Please Take Short Quiz:

1. On your Phone or Laptop, goto: bit.ly/uvicedtech

2. Then join student room: rmccue
I’m grateful for opportunity to talk about a subject I’m passionate about.

I went through number of presentation titles before I settled on this one… And because I put so much work and effort into them I’d like to share the other titles with you…
I thought this might be a good metaphor...
A nod to two educational technology academics we'll talk about in a minute, Richard Clark & Robert Kozma.

Before we go any further, I want to make you aware of a well know bias I possess…
I am a Technophile!

I am known to my colleagues, family & friends as a Technology Early Adopter, but I also consider myself a pragmatist...
As a Systems Administrator I work with: Mac, Windows & Linux ... You could say that I'm quite Ecumenical...
When it comes to technology, I like to use the tools best suited to the job and circumstances.

Right now for example I have a Mac Laptop, Windows desktop computer, and administer Linux servers.

I own an android phone and an iPad tablet
Use the Best Tool for the Job…

I always try to use the best tool for the job… whether it be High Tech…
High Tech

or Low Tech...
Low Tech
Before we get going, I’d like to get a sense for the background of the group...
Back in 1994 Richard Clark & Robert Kozma engaged in a public debate on EdTech that is famous at least in EdTech circles.

Let's be very clear that the debate about educational technology is not a new debate...
The Debate goes back at least to Socrates who thought that allowing students to use books (the new Educational Technology of the day) was a bad idea because it would “diminish their memory”... and he was probably right, but didn’t realize how large the positive impact that books would have in educating a broader audience, transmitting information more reliably.

But back to the 1994 version of the EdTech debate...
Clark argued that “media [or the technology] are mere vehicles that deliver instruction”. In the same way the type of “truck delivering our groceries doesn’t change the nutritional value of the groceries”. If you think of it in terms of the technology available when he first starting talking about this in the mid 1980’s you can see why the argument made sense back then. Whether you watch a lecture in person, or on a VHS video tape, the same information is being communicated in roughly the same format -> a lecture.
Kosma: You have a point but...

Some New Media can give us powerful new methods...

- Kozma countered that while Clark’s argument is often correct, “if media [or technology] are going to influence learning, media must be designed to give us powerful new methods, and our methods must take appropriate advantage of a medium’s capabilities”. To summarize, It’s not the “media” or technology that influences learning, it’s how the technology is used that impacts learning.
- Compare the old Telephone with a modern Smart Phone. A Smart phone doesn’t significantly improve on voice calls, but can also browse the web, listen to music, read books, video conference, navigate on land, sea or in the air, collaboratively edit documents & DJ a party!
- The new SmartPhone technology definitely gives us powerful new methods as Kozma put it.
When Clark defended his argument that the delivery media for instruction usually does not make a difference, the technological landscape was much different. **VHS video tapes** were the primary means of watching on demand educational videos. **Microsoft DOS** was the dominant desktop operating system, and **dial-up modems** using phone lines were state of the art. And **Microsoft Word**, looked like this!

I suspect that in his era, Clark’s assessment that technology does not improve instruction was true almost all the time.
Technology Has Changed!

- Virtual Frog Dissection
- PC Flight Simulator
- Google Hangouts Video Conferencing
- High Power Laptops

On the other hand, with 20+ years of maturation and significant improvements in bandwidth, hardware speed, and authoring tool usability improvements...

Technology is now in a position to make a large positive impact in the delivery of instruction by enabling new pedagogical approaches to instruction, like Blended Learning (mixing of F2F & online instruction) and PBL's with virtual simulations and collaboration.
We have increasing realistic simulation hardware and software, like the medical simulator, Oculus Rift Virtual Reality goggles, weird looking telepresence robots & Maker Bots to help bring our virtual creations into the physical world.
New EdTech + Old Pedagogy = No Significant Difference

- While the passage of time has been kind to the pro-technology arguments of Kosma, it is important to remember Clark was correct in arguing that no matter what new educational technology we use, if we do not also change pedagogy, the educational outcomes will stay the same.
- Of course there are other reasons to implement EdTech other than to improve student performance; Things like:
  - Broadening Access to education (live & recorded videos for off campus students);
  - Streamline administration & Save costs.
A Real World Example: Comparison of EdTech with Pedagogy Held Constant

