Education in the Digital Age

IPR Policy Research Briefing
May 19, 2015
Washington, D.C.
“Parents, Pencils, and iPads: Developing Pre-K Curriculum Standards for Technology in the Classroom”
by Ellen Wartella
Al-Thani Professor of Communication and IPR Associate

“Digital Native or Digital Naïves: The Internet Skills Gap Among Young Adults”
by Eszter Hargittai
Delaney Family Research Professor of Communication Studies and IPR Associate

“Learning in Cyberspace vs. Classrooms: Can Online Education Replace Traditional Instruction?”
by David Figlio
IPR Director and Fellow, Orrington Lunt Professor of Education and Social Policy
Our thanks to:

Representative Bob Dold of Illinois’ 10th District

and

Representative Mike Quigley of Illinois’ 5th District
Parents, Pencils, and iPads: Developing Pre-K Curriculum Standards for Technology in the Classroom

Ellen Wartella

May 19, 2015
Washington, D.C.
Report from Two National Studies

• Parenting in the Age of Technology (2014)

• Technology in the Lives of Early Childhood Educators and Early Childhood Programs (2013, 2015)
Parenting Study

• Surveyed 2,300 parents of children from birth to age 8 about how parents incorporate new digital technologies (iPads, smartphones), as well as older media technologies (TV, videogames, computers) into their family lives and parenting practices.
Main Findings

- Parents use media and technology as a tool for managing daily life, but books, toys, and other activities are used more often.
- Only 21% of parents report that negotiating media use causes conflict in their homes.
- Parents believe in the educational benefits of media, except for video games.
- Parents set the media ecology in the home.
Parenting Styles and Children’s Media Use

• **Media-centric parents** spend 11 hours a day with media (4:28 with TV, 3:37 with computers, 1:48 smartphones, :36 videogames). Their children spend 4:29 hours per day with screen media.

• **Media-moderate parents** spend 4:42 hours a day with screen media (2:14 TV, 1:25 with computers, :32 on smartphone, :18 iPad, :12 videogames). Their children spend 2:53 with screen media.

• **Media-light parents** spend 1:48 hours per day with screen media (:56 TV, :33 computers, :10 smartphone, :06 iPads, :.3 videogames).
Technology in Preschool Programs (2013, 2015)

• Surveyed preschool teachers from NAEYC data base.
• 1,356 teachers surveyed in 2013; 945 surveyed in 2015.
• Predominantly female, white, averaging 20 years of teaching.
Main Findings

• Technologies most available in classrooms both years: TV/DVDs (71%), Computers (4/5ths) and Digital Cameras (9 in 10)

• Smartboards in about one-quarter of classrooms; e-readers in 1 in 5 classrooms

• iPads increased from 29% of classrooms in 2013 to 55% in 2015
Main Findings

• Few differences in access to technology by income level of children in classrooms

• More educators in 2015 report professional development in educational technology

• Barriers to using technology in classroom include:
  – Lack of parent approval (65%),
  – Financial resources,
  – Time to learn how to use digital technology, and
  – Their own comfort in using digital technology.
Main Takeaways

• Parents set the media ecology in the home for preschool children’s engagement with technology

• Preschool classrooms are adopting tablets quickly (doubling in two years)

• Barriers to using technology in preschools are not access issues, but teachers’ comfort, training, and parental expectations.
“Learning in Cyberspace vs. Classrooms: Can Online Education Replace Traditional Instruction?”

David Figlio

Director, Institute for Policy Research
Washington, DC, May 19, 2015
Benefits of online instruction

- Access to higher education
  -- flexibility over space and time
- Pedagogical benefits
  -- study pace, opportunity to review
  -- new technologies for engagement
- Potential cost savings
  -- especially with mass instruction
Costs of online instruction

- Pedagogical costs
  - value of face-to-face interactions
  - issues regarding instructional scale
- Student accountability
  - easier to fall behind?
  - opportunities for dishonesty
- Potential loss of community feel
Evaluating the evidence

• Hard to compare F2F to online
  -- different kinds of students
  -- different kinds of instructors
  -- different kinds of courses

• Few studies to date deal with “selection”
  -- randomized trials
  -- very careful observational studies
First experimental evidence


- Flagship state university
- Introductory economics class
- Large lecture with online resources vs. online equivalent
- Same instructor, same class, same exams
Estimated effect of online vs. F2F instruction (final grade out of 100 points)
Experimental evidence: hybrids


- Six public university campuses
- Introductory statistics class
- Traditional F2F instruction vs. hybrid (machine guided + 1 hour/week F2F)
- Random assignment, different instructors, selection into teaching
On average, students in hybrid classes
-- had higher completion rates
-- had no different test scores
-- thought they learned less
-- had lower overall impressions
-- thought the class was harder than did students in traditional classes
Bowen, Chingos, Lack, Nygren (2014)

