

# Effective Strategies for Integrating Technology and the Tools of Web 2.0 in the Curriculum When Limited by Budget, Infrastructure, and Shelf Life

Sharon Anne O'Connor-Petruso, Ed.D.  
City University of New York at Brooklyn College

Barbara Rosenfeld, Ph.D.  
City University of New York at Brooklyn College

## Abstract

The purpose of this paper is to share effective strategies in the training of teachers and teacher candidates in integrating technology and the tools of Web 2.0 in diverse classrooms when limited by budget, infrastructure, and shelf life. This paper will be of interest to teachers, teacher educators, media specialists, and administrators whose goal is to prepare students for the global economy by exposing them to new/emerging technologies regardless of budgetary constraints and obsolescence.

## 1. Introduction

Globalization catapulted Information and Communication Technologies (ICT) planning in education universally. Government and educational leaders collectively recognized the crucial need to create “work ready” citizens who can compete in the global economy; which at a minimum necessitates literacy, math and science skills, and competencies in new and emerging technologies. Ostensibly, training begins in educational institutions. However the reality is that a majority of our public institutions, K-12, and Institutions of Higher Education (IHEs) are constrained by non-existent or limited budgets, outdated infrastructures, and old computer software.

Albeit the United State’s American Recovery and Reinvestment Act (ARRA) of 2009 directly earmarked \$650 million towards education technology, immediate monies are directed at preventing teacher layoffs and thwarting additional budget cuts in the educational sector. Nancy Pelosi (2009) reports on her Web site that as a result of budget shortfalls, 28 states have already implemented cuts to education and these shortfalls are likely to exceed \$145 billion in 2010. Thus although we are in our fourth wave of ICT planning, many issues remain unresolved. One possible panacea to improve schools’ abilities to integrate new technologies into the curricula is the ARRA stimulus funding – and “only time” will tell if we succeeded.

The purpose of this paper is to share effective strategies in the training of teachers and teacher candidates in integrating

technology and the tools of Web 2.0 in their diverse classrooms when limited by budget, infrastructure, and shelf life. Recognizing the arrival of the millennials, many of whom who are adept in digital technologies due to resources provided in the “home” environment (Visions, 2020), our short-term goal is to provide equity in technology resources for all citizens. Our long-term goals are to have teachers and teacher candidates prepare their own students for the global economy and “turnkey” the instructional strategies in using free Web sites and open source software in their classrooms - as there will always be a digital divide.

Similarly, the tools of Web 2.0 are used in collaboration and collaboration from a socio-cultural perspective (Dewey, 1933; Piaget; 1954; Vygotsky; 1978) builds learning and skill development. When students interact with each other, share ideas, viewpoints, and experiences, they construct/create new knowledge and become adept in new tools.

## 2. Course Management Systems

Although diversified strategies will be shared under the following college course nomenclatures, the underlying principals remain the same: students are exposed to free resources and open source software that are current and emerging technologies and are available to all regardless of socio-economic status. A mainstay of both authors’ strategies is that students harness the power of the Internet and utilize the interactive tools of Web 2.0 that can be accessed in educational environments and non-profit institutions such as local libraries and universities.

Both author-professors, like many teachers around the country, use the Blackboard course management system since it is provided by their respective educational institution. However, instructors could alternatively use the free components (akin to the basic package from Blackboard) from such course management systems Moodle or Sakai. Due to the current economic recession, and the gaining popularity of these nonproprietary course management systems that are user-friendly, these authors purport they will become the norm.

