CCI Liaisons presents: Myth Busters!

True or False!!

A “Learning Technology” Themed Game Show
False... (i.e: Prezi) but when considering the relevancy of a tool, one must first determine the following:

- Size of class participants. (i.e.: Clickers)
- Is material more conducive to didactic teaching (i.e: use lecture/PPT) or experiential learning (i.e.: use Flipped Classroom)?
- Time constraints on faculty/ learner/schedule?
- Human Capital? Need more faculty, etc?
- Other?????
More technology is better than less technology.

• It depends...........
  o The brain cannot multitask! (Medina, 2008)
    • The brain’s attentional ability is not capable of multitasking
    • Think of research on cell phone use and driving!
    • We cannot process attention-rich inputs simultaneously

• Adoption needs to be intentional (following sound educational and pedagogical practices)
  o Novel stimuli are powerful ways to harness attention
    • Technology used “right” can create some of those attention grabbing opportunities
  o Cognitive Load Theory (Sweller, 2011)
  o Sensory integration
    • Cognitive theory of multimedia learning (Mayer, 2005)

Medina J. Brain rules. 2008; Mayer, 2005; Sweller, 2011
Students are more adept at using technology for learning than faculty. Not like we were led to believe........

- Digital natives aren’t necessarily digital learners (Cowan, 2011)
- Students are great with social media......
- Students are far from homogenous, with great diversity in access to, and frequency of use of technologies.

**Social networking site use by age group, 2005-2013**

% of internet users in each age group who use social networking sites, over time

Source: Latest data from Pew Research Center’s Internet Project Library Survey, July 18 – September 30, 2013. N=5,112 internet users ages 18+. Interviews were conducted in English and Spanish and on landline and cell phones. The margin of error for results based on internet users is +/- 1.6 percentage points.
Kennedy et al, 2008
First year students’ experiences with technology: Are they really digital natives?

Table 4: Percentages showing how often students use web based technologies

<table>
<thead>
<tr>
<th>Web</th>
<th>Percentage used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the web to access a school portal, ‘Course or Learning Management System’</td>
<td>26.9 36.7 7.2 7.3 21.8</td>
</tr>
<tr>
<td>Use the web to look up reference information for study purposes (e.g. online dictionaries)</td>
<td>29.7 45.9 11.2 6.9 6.3</td>
</tr>
<tr>
<td>Use the web to browse for general information (e.g. news, holidaying, event timetables)</td>
<td>42.0 41.2 8.2 4.8 3.7</td>
</tr>
<tr>
<td>Use the Internet/web or a LAN to play networked games</td>
<td>11.9 12.1 8.0 17.9 50.2</td>
</tr>
<tr>
<td>Use the web to listen to sound recordings (e.g. via streaming audio or iTunes)</td>
<td>21.5 26.6 12.0 10.8 29.1</td>
</tr>
<tr>
<td>Use the web for other pastimes (i.e. for leisure activities)</td>
<td>37.1 35.3 7.6 5.9 14.1</td>
</tr>
<tr>
<td>Use the web to buy or sell things (e.g. eBay, Amazon, air tickets)</td>
<td>5.5 9.2 12.5 24.3 48.5</td>
</tr>
<tr>
<td>Use the web for other services (e.g. banking, paying bills)</td>
<td>8.0 20.8 14.2 16.6 40.4</td>
</tr>
<tr>
<td>Use the web to send or receive email (e.g. Hotmail, Yahoo, Outlook)</td>
<td>66.4 27.2 2.5 1.3 2.7</td>
</tr>
<tr>
<td>Use the web for instant messaging/ chat (e.g. MSN, Yahoo, ICQ)</td>
<td>54.7 25.1 4.3 5.3 10.4</td>
</tr>
<tr>
<td>Use the web to build and maintain a website</td>
<td>5.3 7.5 3.8 13.6 69.7</td>
</tr>
<tr>
<td>Use social networking software on the web (e.g. MySpace, Friendster)</td>
<td>11.1 12.7 5.0 8.2 62.9</td>
</tr>
<tr>
<td>Use the web to download MP3 files (e.g. music, videos, podcasts)</td>
<td>26.7 31.7 11.7 6.9 23.0</td>
</tr>
<tr>
<td>Use the web to upload and share MP3 files (e.g. music, videos, podcasts)</td>
<td>18.3 19.8 9.1 8.0 44.8</td>
</tr>
<tr>
<td>Use the web to share photographs or other digital material (e.g. using Blublot, Flickr)</td>
<td>11.9 18.8 9.6 10.1 49.5</td>
</tr>
<tr>
<td>Use the web to make phone calls (e.g. VoIP using Skype)</td>
<td>8.7 10.5 4.9 9.7 66.3</td>
</tr>
<tr>
<td>Use the web for web conferencing (e.g. using a webcam)</td>
<td>8.1 10.4 6.0 9.3 66.2</td>
</tr>
<tr>
<td>Use the web to read RSS feeds (e.g. news feeds)</td>
<td>6.5 7.4 3.6 7.3 75.1</td>
</tr>
<tr>
<td>Use the web to read other people’s blogs or vlogs</td>
<td>15.6 22.1 10.5 10.5 41.4</td>
</tr>
<tr>
<td>Use the web to comment on other people’s blogs or vlogs</td>
<td>11.1 15.8 7.5 9.5 36.1</td>
</tr>
<tr>
<td>Use the web to keep your own blog or vlog</td>
<td>10.2 11.0 5.5 8.2 65.1</td>
</tr>
<tr>
<td>Use the web to contribute to the development of a wiki</td>
<td>3.3 5.2 2.3 7.6 81.6</td>
</tr>
</tbody>
</table>
Digital Natives???? (Gadbury-Amyot, Feb 2014 JDE)
FALSE.... actually the appropriate application of technology is **highly dependent on the pedagogy of the instructor** and her ability to **understand how students learn**.

