Active Learning with Technology: Myths, Magic, or Just a Lot of Bonk

Dr. Curtis J. Bonk
Professor, Indiana University
President, SurveyShare, Inc.
http://php.indiana.edu/~cbonk
cbonk@indiana.edu

Four Storms are Approaching:

I. Emerging Technology
II. Escalating Demands
III. Erased Budgets
IV. Enhanced Teaching

On to Storm 1...
Escalating (Learner) Demands

K-12 Online Learning and Virtual Schools: Expanding Options and Opening Access (Susan Patrick, NACOL, 2006)

- There are 147 virtual charter schools with 65,354 students in 18 states.
- In 2002-2003, 36% of public high school districts in the United States offered distance education courses.
- 72% of school districts with distance education programs planned to expand online offerings in the coming year.

K-12 Online Learning and Virtual Schools: Expanding Options and Opening Access (Susan Patrick, NACOL, 2006)

- According to recent research from the Silent Epidemic study, 47% said a major reason for dropping out was that "classes were not interesting" and they were "bored"; 88% of drop outs had passing grades.
- 90% of the fastest growing jobs in the economy require a college degree
- 94% of students say that doing well in school is important to future success.
- College degree = 130% more income
Risky Business, Edutopia
April 6, 2006, by James Daly

- Despite being the wealthiest country on Earth, America maintains a public education system in which 30 percent of high school students don’t graduate, one out of every four reads below basic grade levels, and, compared to students from more affluent backgrounds, few of their low-income counterparts are adequately prepared for college.

- "Silent Epidemic"
  - Gates Foundation commissioned first study of high school drop outs
  - 88% had passing grades
  - 69% were not motivated to work hard
  - 66% would have worked harder if more had been demanded of them
  - 81% called for more real world learning opportunities

K-12 Online Learning and Virtual Schools:
Expanding Options and Opening Access
(Susan Patrick, NACOL, 2006)

- In April 2006, Michigan became the 1st state to require online learning for high school graduation.
- 80% of K-12 school districts cited "the course was otherwise unavailable" as the number one reason for offering courses at a distance.
- According to the Manhattan Institute, 70% of all students in public high schools graduate, and only 32% of all students leave high school qualified to attend four-year colleges.

Growth of Online Learning in Secondary Schools

No Child Left Behind Summit
Learning and Students Today: Options for No Child Left Behind
Susan Patrick, Director, Office of Educational Technology, U.S. Department of Education

- Reasons: Rural, medical, disabilities, at risk, work, sport, poverty, AP, supplement, catch up, summer, etc.
- Types: Virtual charter schools, State run schools, District run, University run.
Enrollments by Gender (2005-06)
- Female 59%
- Male 41%

Enrollments by Race (2005-06)
- White Non-Hispanic 58%
- Hispanic 13%
- African-American 8%
- Asian 4%
- Multi-Ethnic 4%
- Other 3%

FLVS Enrollment Participation by School Type (2005-06)
- Public and Charter 64%
- Home School 28%
- Private 8%

(provided by Daniel W. Schults)

Figure 1 Summary of MVS3 Course and Online Enrollment: 1999-2005

- Number of: 5446
- Distance Level: 18
- Enrollment: 179
- Log On Course Offering: 6
- Log Off Course Offering: 0
- Log On Preparation Users: 15
- Log Off Preparation Users: 0
- Total: 179

Online at Fond du Lac High (March 10, 2006)

- 174 FLVS full-time and 106 adjunct teachers
- 80 Courses (from GED to 10 advanced placement courses)
- 31,000 students in 65,000 half-credit courses (2005-2006)
- Courses are delivered over the Internet. To assure student success with virtual learning, a variety of web-based, technology-based and traditional resources are provided. Teachers communicate with students and parents on a regular basis via phone, email, online chats, instant messaging, and discussion forums.
Virtual School Leaders Encourage Growth of K-12 Online Learning: Discuss High School Reform at Regional Summit (June 26, 2006)
http://www.prnewswire.com/education/20060626/NW251200606-1.html

* "We know firsthand that demand for virtual education is growing," said FLVS President & CEO Julie Young. "For the past five years, we have seen double-digit growth at FLVS."