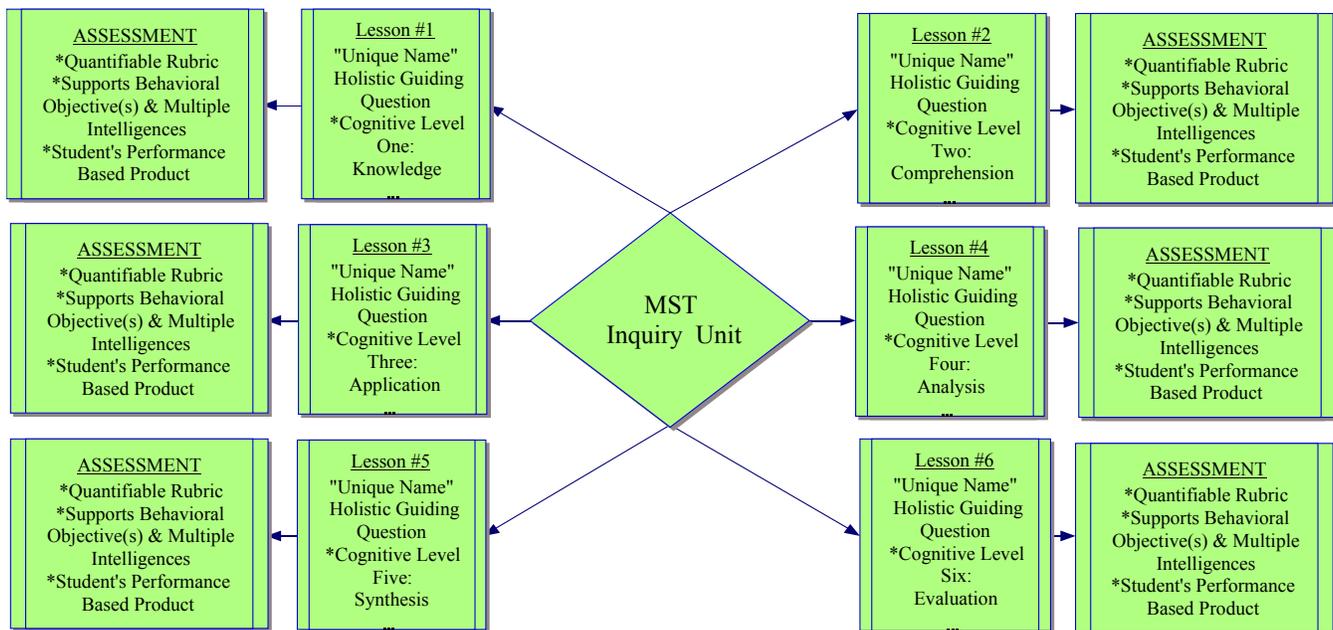
### 3. Open Source Software

In *Advanced Pedagogy and Curriculum II*, a graduate level course, teachers and teacher candidates, in techno-savvy pairs (a novice user paired with an experienced user), create in the constructivist approach a six-lesson intermediate

interdisciplinary science inquiry unit that adheres to Bloom's Taxonomy (1956), addresses each of Gardner's Multiple Intelligences (1993), and incorporates mathematics and new and emerging technologies (see Figure 1- MST Inquiry Unit Model, 2001; 2005).

## MST INQUIRY UNIT MODEL

O'Connor-Petruso, Ed.D., 2001; 2005



### Additional Performance-Based Assessments of the MST Inquiry Unit Model

- 1) Children's literature for each lesson: Text, magazines, newspapers, web resources etc.
- 2) Two manipulative skills: Measuring liquids, grouping objects, magnetic & electrical testing, ball & ramp game, & unknown object.
- 3) Three mathematical representations including congruent spreadsheets and/or charts: Bar graph, line graph, pie and/or picto-graph.
- 4) One scavenger hunt.
- 5) One graphic organizer.
- 6) One Filamentality Web site.
- 7) Minimum of one Web 2.0 tool: Streaming video, blog, wiki, and/or podcast etc.

Figure 1. MST Inquiry Unit Model

Utilizing free resources on the Web, students become well-versed in the 2000-2004 content and process standards set by the National Council of Teachers of Mathematics (2000-2004), Standard 1 (Analysis, Inquiry, and Design) and Standard 4 (The Physical Setting and The Living Environment) of the Elementary Science Core Curriculum Grades K-4 (n.d.), and the 2007 National Technology Standards for Students (1997-2009) and 2008 National Technology Standards for Teachers (1997-2009). Their behavioral objectives reflect these benchmarks. Students are initially exposed to diversified resources which are housed

on Blackboard and open source software in word processing, graphic organizers, and multimedia tools. Several programs are downloaded such as OpenOffice.org (1994-2009) and AbiWord (1998-2009), which emphasize word processing and spreadsheets, and are compatible with the Microsoft Office Suite. Students are also encouraged to work in techno-savvy pairs (O'Connor-Petruso, 2003a; 2003b), instructed to follow one of the many free Internet tutorials on the Web, and if needed, given "hands-on" instruction by a colleague and/or the professor.