![Graph showing density vs. CAOS Posttest Score with Hybrid and Traditional methods compared. The graph includes a note that the kernel used is Epanechnikov with a bandwidth of 0.0335.]
Experimental evidence: hybrids

Joyce, Crockett, Jaeger, Altingdag, O’Connell, CUNY working paper (2014)

- Moderately selective public univ.
- Introductory economics class
- Traditional F2F instruction vs. hybrid (machine guided + 75 mins/week F2F)
- Hybrid underperforms by 2.6 pts/100
- Results appear driven by non-native English speakers
Experimental evidence: 3 mode

Alpert, Couch, and Harmon, UConn working paper (2015)

- Introductory economics class
- Traditional F2F instruction vs. hybrid (machine guided + 75 mins/week F2F) vs. online only
- Hybrid no different from F2F, but online scored 4.2-10.3 pts/100 worse
- Results appear driven by those with low prior GPAs
CA community colleges

Hart, Friedmann, and Hill, UC-Davis working paper (2015)

- Every class in 110 community colleges, nearly 1 million students
- Traditional F2F instruction vs. online
- Not experimental, but very compelling controls for selection
- Focus on course completion, grades
Online Coefficient and Confidence Interval on Course Completion, by college

Estimates and 95% confidence intervals from school-course FE models. Excludes colleges with fewer than 1000 student-course-term or fewer than 100 online enrollments (13 schools)
Online Coefficient and Confidence Interval on Course Success (Pass with C or Higher), by college

Estimates and 95% confidence intervals from school-course FE models. Excludes colleges with fewer than 1000 student-course-term or fewer than 100 online enrollments (13 schools)
The bottom line

- There are lots of very successful online education models, but those being taken to scale don’t seem to realize their potential.
- Students are more successful in F2F vs. online formats...especially so for those more likely to struggle in college.
- Investing in online education may be worth it...but (for now) there’s no free lunch.
Digital Natives or Digital Naïves?
The Internet Skills Gap Among Young Adults

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Digital Divide
Digital Divide

Mere connectivity ≠ Effective, efficient uses
Mere connectivity $\neq$ Effective, efficient uses

Digital Inequality
Web-Use Skills

- Awareness and understanding
- Efficient information seeking
- Credibility assessment
- Participation
  - joining communities
  - contributing content
- Knowledge of privacy, security issues
Generational Myths

A) All young people are digitally-savvy

B) Young people are savvier than older people
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A) All young people are digitally-savvy
B) Young people are savvier than older people
“Net Generation” Characteristics

- Have been using digital media for many years
- Spend a lot of time online
- Engage in lots of online activities
- Are savvy about the Internet and Web tools
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- Are savvy about the Internet and Web tools
Awareness and understanding
- Send messages with special encryption for security
- Send email without the recipient’s address appearing in the message
- Include graphical icons in the body of an email message
- Send compressed picture files attached to a message
34% could not identify the correct description of bcc functionality on a multiple-choice question

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Not

Understanding URLs

Which of the following sites is most likely to be the Web site of a bank?

- www3.da-us.citibank.com/cgi-bin/citifili/portal/I/I.do
- www.citibank.ve/rify.com
- www.us.citibank.businessportal.ru/citiportal/index.php
- www.krezmin.nu/citibank.com
Understanding URLs

Which of the following sites is most likely to be the Web site of a bank?

- www3.da-us.citibank.com/cgi-bin/citifili/portal/I/I.do 12%
- www.citibank.ve/rify.com 37%
- www.us.citibank.businessportal.ru/citiportal/index.php 50%
- www.krezmin.nu/citibank.com 1%
Are certain types of people more skilled than others?
Relationship of skill & socioeconomic status
Relationship of skill & socioeconomic status

Eszter Hargittai, Northwestern University
Relationship of skill & socioeconomic status

- Skill '09
- Skill '12

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Eszter Hargittai, Northwestern University
Who benefits most from their digital media uses?

- Health information seeking
- Looking for jobs
- News consumption
- Political participation
- Sharing content

Skill

Eszter Hargittai, Northwestern University
Why is it helpful to focus on skill?
How about skill differences across generations?

Income
Education
Age (=<50)

Skill

Source: Federal Communications Commission broadband survey, 2009
How about skill differences across generations?

Source: Federal Communications Commission broadband survey, 2009
Take-aways

• Digital inequality signals the spectrum of differences among users beyond mere Internet access

• Web-use skills differ considerably by user demographics and socioeconomic status

• Young adults are not universally savvy with technologies, generational myths should not dictate public policy
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Thank you!

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