the easiest way to bring to life important objects and scenes to the class. Many professors therefore work hard to make great use of slides, even though the information presented electronically could have just as easily been written, at least in part, on a blackboard.

Milliken, John & Barnes, L. Phillip (2003). *Teaching and Technology in Higher Education: Student Perceptions and Personal Reflections*. Computers and Education, Volume 39, pages 223-235. Although aimed at the education system in the United Kingdom, this particular piece discusses the implementation of "a technologically rich approach" to classroom teaching. The

articles central premise is that different teaching methodologies employed in the majority of educational institutions do not always take cognizance of the learning needs of students. An analysis of 600 UK students surveyed showed that 50% of them identified a need for more effective teaching delivery. Referring to Derek Bok, a lawyer, educator, and former president of Harvard University, "...teaching remains one of the few human activities that does not get demonstrably better from one generation to the next." The authors discuss specific learning and teaching strategies, focusing on one in particular: a 20-min short lecture followed by an equally short workshop. Ninety percent of the students surveyed liked the technique and ninety percent of the students surveyed would like to see such a computer-based teaching approach used in other classes. In the final analysis, professors simply follow the teaching methods they experienced as students, and the use of technology can be used to improve both teaching and learning. There remains an over-reliance on the traditional lecture as the major vehicle for course presentation.

Ownston, Ronald D (1997). *The World Wide Web: A Technology to Enhance Teaching and Learning*. Research News and Comment, March 1997, page 27-33. This article focuses on the Internet and attempts to answer three simple questions: (1) does the Internet make learning more accessible? (2) does the Internet promote improved learning?; and (3) does Internet accomplish the aforementioned, while reducing costs. According to the author, the Internet does indeed promote learning; it makes education more attainable for everyone. As to promoting improved learning, the author tends to disagree to the majority viewpoint, or at least states that it remains a difficult measurement to make, given that any improvement in learning may accrue simply from a change in instructional design as much as from the specific medium used. Still, Professor Ownston's acknowledges the Internet's wide appeal to both students and instructors alike. For the students, the Internet is described as the "children's machine," in that today's students do not know a world without it. As to the professors, the wellspring of course websites lends credence to the idea that they too have gained an affinity for the Internet. The author goes on to describe the enormous flexibility this medium affords its users, in the end describing asynchronous learning opportunities from e-mail, electronic videos, to blogs, etc. Finally, he concludes his piece with a discussion of costs, identifying them without any judgment at all.

Rosas, Ricardo (2003). *Beyond Nintendo: Design and Assessment of Educational Video Games for First and Second Grade Students*. Computers and Education, Volume 40, pages 71-94.

While this particular work focuses on a small group of students well outside the undergraduate context, the author's discussion on playing, learning, and cognitive development along with his remarks on computer games as instructional tools is extremely relevant to my piece. The author takes pains to underscore that play is an important part of cognitive development, and games are a form of playing. He cites empirical evidence that games strengthen and support school

achievement, cognitive abilities, motivation, and attention and concentration. What's more, all games have properties, rules, and procedures that must be mastered before becoming "a player." This idea holds true in other disciplines and at all stages of life. Still, despite the aforementioned evidence, the incorporation of games through computer technology continues to undergo resistance, attributable to three sources, according to the author. First, teachers seem to possess an inaccurate view games, believing they are utterly without learning value. Secondly, many of today's teacher's lack the technical know-how, as it relates to games, harboring little to no interest in acquiring it, and third, a paucity of effective educational software exists in the market. The challenge, as the author sees it, is to locate that easy to use instructional and entertained software that is well aligned with the professor's establish curriculum so that it can be used regularly, thereby creating the conditions that favor learning. In the end, the author offers computer games a balanced treatment, ending his piece with the potential side effects of unmonitored, prolonged computer game use, which may include aggression, gender bias, and self-alienation.