### 3.1 Web Pages

Students also create their first Web page on a particular elementary science inquiry unit through the free template, Filamentality (2008). Filamentality is an AT&T and government sponsored Web site, offering free Web hosting and a plethora of diversified templates that encourage students to create Web pages. In order to generate maximum visibility, provide examples of exemplary student created Web sites, and motivate future Web authoring, their completed Filamentality sites are posted by the professor on either a course management system or a free Web hosting site such as Teacher & Teacher Candidates Filamentality Web sites (<http://mymstwiki.wikispaces.com/Teacher+%26+Teacher+Candidates+Filamentality+Web+sites>). Although the actual Filamentality URL denoting the student's self-created Web site is extremely lengthy, students have multiple Web resources on diversified science inquiry units and an online publication. Our goal is to have pre-service and veteran teachers integrate these tools into the classroom and "turnkey" the strategies they learned in their college classroom to their own and/or future students who may be motivated to create their own Filamentality sites.

### 3.2 Recording Tools

Students are also exposed to the open source Web recording tools such as CamStudio (2007), free streaming video software, and Audacity (n.d.), open source software for recording and editing sounds available on multiple platforms. Similarly, if students own portable media players they can incorporate their own podcasts into their multimedia presentation.

### 3.3 Podcasting

Podcasts are audio or video files that are downloaded and may be heard or watched at a later time on one's desktop or laptop computer (Lucking, Christmann, & Wighting, 2009). Podcasts can be crafted for a particular audience or previously posted podcasts can be simply downloaded for student use. (Note that for educational uses the podcast should correspond with the learning objective.) Basics necessary to get started as a podcaster are a microphone and some podcast-recording software (Descy, 2005). A big advantage of podcasts is the access to information that is available at any time. Professors can record their lectures (or their thoughts or musings) to be heard later; students can create podcasts to respond to classroom discourse. Medical students report listening to podcasts on related topics that may be presented with a bit of wit (Ahmad, 2008) or to hear about medical topics in a way that can address varying learning styles (Adesanya, 2007). Podcasting enables learners to obtain information (for free!) without being in a traditional classroom.

### 3.4 Blogging

Students are also given the option to discuss concerns and issues on Blackboard's Discussion Board or on a self-created Math/Science/Technology Blog – their choice as free blogging exists on numerable sites. Although the professor does not monitor the blog, Net-etiquette and legal ramifications of blogging are discussed in detail. In addition, teachers and teacher candidates are also exposed to the Education Policy Blog (2007) that discusses National Council Accreditation of Teacher Education (NCATE) Professional Dispositions. Both blogs and discussion boards offer students a place to record their thoughts. Discussion may not be as focused on a blog as on a discussion board. With a discussion board, topics can be posted for students who respond to the topic and to each other's responses. A tip for teachers is that controversial topics tend to stimulate the most discussion, thus helping students to communicate their ideas clearly in writing.

Blogs and discussion boards can extend the time boundaries of a traditional classroom discussion. Students are free to communicate between class meetings, thus adding to and elucidating the discussion. In the Blogosphere, students can communicate with those outside the classroom, in fact, globally, whereas discussion boards that are part of a course management platform will not always permit strangers and guests to enter the discussion. A good example of blogging is found in the case of the English teachers who blogged on a trip to Antarctica, sharing their thoughts and comments with their students in an exchange of ideas (Lucking et al., 2009).

