

Merging Educational Goals and Interactive Multimedia Projects[®] Online

Merging Educational Goals and Interactive Multimedia Projects Online promotes the use of project-based learning with multimedia to meet state and national standards. Interactive multimedia projects can motivate and engage students, empowering them to solve real-world problems, collaborate with others, and communicate effectively.

To the right are the key areas of focus for the eight-week online asynchronous course. For more information, refer to the syllabus, which provides a detailed outline of the course material as well as a bibliography of research on which the course is based.

In this course, participants will

- ▶ Describe and discuss the changing roles of teachers and students in technology-infused learning environments.
- ▶ Guide students through the process of multimedia project development.
- ▶ Plan and implement interactive multimedia projects for learning using project management strategies.
- ▶ Create multimedia projects using a variety of technological tools.
- ▶ Evaluate interactive multimedia projects.
- ▶ Apply interactive multimedia project strategies to meet the diverse needs of individual learners.

Merging Educational Goals and Interactive Multimedia Projects® Online

Course Description

Merging Educational Goals and Interactive Multimedia Projects is a Performance Learning Systems® online course that helps experienced and beginning educators in all subject areas build expertise in using technology as an effective tool to support and enhance classroom learning. This course responds to the growth of educational technology and the increasing expectation that technology will be regularly implemented in the classroom. The course also supports teachers in creating learning environments that integrate real-world problem solving with interactive, engaging multimedia projects. Educators will learn to create technology-infused classrooms in which students work collaboratively with teachers to meet curriculum standards and make meaning through problem solving, researching, designing, testing, and communicating.

Course Outcomes

Upon completion of this class, the learner is expected to be able to:

1. Discuss how educational research supports the use of multimedia projects to increase student learning.
2. Discuss the expectations placed on today's teachers to use technology in their classrooms, the range of skills teachers need to learn as a result, and the standards that guide instruction and professional development.
3. Describe the ideal learning environment of technology-infused classrooms and the qualities of the teacher-student relationship in a collaborative setting, including the critical thinking skills that such an environment supports.
4. Distinguish among types and characteristics of interactive multimedia projects (IMPs) and their purposes in the teaching/learning process.
5. Guide students through the process of multimedia project development.
6. Plan and implement instructional applications of multiple multimedia and Web technologies.
7. Explain how project management strategies can help teachers plan effective and engaging interactive multimedia projects.
8. Align interactive multimedia projects to educational standards.
9. Create multimedia projects using a variety of technological tools.
10. Evaluate interactive multimedia projects using assessment tools.
11. Use a broad range of online resources for student multimedia project planning, development, and evaluation.
12. Analyze whether content meets copyright and fair use guidelines for classroom multimedia projects.
13. Apply interactive multimedia project strategies to meet the diverse needs of individual learners.
14. Evaluate his or her personal practice, adjust it accordingly, and actively seek out opportunities to grow professionally using the knowledge and skills learned in this course.
15. Work collaboratively to solve problems, give and receive feedback, improve expertise, and share knowledge, skills, and experiences.

16. Address barriers to implementing technology and interactive multimedia projects.

Required Text

Boss, S., & Krauss, J. (2007). *Reinventing project-based learning: Your field guide to real-world projects in the digital age*. Washington, DC: International Society for Technology in Education.

Instructors and learners will also use instructor-generated materials, learner-generated materials, and Web-based resources to facilitate learning.

Required Technology

- Basic to Intermediate PowerPoint skills
- Intermediate Web skills
- Microsoft PowerPoint
- A computer with speakers and/or headphones; a microphone

Topical Outline

List of Concepts

Introduction to Interactive Multimedia Projects

Definition of interactive multimedia projects (IMPs); impact of multimedia; types of IMPs; self-assessment of course skills; why IMPs work; nonlinear PowerPoint bio activity; copyright and fair use guidelines for teachers; copyright issues for multimedia projects

Roles, Goals, and Standards

Evolving roles of teachers and students; professional learning communities; National Educational Technology Standards for Teachers and Students; technology and education reform; research supporting multimedia, technology, and project-based learning; creating persuasive PowerPoint presentation for administrators; PQP method for feedback; peer review and evaluation