50,000 Utah Students Earning High School Credits Online!
(June 20, 2006)
Utah's online Electronic High School leads the nation in student enrollment
by UtahOnline

50,000 Utah students are earning online credits from their high schools, dual enrollment, and through the Electronic High School (EHS), an online program offered through the University of Utah in Salt Lake City. The online program is designed for high school students who need to take courses that are not offered in their local schools or who wish to take courses that will not be available to them next year. The program is open to all Utah high school students. Help us make the EHS possible! Please donate today! Please contact us at info@utahonline.org or call 801.581.3140.

The University of Miami Online High School

University of Miami Online High School

The OUM
(Adhar Kaur, 2005, Ed Media)

Enrollment Growth at the OUM

Enrollment Growth at the OUM

Enrollment Growth at the OUM
The African Virtual University

http://www.ava.org/default.asp

Percentage Distribution of Enrollments in Distance Education Courses: 2002-03
(Patrick, 2006, e-Learn Conference)

- Elementary Schools (1%)
- Middle or Junior High Schools (2%)
- High Schools (68%)
- Combined or Ungraded Schools (29%)

Reasons for Offering Distance Education Courses
(Patrick, 2006, e-Learn Conference)

<table>
<thead>
<tr>
<th>Reason</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offloading Classes Not Available or Available</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>Meeting Needs of Specific Student Groups</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td>Reducing Scheduling Conflict</td>
<td>25%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>Permitting Students Who Have Failed to Take a Grade Again</td>
<td>15%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td>Growing Populations and Limited Space</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td>Generating New Positive Education Options</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Very Important | Somewhat Important | Not Important

Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001
(Patrick, 2006, e-Learn Conference)

- 56% of all 2-year and 4-year institutions offer e-learning courses
- 127,000 online courses offered
- 3,077,000 enrollments in distance education courses
- 90% use asynchronous Internet-based courses
- 51% use two-way interactive videoconferencing

What Leaders Need to Know: Four Key Ideas
(Patrick, 2006, e-Learn Conference)

- #1 Online Learning Expands Options
  "The first impetus to the growth of K-12 distance education was an interest in expanding educational options and providing equal opportunities for all learners." (p.7)
- #2 Online Learning Is Rapidly Growing
  "Recent Surveys show that K-12 online learning is a rapidly growing phenomenon." (p.4)
  - Growing 36% annually

Online Learning Works
(Patrick, 2006, e-Learn Conference)

- #3 Is Effective: "Equal or Better"
  "One conclusion seems clear: On average, students seem to perform equally well or better academically in online learning." (p. 17)
- #4 Improves Teaching
  "Teachers who teach online reported positive improvements in face-to-face, too.
  "...three in four reported a positive impact on their face-to-face teaching." (p. 25)
**Ok, Million Dollar Question: Which technology will impact schools the most?**

**Storm 1. Emerging Learning Technologies**

1. Assistive Technologies & Talking Computers
2. Blogs and Online Diaries
3. Digital Portfolios
4. Electronic Books
5. Online Communities and Learning Portals
6. Intelligent Agents
7. Online Exams and Homework
8. Online Games and Simulations (Massive Multiplayer Gaming)
9. Online Translation Tools & Language Lrng
10. Course Management Systems
11. Peer-to-Peer Collaboration
12. Reusable Content Objects
13. Videoconferencing, IP Videoconferencing
14. Virtual Worlds/Reality
15. Wearable Computing
16. Wireless Tech: Tablet PCs, Handheld Devices

**Evolution of Learning Theory**

(Bernard Robin, Univ of Houston, 2006)

1900 1910 1980

Response learning Knowledge acquisition Knowledge construction

Lambert & McCombs, 1998

**Education in Transition**

(Bernard Robin, Univ of Houston, 2006)

Traditional Learning New Learning

Instruction --- Construction/discovery
Task-centered --- Learner-centered
Instructor dominates --- Autonomous
Teacher acts as mentor --- Teacher as facilitator
Teaching --- Learning
Individual --- Collaborative
Individual Work --- Knowledge-based Learning
Experiences, Knowledge --- Information Exchange
Standing, Knowledge-based --- Critical Thinking and Informational Decision Making
Student Work --- Collaborative Work

ISTE National Education Technology Standards for Teachers

**Industrial Age vs. Info Age Learning**

(Bernard Robin, Univ of Houston, 2006)

Linear, sequential/linear Hypermedia learning
Instruction --- Construction/discovery
Teacher-centered --- Learner-centered
Absorbing materials Learning how to learn
School --- Lifespan
One-size-fits-all --- Customized
School as torture School as fun
Teacher as transmitter Teacher as facilitator

Don Tapscott
“When used appropriately, technology can become a mind tool, functioning as an intellectual partner with the learner to engage and facilitate critical thinking and higher-order thinking.”