### 3.5 Web Hosting

Technologically savvy students also create personal index pages on their choice of free Web hosting sites. Touted for user-friendliness and multiple attributes such as widgets and blogs, <http://tripod.com> (2009) and <http://www.wix.com> (2006-2009) offer users the opportunity to upload pictures and animation, insert sound, and create professional looking Web sites in a matter of minutes. Students are exposed to the various tenets of several wiki tools and are given instruction on how to access and join the professor's created Web site (<http://mymstwiki.wikispaces.com>), view pages, paste text, upload files, save files, and view history in case they accidentally delete part or all of the pages – which they do!

### 3.6 Wikis, Blackboard, and Other Freeware

The culminating project in the *Advanced Pedagogy II* course is a multimedia presentation on the highlights of their science inquiry unit. The presentation underscores their top behavioral objectives and Web 2.0 tools they have incorporated in their lessons, provides examples of student target based assessments and rubrics, and is uploaded on the wiki. Again the underlying goal for posting these

assignments on the collaborative wiki (as everyone can contribute to the online community) is to motivate these teachers and teacher candidates to continue to explore and integrate Web 2.0 tools in their classroom and most importantly - turnkey these strategies to their students who will become technologically savvy, motivated to become lifelong learners in the chameleonic realm of technology (O'Connor-Petruso, 2003a), and thus be competitively prepared for the global community.

In the two semester graduate level *Action Research* courses, teachers and teacher candidates are again exposed to Blackboard, Wikis, and freeware. Blackboard again is utilized for accessing course syllabi, assignments, resources, external links for accessing open source resources and statistical software, and discussion board is used for online assistance from colleagues and/or the professor. In preparation for their final Action Research Project, all in-class assignments are posted on the wikis that the professor reviews in class. Students overwhelmingly tout the need for visuals as they provide examples for those who need assistance with the assignments. In the initial research course, students post their work on <http://earlyactionresearch.wikispaces.com>. During the second semester students view their prior colleagues' completed Action Research Projects on <http://actionresearchprojects.wikispaces.com> and eventually post their final Action Research Projects. Multiple examples of student performance-based projects are provided on the aforementioned wiki sites.

#### 4. Virtual Field Trips

In another graduate level course, teachers find information on a Web site to extend or enhance a lesson. Paying special attention to national and state curriculum standards, students develop a virtual field trip (VFT) lesson plan. Although a real field trip is generally viewed as an excellent way for students to have a firsthand learning experience (Smaldino, Lowther, & Russell, 2008), in areas where distance makes such a trip impossible or in places where funding is an obstacle, a VFT is a way to give all students an opportunity to "visit" a place outside of school. VFTs can be custom designed by a teacher or they can be found "ready-made" on Web sites. How a VFT is used in the classroom depends on the teacher's learning objectives and availability of computers per student. VFTs can be teacher-led or student-centered. Students may work individually or in cooperative groups. The variation in the way the VFT is conducted makes it fairly easy to incorporate into any instructional unit. Although VFTs are not necessarily Web 2.0 tools, they are, nonetheless, freely accessible.

#### 5. Film Making

If a teacher wishes to approach a curriculum area in a different way, capturing a story on film can be a wonderful

change of pace. Many content areas can be addressed, for example, teaching a difficult math concept to others, enacting or making changes to a favorite story, filming a class play so that family members can see it later, recording a science experiment, or interviewing elderly people in the community to find out what life was like 50 years ago. If a class has access to a digital camera, there are some free applications for film making, such as Movie Maker, and for creating slides, such as Photo Story. Using a camera to tell a story is another way for students to express themselves as they learn. There are many roles in which students can be involved in a film making project, including those dealing with directing, camera operation, scenery and props, lighting, scripting, and acting. Students can collaborate on this type of project, making the learning interpersonal as well as content driven.

#### 5.1 YouTube

YouTube is a relatively new phenomenon that can also be employed as an engaging learning tool. Many videos have been posted that can be useful for student learning. For example, if a teacher was using Oobleck to discuss the properties of matter, there is a funny video (in Spanish – although the language is of no consequence) showing two fellows running across a pool of Oobleck without falling in (<http://www.youtube.com/watch?v=yHIAcASsf6U>). This could be a very interesting motivational tool for a conversation about the properties of Oobleck.