Project Design and Storyboarding

Designing projects; aligning projects to standards; essential questions; storyboards and mind mapping for project design; the storyboarding process and how it applies to IMPs; storyboard and mind map creation and application; troubleshooting and support

Visuals and Audio

Principles of visual design; tools for creating and editing visuals; research on audio for learning; tools for audio; writing an audio script; putting audio and visuals together; testing and quality assurance

Animation and Video

Instructional uses of animation and video; tools for animation and video; visuals and audio in animation and video; create an animation or video project

Project Planning and Implementation

Knowing one's students; online exploration of multimedia projects for resources for various types of projects; strategies for project management; creating a timeline for an IMP; addressing technological and administrative barriers to implementing interactive multimedia projects; communication with parents; parent permissions and online safety

| | |
|--|--|
| Project Management and Assessment | Ongoing management of projects; keeping projects moving; assessing student-produced multimedia projects; assessment rubrics for student-produced multimedia projects |
| Online Portfolios | Research supporting student portfolios; portfolio tools; using wikis for portfolios; create a portfolio of work from this course; sharing with the community; celebrating student work |

Course Assessments and Links to Course Outcomes

Throughout the course, the learner will be assessed and evaluated on the completion of the following assessments. Learning activities include large- and small-group discussions and assessments for a total of 873 points.

| Modules | Topics of Modules | Points | Correlation With Course Outcomes |
|-----------|---|--------------|----------------------------------|
| Module 1: | Introduction to Interactive Multimedia Projects | 69 | 1, 2, 3, 4, 12, 14 |
| Module 2: | Roles, Goals, and Standards | 108 | 5, 6, 7, 8, 10, 13, 14, 16 |
| Module 3: | Project Design and Storyboarding | 75 | 8, 9, 11 |
| Module 4: | Visuals and Audio | 128 | 9, 10, 14, 15 |
| Module 5: | Animation and Video | 128 | 9, 10, 14, 15 |
| Module 6: | Project Planning and Implementation | 122 | 4, 5, 6, 9, 10, 11, 13, 15, 16 |
| Module 7: | Project Management and Assessment | 105 | 5, 6, 7, 9, 10, 11, 13, 15, 16 |
| Module 8: | Online Portfolios | 138 | 10, 11, 14, 15 |
| | | Total | 873 |

Criteria specific to each assessment will be explained in conjunction with the instructional activities.

Instructional Methodology

The instructional methodology of this course focuses on developing, enhancing, and improving the instructional expertise and pedagogical knowledge base of practicing educators. Strategies include presentation of new content through online readings, active construction of knowledge through practice and problem solving, collaborative group work, personal reflection, structured small-group or whole-class discussion, analysis of assigned reading, and the application of course content and skills to participant's individual grade level, subject area(s), and classroom.

Grading Scale

The course facilitator will post the grading scale.

Performance Learning Systems' Late Policy

There will be a 10% deduction of points per day for all posts and submitted assignments which are late. Replies posted after the due date will earn no points. In rare cases, partially or poorly completed assignments may be resubmitted for partial credit at the discretion of the instructor. The following exceptions apply:

- If a participant is sick/hospitalized or has a death in the family, the timing of makeup work may be arranged with the course facilitator. No points will be deducted if the work is completed according to the agreement.
- If a participant is on vacation/traveling/etc., the participant must contact the course facilitator ahead of time to avoid a penalty. This type of absence may occur only once during a course. All posts should be submitted for the missed module before

leaving; replies may be completed according to agreed-upon timing when the participant returns.

- If a participant has difficulty completing everything in a week, an extension can be granted if the participant contacts the facilitator during the week (not at the last minute).

Performance Learning Systems' Participant Drop Policy

- Participants are eligible to receive a refund if they attend class for one week or less. This means participants must withdraw by the end of Module 1 to receive a refund.
- Refunds of the balance of tuition paid will be given, minus the \$50 deposit.