Library Based Information Literacy Instruction


- An example of this is a study that was conducted at the University of North Texas where a comparison of student retention of information literacy skills was measured between sections instructed in a traditional face-to-face class, a blended class, and an online class. In each of the three classes, the instructional materials and pedagogy were kept as uniform as possible.
- So What were the results?
Not surprisingly, the researchers found that there was no significant difference in information literacy skills retention between the three different delivery methods. The delivery methods were different, but the study authors went out of their way to make the content as consistent as possible, and as a result, the outcomes from each group in the study were almost identical.

Fortunately this is not the way most people actually teach when they move to Blended pedagogies.
“The observed advantage for blended learning conditions is not necessarily rooted in the media use per se and may reflect differences in **content, pedagogy** and **learning time**.”


- In the large meta-study conducted by the US Department of education, blended classes were found to have a statistically significantly higher summative assessment scores than face-to-face classes.
- Given the lack of information about pedagogies used in the hundreds of studies they analyzed, they stated that “the observed advantage for blended learning conditions is not necessarily rooted in the media use per se and may reflect differences in **content, pedagogy** and **learning time**.”
Write down the 1 or 2 pedagogies you use most.

On a piece of paper, please:
• Write down 1 or 2 pedagogies you use most when teaching.
We Typically Don’t take advantage of the new capabilities that new Tech affords us...

at least right away...

• Here’s an old, but typical example. Almost always in the early adoption of new technologies, we do not take advantage of all the new capabilities available to us and tend to mimic activities that we are familiar with.

• At Least Right away...

• Anyone want to guess which is the Gutenberg text, and which is a monk copied manuscript?
• Here’s a pretty awful powerpoint slide, but when you consider the technology that came just before it… [NEXT]
• It starts to make more sense why someone would just put text on their PowerPoint Slide… because it came from transparency slide.
• What are some other potential uses for video projectors? [NEXT]
- Video Conferencing for guest speakers. -> One of my prof’s would assign readings from guest speaker & have us ask questions of speaker from the reading.
- Video Clips.
- Interactive feedback using clickers, smartphones and/or laptops.
- Pedagogical Plus: A. Ability to project rich media. B. Active Learning by having to form questions for guest speaker while reading.
Dictionary - Talk about reading the “Master & Commander” series of nautical books by Patrick O’Brien; built in dictionary was a life saver!

Pedagogical Plus: Comprehension and/or not having to slow down flow of reading for paper dictionary.
Most Highlighted Passages

- Highlighting - Not a big deal? It is when you can see what many others have highlighted so you can get a sense for what is important in a book.
- **Pedagogical Plus**: Can provoke questions in readers like, “why do my peers find this to be important?”
A recent example of new technology being used in an “old” way is educators creating instructional materials for Massively Online Open Courses (MOOC). Many started by taking face-to-face lectures & simply videotaping them... So instead of sitting in a classroom to watch a 60 minute lecture, you can now watch that lecture online.
Initially they didn’t take advantage of the flexibility of the digital medium by:

- A. Interleaving video & exercises.
- B. **Adding audio and visual elements** to enrich the video instruction.
- C. Dividing it into a number of shorter segments,

**Pedagogical Plus:** Good research shows that **interleaving** instruction and exercises much more effective at helping learners to remember information than long lectures.
The Internet & Web

Course website circa 2004

- What we did initially is transfer the Syllabus & Handouts to the “Course Website“… A good first step!
- So what are some of the possibilities now?…
Modern LMS's let you much more effectively lay out any pre-class materials. Each video is 3-7 minutes long. Video instruction is interleaved with exercises to help student retain the information longer.

The LMS can also help you to see how prepared students are for class, at least for the activities and quizzes you have setup in the LMS.

Notice the videos have been watched many more times than the exercised have been completed. Student are going back for review.