Students can also upload their own videos and share them with others. Two such examples of exemplary YouTube videos created in the constructivist approach by graduate level students from the *Advanced Pedagogy and Curriculum II* course are "The Water Cycle Song" by Ashley Martin & Bradley Appel (<http://www.youtube.com/watch?v=KQ8KRznrXiA>) and "Water Cycle Boogie" by LaShaun Ellis & Cory Feldman ([http://www.youtube.com/watch?v=ipAiWXvH\\_24](http://www.youtube.com/watch?v=ipAiWXvH_24)). Both streaming videos elicit tenets from a fourth-grade science inquiry unit on "Air, Water, & Weather," and serve to motivate and inspire both their students and college colleagues (O'Connor-Petruso & Rosenfeld, 2009).

#### 6. Cellphones

The use of cellphones appears to be ubiquitous, even in low-income areas where many students own cellphones (Manzo, 2008). Although most school districts in the United States ask students to turn cellphones off in the classroom, in New York City, cellphone use has been banned in the classroom because it is thought to be a distraction to learning (Gewertz, 2006; Vaishali, 2007). Sometimes cellphones are disruptive, for example, when they ring in the classroom. Students abuse them when they use the camera function to copy tests or answers or to tape an unaware teacher. However, forward-looking educators are suggesting that the

multi-function cellphone could also be a good teaching tool in the classroom. Manzo (2008) reports on some suggested uses of a cellphone that include recording first-person interviews that can later be posted on wikis, Web sites, or somewhere else on the Internet to augment a report or project. Students can record themselves playing an instrument or speaking another language and they can then send these audio clips to their instructors. In the classroom, the cellphone can be used to quickly poll student opinions. Teachers can make videos of lesson plans for a substitute teacher and send them via cellphone. When parents and teachers have difficulty communicating because of a language problem, messages can be translated and then transmitted by cellphone. As new technologies become available, educators need to think about ways to harness their potential for classroom use.

## 7. Conclusion

We tend to teach the way we are taught, what Lortie (2002) referred to as an “apprenticeship of observation.” Some teachers have been fortunate to have had technology experiences in their classrooms as students. However, often teachers have not had experiences *teaching* with technology, even if they have seen it modeled during their student years. Teachers need to practice with new tools to become comfortable and confident users before they introduce these tools to their own students. Using Web 2.0 and other freely accessible technology tools can help to broaden the technology abilities of all teachers who can then be better prepared to help their own students in the learning process.

In an economically downward market, in which the American dollar continually loses leverage worldwide, it is critical that professors expose teachers and teacher candidates to the new and emerging free tools of Web 2.0 as the global economy necessitates these skills. Similarly, the majority of our students cannot afford to purchase new technologies and school districts overall may have outdated software and infrastructures. One out of every three American students (Burr, 2008), approximately 1.2 million students annually, drop out of high school and the twelfth grade literary scores (NCES, 2007) are the lowest in 20 years. Perhaps these new free and emerging tools of technology, if turnkeyed properly to the K-12 students by technologically savvy educators, will provide intrinsic motivation for students to learn Information Age skills and want to become productive and competitive citizens (Dewey, 1916) in the global age.

