EDUCATIONAL TECHNOLOGY: RESEARCH & INTEGRATION

Dr. Kurt Schulze
Walden University
Preble Shawnee Local School District
kurtschulze82@gmail.com
3/19/14
Goals

- Provide research-based information on the benefits of utilizing educational technology

- Provide integration information on student response systems
Think – Pair – Share

- Why integrate?
- Why not integrate?
This image is a poll’s place holder.
Enter slide show mode (F5) to view your live poll.

You can resize this image to resize where your poll will load in slide show mode.

Make sure you’ve installed the PollEv Presenter app (pollev.com/app) and are connected to the internet!

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Three broad categories
- Preparation
- Delivery
- Learning Tool
  - (Inan & Lowther, 2010)
Traditional & technology instructional practices should compliment each other (Walker, 2010)

Using technology does not ensure effective integration (Parker et al., 2008)
- Need to know how and why
Technology Integration

- Student achievement negligible when integrated improperly (Shapley et al., 2010)

- Done correctly, technology will be “invisible”
  - Natural part of the classroom
    - Desks, pencil sharpeners, & staplers
      - (Schrum et al., 2011)
Technology Integration

- Most common classroom uses
  - Low-level tasks
  - Direct instruction
    - (Berry, 2011; Lowther et al., 2012)
  - My results confirmed
    - Relationships between Teacher Characteristics and Educational Technology

- Should be...
  - Student-centered
  - Problem-based learning
  - Independent inquiry
    - (Berry, 2011; Lowther et al., 2012)
Benefits

- Transforms educational environment (Ball & Levy, 2008; Panigrahi, 2011)

- Teachers use technology to...
  - Motivate
  - Engage
  - Increase comprehension & higher-order thinking
  - Increase skills for future applications
    - (Ottenbreit-Leftwich et al., 2010)
More Benefits

- Personal instruction for students (Project Tomorrow, 2012)

- Increase student knowledge & ability
  - (Lowther et al., 2008)

- Prepare students for 21st century

- Teachers facilitate not transmit
  - (An & Reigeluth, 2011; James, 2009)
More Benefits

- Creates student-centered learning environments (Alam, 2011)
  - Constructivism
  - Cognitive Flexibility Learning Theory
    - Both authentic experiences (An & Reigeluth, 2011)

- Allows students to perform powerful tasks
  - Computation
  - Construction
  - Simulations
  - Visual representations
    - (Wachira & Keengwe, 2011)
Additional Benefits

- Technology integration takes time & may be an inconvenience
  - When mastered, will save time & money
    - (Loertscher, 2010)

- Reduces teachers’ workload

- Improves efficacy in job performance

- Significant effect on teacher quality & instruction
  (Loertscher, 2010)
Four major factors influence integration:
- Beliefs towards technology & pedagogy
- Attitude
- Knowledge & skills
- Time & workload
  - (Marwan, & Sweeney, 2010)

Most important factor is teachers’ competency & ability to meet student needs (Gorder, 2008)
When teachers believe resources are valuable, they integrate quicker (Hutchison & Reinking, 2011; Ottenbreit-Leftwich et al, 2010)

Teachers not proficient or unfamiliar are resistant to change
- Creates sense of inadequacy & intimidation (Loertscher, 2010)
Before integrating technology, know the purpose
Integrating Technology

What to teach

How to teach

TPCK

What technology to use
Teachers must balance technology, pedagogy, & content (Lee & Spires, 2009)

- Technology integration not always best practices (Ottenbreit-Leftwich et al., 2010)

Low TPCK can cause teachers to be reluctant to integrate (Pierce & Ball, 2009)

NEVER integrate technology for technology’s sake (Ottenbreit-Leftwich et al., 2010)
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Barriers

- Access
- Attitudes
- Beliefs
- Confidence
- Funding
- Incentives
- Lack of vision

- Lack of Resources
- Quality resources
- Relevant software
- Support
- Time
- Training
Student Response Systems (Clickers)
This image is a poll’s place holder.
Enter slide show mode (F5) to view your live poll.

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Benefits

- Instant results & feedback
- Provides everyone a “voice”
  - Eliminates: “Because everyone else raised their hand”
- Data driven decision making
- Increase interaction & class participation
Additional Benefits

- Teacher or student paced
- Reduced paperwork & grading
- Detailed reports
- Multiple choice, numbers, & short answer response (most systems)
Think – Pair – Share

- Do you currently use clickers? In what ways?
- If you had them, how would they be used?
<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Used Clicker (n=45) Mean</th>
<th>Used Class Discussion (n=47) Mean</th>
</tr>
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<td>Participation with clickers (or class discussion) improved my grade in the course.</td>
<td>3.60</td>
<td>3.20</td>
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<td>Participation with clickers (or class discussion) improved my understanding of the subject content.</td>
<td>4.03</td>
<td>3.61</td>
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<td>Participation with clickers (or class discussion) increased my feeling of belonging in this course.</td>
<td>3.78</td>
<td>3.48</td>
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<td>Participation with clickers (or class discussion) increased my interaction with the instructor.</td>
<td>4.15</td>
<td>3.62</td>
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<tr>
<td>Participation with clickers (or class discussion) increased my interaction with other students.</td>
<td>3.45</td>
<td>3.17</td>
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<td>I enjoyed participation with clickers (or class discussion).</td>
<td>4.14</td>
<td>3.93</td>
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<tr>
<td>I would recommend using clicker (or class discussion) again in this course.</td>
<td>4.12</td>
<td>4.05</td>
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*Strongly Disagree = 1; Disagree = 2; Unsure = 3; Agree = 4; Strongly Agree = 5; Martyn (2007)
Clicker Reports
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| Response Percentages | 10 | 0 | 10 | 79 |

**Student Responses**

- **A**: 3
- **B**: 0
- **C**: 3
- **D**: 23
- **N/A**: 0

Legend:
- 3 A
- 0 B
- 3 C
- 23 D
- 0 N/A
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# Response Reports

**Session:** Exponents  
**Class:** 7th

Class Points Avg: 89.08 out of 100.00 (89.08%)  
(includes only students who took assessment)

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## Item Analysis Report

**Session:** Exponents  
**Class:** 7th  
**Class Points Avg:** 89.08 out of 100.00 (89.08%)  
(Includes only students who took assessment)

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Poll Everywhere

- Pre-load questions
- On the fly
- Embedded into presentations
- Use own device
  - Phone, tablet, or computer
- Free & purchase options
- Excellent for 1 to 1 classrooms or BYOD
Teachers create questions
  - On the fly
  - Pre-loaded

Game mode
Import quizzes
Create reports
Mobile App
Excellent for 1 to 1 classrooms or BYOD
This is a beta site, please be patient as this is a work in progress. Note that activities created & run in Socrative 2.0 will not exist in Socrative 1.0. Students and teacher must join via beta.socrative.com to be connected. Please send any feedback to beta@socrative.com.

ROOM: 888b17a6
Dashboard
Why Technology???

http://www.youtube.com/watch?v=HbVKPhVCRFI
Relationships between Teacher Characteristics and Educational Technology

- Investigated
  - Characteristics & Perception
  - Characteristics & Integration
    - Characteristics: Age, gender, teaching experience, subject, grade level, and educational attainment
- Overall positive perceptions
- Technology resources available, but low integration

Please contact for detailed findings
Questions
References