Performance Learning Systems' Academic Integrity Policy

Performance Learning Systems expects absolute academic honesty and integrity from every course participant. The specific Academic Integrity and Honor Code policies of our partner colleges and universities are embraced and enforced by PLS instructors. The following are considered to be serious violations:

- **Plagiarism:** the use of another's ideas, data, or words without proper acknowledgment.
- **Fabrication:** the use of invented information or the falsification of research or other findings with the intent to deceive.
- **Collusion:** improper collaboration with another in preparing assignments or projects.
- **Cheating:** an act of deception by which a student misrepresents that he or she has mastered information on an academic exercise that he or she has not mastered.
- **Academic Misconduct:** tampering with grades, or taking part in obtaining or distributing any part of student work that is not his or her own.

Violation(s) or suspected violation(s) will be investigated and pursued according to specific college/university procedures.

Identity Authentication

The college/university, Performance Learning Systems (PLS), and students share a joint responsibility to ensure that each student's contribution in an online course activity comes from that student alone. For the student, this responsibility has two parts:

1. Students are responsible for positively ensuring that every contribution to an online course created with the students' computer account is made by the student alone. Contributions covered under this policy include: written assignments; quiz and exam submissions; discussion forum postings; live participation in text-based chat sessions, phone conferences, and videoconferences. If a student allows another person to write or make any kind of submission to an online activity in the student's name, then this constitutes cheating and will be treated as a violation of academic honesty.
2. Students are responsible for ensuring the integrity of their computer account security by following the actions required of them by the PLS Acceptable Use Policy. These actions include keeping passcodes private, updating passcodes when required by Performance Learning Systems, and reporting breaches of the security policy to the IT Helpdesk.

Course Evaluation

The evaluation of learner work will be based on the defined criteria for learner assessments. The criteria for learner assessments will be outlined for students prior to instructional activities and engagement with student learning targets (outcomes). Grading is based solely on the evaluation of student learning targets and defined criteria for learner assessments.

Formative assessment of learning outcomes is conducted throughout the course, using a variety of means that include the following: completion of assessments; constructive contributions to class discussions (whole-class as well as small-group); sharing of valuable, pertinent, and/or applicable ideas and experiences; and active participation in online interactions. It is expected that each participant will contribute to the academic quality of the course.

Summative assessment includes the completion of weekly learning activities and assignments for which the participant will need to synthesize class content, apply it to his or her own practice, and complete a plan for implementing the major components of content and skill acquired during the course.

Course Outcome Correlations With INTASC Standards for Teachers

| | Course Outcomes |
|---|---|
| Standard 1: Subject Matter The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students. | 1, 2, 3, 4, 5, 6, 7, 8, 11, 13 |
| Standard 2: Student Learning The teacher understands how children and youth learn and develop, and can provide learning opportunities that support their intellectual, social and personal development. | 1, 2, 3, 4, 9, 10, 11, 13 |
| Standard 3: Diverse Learners The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners. | 1, 3, 13 |
| Standard 4: Instructional Strategies The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills. | 2, 3, 4, 5, 6, 9, 11, 13, 16 |
| Standard 5: Learning Environment The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation. | 2, 3, 7, 14, 15 |
| Standard 6: Communication The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom. | 3, 4, 5, 6, 7, 9, 11 |
| Standard 7: Planning Instruction The teacher plans and manages instruction based upon knowledge of subject matter, students, the community, and curriculum goals. | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 16 |
| Standard 8: Assessment The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner. | 8, 10, 11 |
| Standard 9: Reflection and Professional Development The teacher is a reflective practitioner who continually evaluates the effects of her/his choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally. | 2, 3, 14, 15, 16 |
| Standard 10: Collaboration, Ethics, and Relationships The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being. | 2, 14, 15 |

The Interstate New Teacher Assessment and the Support for Consortium (INTASC) standards were developed by the Council of the Chief State School Officers and member states. Copies may be downloaded from the Council's website at <http://www.ccsso.org>.

© Council of Chief State School Officers. (1992) Model standards for beginning teacher licensing, assessment, and development: A resource for state dialogue. Washington, DC: Author. <http://www.ccsso.org/content/pdfs/corestrd.pdf>.