Computers as Cognitive Tools
Book (1999); Robert Kozma (1986)
1. Computers transform, translate, calculate, sort, order, integrate, infer
2. Amplify, extend, and enhance human capabilities
3. Reduce cognitive load, free up resources
4. Internalize overtly modeled processes
5. Limited WM, structure of LTM, and cognitive strats
6. Prompt or model: examples, ask questions, eval answers, pose a hypothesis
7. Organize notes, links, concept maps, outlines, notebook, graphs, self-check

Role of Technology
- Computers to support not drill
- Use technology to enhance thinking—planning and revising learning goals, monitoring, reflecting on progress, construct knowledge
- Simplify access to research materials
- Autonomy, social support, critique activities, develop problem-solving, connect evidence, organize ideas, rep arguments, make sense
- Facilitate data storage and transfer
- Communication within and beyond classroom.

Tech Rich Environments
Goldman and Vandy Colleagues (1999)
- Jasper Woodbury series (SMART) - Problem solve and share solutions
- Little Planet Series - Research and write books
- The GLOBE project - Global Learning and Observations to Benefit the Environment - Collect data, observe, submit data and share results
- The Journey North - Ask experts, solve problems, track data, interview, collaborate
- The JASON Project - Interact with expedition team, virtual fieldtrips, explorations

Authentic Data Analysis
(e.g., The Globe Project, Kids as Global Scientists, The Journey North, etc.)
Knowledge Building Communities
Scardamalia & Bereiter (1994)

- Emphasis on problems, depth, open, decentralized, collective, communities.
- More advanced others participate, communal database, live experts, both open & private.
- Computer tools—foster choice of links, nature of relationships
- Asking leading questions, probing for details
- Alternative forms of assessment—group cooperation, design presentations, peer feedback

Kids as Global Scientists
(Nancy Songer, 1998)

- Students learned about local weather
- Developed a proficiency with the Internet
- Communication used to hook students in for deeper science learning
- Students move from consumers to reporters and participants
- Build new idea relationships through greater personalization of information
- Technology problems

Students as Infotectives
(Jasmin Mckinley, Crossing the Internet: Raising a generation of free-ranging students. Sept. 1994, pp. 56-58, Phi Delta Kappan)

- Envisioning what's possible, invent, rearrange
- Inquiry and Detective Skills
  - changing course, asking for help,
  - framing essential questions and subsidiary questions,
  - planning voyage,
  - screening garbage, analyzing data.
- Suggesting and testing hypotheses
- Seeing what's missing
- Suspending judgment

Any questions or comments so far?

We're in the Midst of Storm 3: Erased Budgets

Successful Strategies for Saving & Securing Technology Funding

Detect: IT reducing could save $1 million per year

E-SCHOOL NEWSonline

Weekly coverage of state and national school news

1-800-321-4670
http://www.e-schoolnews.com
Recap of the Perfect E-Storm....
1. Emerging Technology
2. Escalating (Learner) Demands
3. Erased Budgets
4. Enhanced Teaching

Poll #1. What are you???
A. Teacher, teacher assistant
B. Special education teacher
C. Counselor, school psychologist
D. Curriculum specialist
E. Administrator, principal
F. Dept of Education, Gov't Official
G. Social worker
H. Other

Part I. 16 Myths of Technology in Education

Technology Myth #1.
A teacher from the 1880s can easily walk into a class and teach today.

Students of the 1880s

Myth #2.
Teachers are reluctant and resistant to use technology.

Teacher Dorothy Swain uses a tablet connected to an electronic blackboard in one of her classes at Winterboro School. With this technology, teachers can write on the board from anywhere in the classroom.
(Bob Crisp, The Daily Home (Alabama), April 9, 2006)
Some are scared of technology!!!

Myth #3.
I must have a technology background to use effectively.

Need a Community of Practice:
Online Professional Development

Differences between
Boomers and Gen Xers

Three Most Vital Skills
The Online Teacher, TAFE, Guy Kemshai-Bell (April, 2001)

- Ability to engage the learner (30)
- Ability to motivate online learners (23)
- Ability to build relationships (19)
- Technical ability (18)
- Having a positive attitude (14)
- Adapt to individual needs (12)
- Innovation or creativity (11)
Myth #4.
My School and Kids Cannot Afford the Technology.