Technology simply **supports** a more active learning experience through a high degree of learner involvement, thus promoting deeper understanding.

“Alternatives to direct instruction (lectures) such as technology-directed learning, reflect different assumptions and draw upon different research and theory bases. These differences are fundamental—not cosmetic or semantic in nature. Simply renaming traditional processes without altering basic beliefs about process themselves and the supporting methods, will not significantly alter the nature or quality of a learning environment.” Hannafin & Land (1997)

“You can put lipstick on a pig. It's still a pig.”

— Barack Obama (2008)
What may be a very good learning aid in its original form may lose its merits through inappropriate “electronification.”

Underlying all learning environments are the beliefs about how knowledge is acquired and used—psychological foundations: Behaviorism-Cognitivism-Constructivism.
Retention Rate: 5%-10%
Behaviorism

- Theorists: Pavlov, B.F. Skinner

- Instructor Directed Learning

- Learning is an Observable Change in Behavior

- Observe ➔ Practice ➔ Reinforcement (+ / -)

- Classroom Technology: observation (video) followed by a quiz or practical.
Behaviorism

http://techforinstructionsum08.wikispaces.com/Behaviorism
Retention Rate: 20%-30%
Theorists: Chomsky, Piaget, Bloom

Faculty is a Modeler of Strategies

How Learning is Processed: Change in Mental Behavior

Attention Gained - Rehearsal/Visuals → Memory

Classroom Technology: Problem Solving, Gaming (???)
Cognitivism

Step 1: Assemble Part A to Part B. Step 2: Glue these pieces securely. Step 3: Find Part C and connect to Part D...
Constructivism

Retention Rate: 50%-90%
Constructivism

- Theorists: Vygotsky, Rogers
- Faculty is a Facilitator of Knowledge
- Knowledge is Constructed and Experiential
- Learners are in charge of their own learning through authentic tasks and have choice in their presentation.
- Classroom Technology: Internet, Multimedia, Texting, Flipped Classroom
Effective learning environments support the learners intentions to derive and solve problems through the use of available resources and tools.