## References

- AbiWord-Word processing for everyone. (1998-2009). Retrieved September 10, 2009, from AbiSource Community Web site:  
<http://www.abisource.com/download/>
- ActionResearchProjects. (n.d.). Retrieved January 28, 2008, from <http://actionresearchprojects.wikispaces.com/>
- Adesanya, D. (2007). *Cutting class. Student BMJ*. Retrieved December 6, 2008, from <http://student.bmj.com/issues/07/12/life/442.php>
- Ahmad, U. (2008). *Learning through podcasts. Student BMJ*. Retrieved December 6, 2008, from <http://student.bmj.com/issues/08/05/reviews/219b.php>
- Audacity, The Free Cross-Platform Sound Editor. (n.d.). Retrieved September 10, 2008, from <http://audacity.sourceforge.net/>
- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals, by a committee of college and university examiners*. New York: McKay.
- Burr, R. (2008, September 16). Raising the high school graduation rate: It's a challenge we must face. *The Hill*. Retrieved September 20, 2008, from <http://thehill.com/op-eds/raising-the-high-school-graduation-rate-its-a-challenge-we-must-face-2008-09-16.html>
- CamStudioFree Streaming Video Software. (2007). Retrieved August 23, 2008, from <http://camstudio.org/index.php>
- Descy, D. E. (2005). All aboard the Internet: Podcasting: Online media delivery...with a twist. *TechTrends* 49(5), 4-6.
- Dewey, J. (1916). *Democracy and education*. New York: Macmillan.
- Dewey, J. (1933). *How we think*. New York: DC Health.
- EarlyActionResearch. (n.d.). Retrieved September 8, 2008, from <http://earlyactionresearch.wikispaces.com/>
- Education Policy Blog. (2007). *NCATE's Professional Dispositions: To be determined*. Message posted to <http://educationpolicyblog.blogspot.com/2007/07/ncates-professional-dispositions-to-be.html>
- Ellis, L., & Feldman, C. (2009, October 10). *Water cycle boogie*. [Video File]. Retrieved from [http://www.youtube.com/watch?v=ipAiWXvH\\_24](http://www.youtube.com/watch?v=ipAiWXvH_24)
- Filamentality. (2008). *Knowledge network explorer*. Retrieved January 4, 2008, from <http://www.kn.pacbell.com/wired/fil/>
- Gardner, H. (1993). *Multiple intelligences: The theory in practice*. New York: Basic.
- Gewertz, C. (2006). N.Y.C. schools take hard line on cellphones. *Education Week*. Retrieved October 9, 2008, from <http://www.edweek.org/login.html?source=http%3A%2F%2Fwww.edweek.org%2Ffew%2Farticles%2F2006%2F07%2F12%2F42cell.h25.html&destination=http%3A%2F%2Fwww.edweek.org%2Ffew%2Farticles%2F2006%2F07%2F12%2F42cell.h25.html&levelId=2100&baddebt=false>
- Lortie, D. C. (2002). *Schoolteacher*. (2nd ed.). Chicago: University of Chicago Press.
- Lucking, R. A., Christmann, E. P., & Wighting, M. J. (2009). Podcasts and blogs. *Science Scope*, 33(3), 64-67.