Free Online Tools and Resources
(e.g., Encyclopedia of Women)

Myth #5.
Technology is not appropriate for at-risk students.

Myth #6.
Online courses will not meet standards.

Students and Teachers, From K to 12,
Students and Teachers, From K to 12, Hit the Podcasts.
**Lesson Plan Sites with Links to Standards**

Students at one middle school in Miami answered more than 250,000 questions in 1 year (Gina Koch Hidalgo, FETC Connections, Fall 2005)

**Scavenger Hunts**

**BrainPop** (movies, experiments, timelines, activity pages)

(Gina Koch Hidalgo, FETC Connections, Fall 2005)

**COSMEO: Online Homework Help from the Discovery Channel**

includes math homework help, 15,000 interactive learning quizzes, games, and puzzles, 27,000 research articles, and 30,000 video clips that correlate to state standards!!! And the collection is expanding daily (cost = $9.95/month for up to 4 kids per family)

**Myth #7. Online learning is boring! Retention of students is a problem!!!**

Experience. The difference.
Online Drill (perhaps with Audio)
(Electronic Classroom of Tomorrow (ECOT) in Ohio)

Use of Weblogs
(epecially English writing class)
1. Instructor or Tutor blog: resources, information, space to chat
2. Learner blog: reflections, sharing links and pics, fosters ownership of learning
3. Partner blog: work on team projects or activities
4. Class blog: international exchanges, projects, PBL
5. Revision: review and explode sentences from previous posts, add details
6. Nutshell: summarize themes or comments across blogs
7. Blog on blog: reflections on feelings, confusions, and experiences with blogs

SWHS SPARTANART
COMPUTER GRAPHICS

K-12
WillowWeb

Myth #8.
Technology in the classroom is simply about playing games.

Credit: Marc Rosenthal
Online Jeopardy Game
www.jrn-solutions.biz/cau/quiz.zip;
Games2Train: The Challenge; Thiagi.com

Sure, there is negative technology!

Monty Python Spam Song


Myth #9.
Technology in the classroom eliminates the role of the teacher.

Videostreaming and Videoconferencing
(to take off in next several years ...$4.5 billion in 2007
Myth #10.
Online learning limits the social development of students.

Myth #11.
Technology only makes it harder for teachers, students, and parents.

Computer Grading

Myth #12.
Online learning is inferior to more traditional FTF instruction.
Technology in Schools: What the Research Says (Fadel & Lemke; Metiri Group and Cisco Systems, 2006)

- Purposes of technology in schools
  - Improve learning
  - Increase student engagement
  - Improve economics viability of students (productivity, technology fluency, teaming)
  - Increasing relevancy and real-world apps
  - Close digital divide
  - Build 21st century skills (critical thinking, sound reasoning, global awareness, communication skills, information and visual literacy, creativity, productivity, scientific reasoning, etc.)

Online quality is inferior.

Student Outcomes in Online Learning Compared to Traditional Instruction.

Mobile phone cheating in exams on the rise

Myth #13. Students will cheat more online.

The Evil House of Cheat

Myth #14. Teachers can just teach the same way they always have.
Many Professional Development Programs

Teacher Professional Development in Technology Integration (the TICKIT Program)
(Bonk, Ehman, & Yamagata-Lynch, in press, AACE Journal)
http://www.iub.edu/~tickit

TICKIT: Teacher Institute for Curriculum Knowledge about Integration of Technology

TICKIT Program Elements

Changes/Outcomes

Individual Teachers
Knowledge of Technology Integration
Motivation
New Models of Technology Integration
Quality of Students

School
Workshops
Collaborative Communities
Teaching
Teachers

Other Professional Development Experiences

The TICKIT Model (Ehman, Bonk, & Yamagata, 2005)

Project type  Number of projects (132)

Webquest  64
Electronic newsletters  1
Web editing & publishing  13
Online conferencing, collab, and discussion (includes email and phone)  10
Virtual tours  1
Computer apps (Excel, PP, Word, Internet)  38
Book review  2
Brochure construction  1
Electronic portfolio  2
The TICKIT Project