Course Outcome Correlations With National Board for Professional Teaching (NBPTS) Propositions and Standards

| Proposition 1: Teachers are Committed to Students and Their Learning. | Course Outcomes |
|--|---|
| NBCTs are dedicated to making knowledge accessible to all students. They believe all students can learn. | 1, 13 |
| They treat students equitably. They recognize the individual differences that distinguish their students from one another and they take account for these differences in their practice. | 13 |
| NBCTs understand how students develop and learn. | 1, 3, 4, 13 |
| They respect the cultural and family differences students bring to their classroom. | 13 |
| They are concerned with their students' self-concept, their motivation and the effects of learning on peer relationships. | 1, 3 |
| NBCTs are also concerned with the development of character and civic responsibility. | 12 |
| | |
| Proposition 2: Teachers Know the Subjects They Teach and How to Teach Those Subjects to Students. | |
| NBCTs have mastery over the subject(s) they teach. They have a deep understanding of the history, structure and real-world applications of the subject. | 1, 2, 3, 4, 8 |
| They have skill and experience in teaching it, and they are very familiar with the skills gaps and preconceptions students may bring to the subject. | 1, 2, 3, 4, 16 |
| They are able to use diverse instructional strategies to teach for understanding. | 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 16 |
| | |
| Proposition 3: Teachers are Responsible for Managing and Monitoring Student Learning. | |
| NBCTs deliver effective instruction. They move fluently through a range of instructional techniques, keeping students motivated, engaged and focused. | 1, 2, 3, 4, 5, 6, 7, 11, 13 |
| They know how to engage students to ensure a disciplined learning environment, and how to organize instruction to meet instructional goals. | 2, 3, 5, 7 |
| NBCTs know how to assess the progress of individual students as well as the class as a whole. | 10, 11 |
| They use multiple methods for measuring student growth and understanding, and they can clearly explain student performance to parents. | 10, 11 |
| | |
| Proposition 4: Teachers Think Systematically about Their Practice and Learn from Experience. | |
| NBCTs model what it means to be an educated person – they read, they question, they create and they are willing to try new things. | 1, 2, 3, 14, 15 |
| They are familiar with learning theories and instructional strategies and stay abreast of current issues in American education. | 1, 2, 3, 4, 11, 13 |
| They critically examine their practice on a regular basis to deepen knowledge, expand their repertoire of skills, and incorporate new findings into their practice. | 2, 3, 14, 15 |

Proposition 5: Teachers are Members of Learning Communities.

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|--|-----------------|
| NBCTs collaborate with others to improve student learning. | 14, 15 |
| They are leaders and actively know how to seek and build partnerships with community groups and businesses. | 15 |
| They work with other professionals on instructional policy, curriculum development and staff development. | 14, 15 |
| They can evaluate school progress and the allocation of resources in order to meet state and local education objectives. | 2, 3, 16 |
| They know how to work collaboratively with parents to engage them productively in the work of the school. | 16 |

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Bibliography

- Audet, R. H. (2005). Curriculum integration: Capitalizing on student inquiry. In R. H. Audet & L. K. Jordan (Eds.), *Integrating inquiry across the curriculum* (pp. 137–154). Thousand Oaks, CA: Corwin.
- Barrett, H. C. (2003). *The research on portfolios in education*. Retrieved May 8, 2009, from <http://electronicportfolios.com/ALI/research.html>
- Becta. (2007, June). *Impact study of e-portfolios on learning*. Retrieved May 8, 2009, from http://partners.becta.org.uk/upload-dir/downloads/page_documents/research/impact_study_eportfolios.pdf
- Bliesener, T. (2006). Training synchronous collaborative e-learning. *International Journal on E-Learning*, 5(2), 185–196.
- Brandes, G. M., & Boskic, N. (2008, June). Eportfolios: From description to analysis. *The International Review of Research in Open and Distance Learning*, 9(2). Retrieved May 8, 2009, from <http://www.irrodl.org/index.php/irrodl/article/view/502>
- Brophy, J. (2004). *Motivating students to learn* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Brown, G., Peterson, N., Wilson, A., & Ptaszynski, J. (2008). Out of the classroom and beyond. *Innovate*, 4(5). Retrieved May 8, 2009, from <http://www.innovateonline.info/index.php?view=article&id=559>
- CARET. (2005a). Q: How can technology develop higher order thinking and problem solving? In *Topic: Student learning*. Retrieved February 12, 2009, from <http://caret.iste.org/index.cfm?fuseaction=answers&QuestionID=2>
- CARET. (2005b). Q: How can technology influence student academic performance? In *Topic: Student learning*. Retrieved February 12, 2009, from <http://caret.iste.org/index.cfm?fuseaction=answers&QuestionID=1>
- Cepni, S., Tas, E., & Kose, S. (2006). The effects of computer-assisted material on students' cognitive levels, misconceptions and attitudes towards science. *Computers and Education*, 46(2), 192–205.
- Clark, R. C., & Mayer, R. E. (2003). *E-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. San Francisco: Pfeiffer.
- Conn, K. (2004). The dangerous intersection project and other scientific inquiries. *Educational Leadership*, 61(5), 30–32.
- Daniels, A. (2004). Composition instruction: Using technology to motivate students to write. *Information Technology in Childhood Education Annual*, 2004(1), 157–177.