- Retrieved November 16, 2009, from Education Full Text database.
- Manzo, K. K. (2008). Focus on: Curriculum & teachers networking teachers coaxing colleagues to use technology. *EdWeek*, 28(3), 10-11. Retrieved September 11, 2008, from <http://www.edweek.org/ew/articles/2008/09/05/03teachWebinar.h28.html?tmp=2055158030>
- Martin, A., & Appel, B. (2009, October 10). *Water cycle song*. [Video File]. Retrieved from <http://www.youtube.com/watch?v=KQ8KRznrXiA>
- MyMSTWiki. (n.d.). Retrieved June 2, 2008, from <http://MyMSTWiki.wikispaces.com/>
- O'Connor-Petruso, S. A. (2001; 2005). *The MST Inquiry Unit Model*. Retrieved November 29, 2009, from <http://mymstwiki.wikispaces.com/MST+Inquiry+Unit+Model>
- O'Connor-Petruso, S. A. (2003a). A model for implementation: Integrating mathematics and technology in the elementary science inquiry classroom. *ISTE's Learning & Leading with Technology*, 30(8), 32-39.
- O'Connor-Petruso, S. A. (2003b). SUNY students successfully integrate mathematics and technology in the elementary science inquiry classroom. *ERIC Mathematics, Science, and Environmental Education*. Paper presented at the 2003 American Educational Research Association (AERA), Chicago. (ERIC Document Reproduction Service No. ED480980)
- O'Connor-Petruso, S. A., & Rosenfeld, B. (2009). *Web 2.0: What works – And what doesn't – Experience from the trenches*. Paper presented at the 2009 Association of Educational Communications and Technology (AECT). Louisville, KY.
- OpenOffice.org. (1994-2009). Retrieved June 23, 2008, from <http://www.sun.com/software/openoffice/index.jsp>
- Overview: Standards for School Mathematics: Prekindergarten through Grade 12. (2000-2004). Retrieved August 20, 2008, from <http://standards.nctm.org/document/chapter3/index.htm>
- People run on a pool of oobleck*. (2006, November 18). [Video File]. Retrieved from <http://www.youtube.com/watch?v=yHlAcASsf6U>
- Piaget, J. (1954). *The construction of reality in the child*. New York: Basic Books.
- Smaldino, S. E., Lowther, D. L., & Russell, J. D. (2008). *Instructional technology and media for learning* (9th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Speaker Nancy Pelosi: Current legislation. (n.d.). Retrieved November 16, 2009, from <http://www.speaker.gov/newsroom/legislation?id=0273#science>
- Teacher & Teacher Candidates Filamentality Web sites. (n.d.). Retrieved November 15, 2009, from <http://mymstwiki.wikispaces.com/Teacher+%26+Teacher+Candidates+Filamentality+Web+sites>
- The Elementary Science Core Curriculum Grades K-4 (n.d.). New York State Education Department. Retrieved June 20, 2008, from <http://www.emsc.nysed.gov/ciai/mst/pub/elecoresci.pdf>
- The ISTE National Educational Technology 2007 Standards (NET•S) for Students (1997-2009). Retrieved September 14, 2009, from [http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/NETS\\_for\\_Students.htm](http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/NETS_for_Students.htm)
- The ISTE National Educational Technology 2008 Standards (NET•T) for Teachers. (1997-2009). Retrieved September 14, 2009, from [http://www.iste.org/Content/NavigationMenu/NETS/ForTeachers/NETS\\_for\\_Teachers.htm](http://www.iste.org/Content/NavigationMenu/NETS/ForTeachers/NETS_for_Teachers.htm)
- The Nation's Report Card-12th Grade Reading and Mathematics 2005. (2007). IES National Center for Education Statistics, U.S. Department of Education: NCEES 2007-4668.
- Tripod. (2009). *Create your own website*. Retrieved January 12, 2009, from Lycos Inc. All Rights Reserved Web site: <http://www.tripod.lycos.com/>
- Vaishali, H. (2007). Cell phones in classrooms land teachers on online video sites. *Education Week*, 27(11), 1-2. (ERIC Document Reproduction Service No. EJ779516)
- Visions, 2020.2: Student Views on Transforming Education and Training Through Advanced Technologies. (2005). Retrieved August 17, 2008, from <http://www.nctet.org/Visions2020-2.pdf>
- Vygotsky, L. S. (1978). *Mind in society. The development of higher psychological processes*. Cambridge, MA: Oxford University Press.
- WIX – Stunning Flash Web Sites for Free. (2006-2009). Retrieved November 20, 2009, from <http://www.wix.com/>

## Author Information

Sharon Anne O'Connor-Petruso, Ed.D.

Assistant Professor  
Program Head (2007-2009)  
School of Education  
Brooklyn College of the City University of New York  
2606 James Hall  
2900 Bedford Avenue  
Brooklyn, NY 11210  
[occonnorpetrusos@brooklyn.cuny.edu](mailto:occonnorpetrusos@brooklyn.cuny.edu)

Sharon Anne believes strongly in educating K-12 students and teachers in *Information Age* skills and preparing them for the global economy. She promotes the use of source ware and teaches both online and hybrid graduate level research and advanced pedagogy courses.

Barbara Rosenfeld, Ph.D.

Assistant Professor  
School of Education  
Brooklyn College of the City University of New York

2617 James Hall  
2900 Bedford Avenue  
Brooklyn, NY 11210  
[rosenfeld@brooklyn.cuny.edu](mailto:rosenfeld@brooklyn.cuny.edu)

Barbara enjoys enabling and encouraging her graduate and undergraduate students to use technology tools to facilitate the learning process in the classroom. Her present research focuses on how technology tools are used, for both educational and personal purposes.