TICKIT WebQuest: Read Cases and Apply for Home Loans

Findings

<table>
<thead>
<tr>
<th>Factors</th>
<th>Means</th>
<th>TICKIT Completed</th>
<th>TICKIT Applicants</th>
<th>t</th>
<th>Sig.</th>
<th>f Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technology Integration</td>
<td>74.86</td>
<td>78.25</td>
<td>7.053</td>
<td>.003**</td>
<td>.813</td>
<td></td>
</tr>
<tr>
<td>2. Technology Limitations</td>
<td>11.40**</td>
<td>19.79</td>
<td>-6.381</td>
<td>.002**</td>
<td>.533</td>
<td></td>
</tr>
<tr>
<td>3. Technology Assistance</td>
<td>4.37**</td>
<td>7.01</td>
<td>-3.143</td>
<td>.002**</td>
<td>.363</td>
<td></td>
</tr>
<tr>
<td>5. Learner-centered Instruction</td>
<td>16.29</td>
<td>12.40</td>
<td>5.223</td>
<td>.001***</td>
<td>.133</td>
<td></td>
</tr>
</tbody>
</table>

**p < .01; ***p < .001
149 effect size based on TICKIT group
*Lower scores on factor two and three indicate more positive responses
**The t-s for each comparison were due to linemutat data. We used t-test with deletion of missing data (Completes n=66-77; Applicants n=138-20)

TICKIT Teacher Voices

> "This class was very helpful. I gained a lot of confidence as a technology user from this class."  
> "The door is now open. I will continue to try to find technological ways to teach them."
> "This was the best program I have ever been involved with as a teacher."
> "Thank you! A poor tired out "old broad" has a new lease on teaching"

Overall Lessons Learned (and Not Learned)

- Avoid Teachers Who Are Compelled By School Administrators Into Participating
- Teachers Need a Reasonable Tech Environment
- Teach Technology Use in the Teacher's Computing Environment, Not Ours
- A Local Leader is Important For the Cohort

Myth #15. We can just wait it out—it will go away
Prefer online to traditional!

Myth #16.
Online learning is too much text and passive learning. Must learn in meaningful ways!!!
What can we say about emerging technology then???

- It is everywhere!!!!!!!
- Resistance is futile!!!!!!!

Part II. Magic

Part III.
Just a Lot of Bonk....

#1: Synchronous Conferencing

#2. Practitioner Feedback: Asynchronous Threaded Discussion plus Sync Expert Chat (e.g., Starter-Wrapper + Sync Guest Chat)
#3. Online Data Collection
Survey Research
(e.g., WebSurveyor, Zoomerang, SurveyGizmo, SurveyMonkey)

#4. Brainstorming Chat

#5: Online Role Play of Scholars, Personalities, or Famous People

#6. Online Resource Libraries

#7. Choice: Multiple Topics

#8. Online Collaboration and Editing
#9. Workplace and Field Reflections

1. Instructor provides reflection or prompt for job related or field observations
2. Reflect on job setting or observe in field
3. Record notes on Web and reflect on concepts from chapter
4. Respond to peers
5. Instructor summarizes posts

#10. Fostering Info Exchange: Critical/Constructive Friends, Email Pals...

#11. Wikibook Creation and...

Welcome to Wikibooks, a collection of open-content textbooks that anyone can edit. Wikibooks is a wiki-based project, started in 2003, that aims to create a comprehensive and user-friendly resource for students, teachers, and learners. The project is open-source and collaborative, allowing anyone to contribute and improve the content.

#12. High School Student Self-Testing (e.g., Calm Chemistry)

#13. Podcasting and Coursecasting (Adam Curry: www.dailysourcecode.com)

Podcasting and Coursecasting are innovative ways to deliver educational content. Podcasts involve regular audio or video broadcasts, often episodic, that can be listened to or viewed on demand. Coursecasts, on the other hand, are detailed views of course content, often presented in a refined format. Both methods can enhance learning and provide flexibility for students.

#14. Cross-Class Collab (Indiana Univ and Open U of...
21. Online Music Training
Basic Acoustics of Musical Instruments

22. Interactive News on Web

23. Virtual Tours and Timelines

24. Virtual Fieldtrips

25. Visualization & Laboratory Software

Poll: Do you think technology will change that way you teach?

a. Yes, definitely
b. Probably yes
c. Maybe
d. No
e. Do not yet know
The End...Remember

It's Over...
Final Poll. Ok, then, who wants more???
A. Yes
B. No
C. Not sure

Sorry...it really is the end!!!