- Davidson-Shivers, G. V., & Rasmussen, K. L. (2006). *Web-based learning: Design, implementation, and evaluation*. Upper Saddle River, NJ: Pearson/Merrill/Prentice Hall.
- Dede, C., L’Bahy, T. B., & Whitehouse, P. (2002, March). *Designing and studying learning experiences that use multiple interactive media to bridge distance and time*. Retrieved April 22, 2009, from <http://www.lesley.edu/faculty/tbrownlb/T502/index.htm>
- Dobson, S. (2006). The assessment of student PowerPoint presentations—Attempting the impossible? *Assessment & Evaluation in Higher Education*, 31(1), 109–119.
- Fetsco, T., & McClure, J. (2005). *Educational psychology: An integrated approach to classroom decisions*. Boston: Allyn and Bacon.
- Fletcher, A. (2003). *Meaningful student involvement: Guide to inclusive school change*. Olympia, WA: The Freechild Project.
- Fox, R. (2005). *Teaching and learning: Lessons from psychology*. Malden, MA: Blackwell.
- Fralick, C. (2005). Reflective portfolios: Learning is both an active and reflective practice. *School Arts: The Art Education Magazine for Teachers*, 104(9), 46.
- Fried, R. L. (2005). *The game of school: Why we all play it, how it hurts kids, and what it will take to change it*. San Francisco: Jossey-Bass.
- Gijbels, D., Dochy, F., van den Bossche, P., & Segers, M. (2005). Effects of problem-based learning: A meta-analysis from the angle of assessment. *Review of Educational Research*, 75(1), 27–61.
- Guerrero, S., Walker, N., & Dugdale, S. (2004). Technology in support of middle grade mathematics: What have we learned? *Journal of Computers in Mathematics and Science Teaching*, 23(1), 5–20.
- Gulek, J. C., & Demirtas, J. (2006). Learning with technology: The impact of laptop use on student achievement. *Journal of Technology, Learning, and Assessment*, 3(2), 4–38.
- Gulikers, J. T. M., Bastiaens, T. J., & Martens, R. L. (2005). The surplus value of an authentic learning environment. *Computers in Human Behavior*, 21(3), 509–521.
- Haake, J. M., Haake, A., Schümmer, T., & Lukosch, S. (2005). Collaborative learning at a distance with the project method. *Educational Technology*, 45(5), 21–24.
- Harrell, P. E., Walker, M., Hildreth, B., & Tyler-Wood, T. (2004). Mentoring BUGS: An integrated science and technology curriculum. *Journal of Computers in Mathematics and Science Teaching*, 23(4), 367–378.
- Hidi, S., & Harackiewicz, I. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research*, 70(2), 151–179.
- IUPUI Center for Teaching and Learning. (2002). *Bloom's Taxonomy “revised”: Key words, model questions, & instructional strategies*. Retrieved April 20, 2009,