This results in a complex interaction among prior knowledge, perceptions of events, intents, actions, observations, and reflections attendant to on-going thoughts and actions.

Hence:

Learning: a dynamic process of “reflection in action” where action is used to extend thinking, and reflection is governed by the results of action (Schon, 1983)
Hence:

- Student-centered learning environments emphasize constructing personal meaning by relating new knowledge to existing conceptions and understandings: technology promotes access to resources and tools that facilitate construction.
Constructivism

"I expect you all to be independent, innovative, critical thinkers who will do exactly as I say!"

You Cannot Teach a Person Anything: You Can Only Help That Person Find It Within Himself.

-Galileo

http://pentap.edublogs.org/2012/07/25/critical-thinking-whats-that/
Learning Technology does not obviate the need for work on the part of the Learner or the Educator.

- The Learner must be motivated, by the instructional design and choice of technology, to become more active in the learning process.

- The Educator must invest considerable planning and effort, based on learning theory, to be able to exploit the strengths of the target media.

- A successful learning environment encourages learners to use its resources and tools to process more deeply and extend thinking.
Technology is expensive to integrate into courses.

It can be but that depends on:

- The type of technology used (clicker system vs. personal smart phones)
- The size of the class (number of students).
- The amount of information delivered over time (the value of time saved).
- Value versus cost (improved learning, improve value of the program attended, technology moves forward—eventually we must engage of be left behind).
- Can you afford NOT to integrate?
Perceived Attributes theory. There are five attributes upon which an innovation is judged: that it can be tried out (**trialability**), that results can be observed (**observability**), that it has an advantage over other innovations or the present circumstance (**relative advantage**), that it is not overly complex to learn or use (**complexity**), that it fits in or is compatible with the circumstances into which it will be adopted (**compatibility**).
Actually students prefer “good teaching”

Not a homogeneous learning group: All kinds of learners exist at different levels of technology usage.

Rather than the classroom alone, learning will and does take place in a variety of locations, most often outside the classroom.

Learners learn best when various representations of material are supported.


Blended-Learning (Divaris, et al., 2008) meets the requirements for an effective learning model as dictated in the evidence listed above.
Reasons students prefer web-based over traditional lecture:

- Accessibility
- Ease of Use
- Freedom in navigation
- High image quality
- Repeated practice advantage

Potomkova, et al. (2006)
Students prefer a “skilled instructor” in any format.

Students perceive e-tools as supplements to good teaching and prefer “face to face” teaching.

Prefer a blending of online convenience with in-person pedagogy.

Caruso & Kvavik (2005)-Educause Study

Students prefer printed text over reading online.

Salaway & Caruso(2008) Educause

People read faster (25%) in print than online. (Nielsen-1998)
So why then don’t they (students) come to class if it’s not the technology?

Factors impacting students’ decision to attend class:

• 82% Previous experience with instructor.
• 50% Cost/benefit analysis (is the value worth my time?)
• 40% Predicted learning outcome.
• 13% Personal life impact.
In the flipped classroom instructors prerecord lectures and post them online for students to watch on their own so that class time can be dedicated to student-centered learning activities. The idea is for faculty to incorporate content for class that will require students’ engagement with material and where critical thinking and problem solving will exist. The student-centered model requires that students be responsible for coming to class with a basic understanding of the materials, so that he or she can fully participate and engage in the class discussion and activities.
Think back to the Gies Report published in 1926

- Main theme – necessity for a scientifically based curriculum that would promote scientific principles as the basis for dental clinical therapy
  - Main goals – to develop critical thinking and problem solving skills, and create an orientation for lifelong learning

So when did we STOP expecting our students to read and study ahead of class and come prepared to ask questions, delve deeper into content, etc........?????????
As they say......”not so much.”

BUT

The ability to monitor the students' actual outside of class learning has been greatly enhanced through technology,
Class time not spent giving out new information

- Students have done advanced work – developed “advanced organizer”
References

- Cowan, 2011
- Kennedy GE et al, 2008
- Medina J. Brain rules. 2008
- Mayer, 2005
- Sweller, 2011