- from http://www.stfrancis.edu/content/assessment/BloomRevisedTaxonomy_KeyWords.pdf
- Kearney, M., & Schuck, S. (2006). Spotlight on authentic learning: Student-developed digital video projects. *Australasian Journal of Educational Technology*, 22(2), 189–208. Retrieved February 4, 2009, from <http://www.ascilite.org.au/ajet/ajet22/kearney1.html>
- Kiboss, J. K., & Ogguniyi, B. (2005). Outcomes of first year secondary students in a computer-augmented physics program on measurement. *Learning, Media & Technology*, 30(3), 313–326.
- Kottler, J. A., Zehm, S. J., & Kottler, E. (2005). *On being a teacher: The human dimension* (3rd ed.). Thousand Oaks, CA: Corwin.
- LaCour, S. (2005). The future of integration, personalization, and ePortfolio technologies. *Innovate*, 1(4). Retrieved May 8, 2009, from <http://www.innovateonline.info/index.php?view=article&id=85>
- Lane, C. (2007). The power of “e”: Using e-portfolios to build online presentation skills. *Innovate*, 3(3). Retrieved May 8, 2009, from <http://www.innovateonline.info/index.php?view=article&id=369>
- Lang, Q. C., Peer, J., Divaharan, S., Chia, L. W., Williams, M. D., Wong, A. F. L., & Jamaludin, A. (2005). Computer-mediated communication as a collaborative tool for facilitating student-centered learning in project-based classrooms. *Educational Technology*, 45(4), 48–51.
- MacIver, D. J., Young, E. M., & Washburn, B. (2002). Instructional practices and motivation during middle school (with special attention to science). In A. Wigfield (Ed.), *Development of achievement motivation* (pp. 333–351). San Diego, CA: Academic.
- McCain, R. (2005). *Teaching for tomorrow: Teaching content and problem-solving skills*. Thousand Oaks, CA: Corwin.
- National Research Council. (2004). *Engaging schools: Fostering high school students' motivation to learn*. Washington, DC: National Academies Press.
- Neubert, G. A., & McNelis, S. J. (1990, September). Peer response: Teaching specific revision suggestions. *English Journal*, 79(5), 52–56. (ERIC Document Reproduction Service No. ED EJ413020)
- Newell, R. J. (2003). *Passion for learning: How project-based learning meets the needs of 21st century students*. Lanham, MD: ScarecrowEducation.
- Penuel, W. R., & Means, B. (1999). Observing classroom processes in project-based learning using multimedia: A tool for evaluators. In *The Secretary's Conference on Educational Technology-1999*. Retrieved April 15, 2009, from <http://www.ed.gov/rschstat/eval/tech/techconf99/whitepapers/paper3.html>
- Psycharis, S., & Daflos, A. (2005). Webbing through science history. *Science and Children*, 43(2), 37–39.

- Ringstaff, C., & Kelley, L. (2002). *The learning return on our educational technology investment*. Retrieved April 15, 2009, from http://www.wested.org/online_pubs/learning_return.pdf
- Schuck, S., & Kearney, M. (2004). *Students in the director's seat: Teaching and learning across the school curriculum with student-generated video*. Retrieved February 4, 2009, from <http://www.ed-dev.uts.edu.au/teachered/research/dvproject/home.html>
- Slavkin, M. L. (2004). *Authentic learning: How learning about the brain can shape the development of students*. Lanham, MD: ScarecrowEducation.
- Storyboard. (2009, April 28). In *Wikipedia, the free encyclopedia*. Retrieved April 30, 2009, from <http://en.wikipedia.org/w/index.php?title=Storyboard&oldid=286687909>
- Tuscaloosa City Schools. (2003). Unit 5: Multimedia project activities. In *Tools and Activities for Technology Integration*. Retrieved April 16, 2009, from <http://www.online.tusc.k12.al.us/shortc/techint/u1-5.htm#multic>
- Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it*. New York: Basic Books.
- Wenglinsky, H. (2006). Technology and achievement: The bottom line. *Educational Leadership*, 63(4), 29–32.
- Williams, W. M., Papierno, P. B., Makel, M. C., & Ceci, S. J. (2004). Thinking like a scientist about real-world problems: The Cornell Institute for Research on Children Science Education Program. *Journal of Applied Developmental Psychology*, 25(1), 107–126.