**Pedagogical Plus:**
A. Interleaving video & exercise.  
B. Instructor can “encourage” students who are not prepping to prep.
Many Interesting Web Applications for Education

There are many other examples of great Web apps for education, including Google Doc’s & Citation Managers…

peerScholar - Helps you look at your work and other’s work from a different, typically more critical perspective. Having used this in two classes I have first hand knowledge at how well this works. [NEXT] Powerful pedagogical tool!
- **Phase 1**: Students write assignment with specific grading criteria so the student's know in how they will be graded.
• **Phase 2**: After writing phase closes, they can immediately move into evaluating, where they see their assignment alongside peer’s.
• Critical thinking encouraged as they evaluate & give feedback on their peer’s work based on assignment rubric.
• Can see how their work stacks up against peers immediately.
Peer Evaluation of Assignments

- **Phase 3**: As soon as evaluation phase closes they can receive their peers’ evaluations and feedback.
- Feedback typically much quicker than if marked by Prof or TA’s. If desired, work can be revised and resubmitted.

**Pedagogical Pluses**: 

- **A**: Encourages Students to look at their work from a different perspective.
- **B**: More timely feedback <- research indicates that more timely feedback is adopted more frequently...
- **C**: Allows for for students to revise their own work which expands learning time.
- **D**: Interleaving - write, evaluate, revise.
Some Pedagogies were possible in the past, but impractical because of cost & time…
Video feedback and reflection were used sparingly in the past because the process was so labour intensive. My high school volleyball team was a great example of this. Also, the law interview classed used sparingly. Now online tools make it powerful but much, much easier.
• VideoANT is a great example of how the confluence of the YouTube API and a web app can make a powerful tool for video reflection and feedback.
• This is how I use it for the soccer teams I coach… a great tool for self reflection and self assessment.
• Students can use their laptops to record and upload videos very easily…. [DEMO?]
Video Reflection & Feedback

- Other uses: Interviewing practice; presentation practice, moot teams, drama, athletics, teacher instruction...
- In law schools it is used heavily in interview classes to help students how to effectively interview clients, and by moot teams preparing for intra-law school moot competitions.
- **Pedagogical Plus:** Allowing students and athletes to view their performances from a different perspective is powerful.
- Gamification can be done using both high tech and low tech means. For example.
- LA film school, used cards for final project constraints... worked out wonderfully to help them achieve hard to do learning objectives: collaboration & negotiation. Raised the stakes & gave students a taste for what they would encounter outside of the school’s walls.
- **Pedagogical Plus**: Higher engagement levels, and experiential learning.
Gamification

- Plague Inc. - Saw my son playing this last summer, assumed he was protecting the world... [NEXT]
- Uses realistic epidemic model w/ a complex and realistic set of variable to simulate the spread a severity of a plague.
- Pedagogical Plus: **A.** Expanded learning time. **B.** Student engagement.
Gamification of Business Case Studies

- Business Case study... Back in the day when I was a BComm student at UVic they were all paper based... [NEXT]
- They were great in that it helped us learning about an use the concepts we were learning in more practical ways...
- Let me be clear, I have no exp. with current Bus Case studies, but knowing the tech this is what I wish:
  - Team based or individual simulations vs. the computer. MIT
  - Team based simulations vs other teams (possibility at other institutions), mediated by a computer.
- **Pedagogical Plus:**
  - **A.** Expanded learning time.
  - **B.** Student engagement.
- Note: team competitions can be powerful, as I witnessed at the Law School with Moot competitions...
Think about a pedagogy that you would like to try out…

Spend 1 minute talking to your neighbour what the pedagogy is and how it might help your students (1 min each).

- Take a few seconds and Think about a pedagogy you would like to try out or experiment with. Assume you have sufficient time and resources to experiment with it…
- Now turn to your neighbour and Spend 1 minute talking about what you’d like to try and how you think it might help your students (1 min each).
“Nothing works better than a good teacher, unless it’s a good teacher with decent tools.” - Katrin Becker

Unless...
Unless you have a highly motivated group of students with good tools!
When my partner was in her 1st year of nursing school, she & her cohort had a sub Anatomy & physiology prof.
He did not teach well; just read of ppt slides he’d been given & occasionally gave factually incorrect answers.
My wife & classmates complained to nursing program & biology head, but could not be changed b/c of budget.
So what did the class do?
• They started to use their cohort Facebook that was originally setup to organize parties to hare YouTube videos to explain the biology concepts the professor was not adequately explaining.
• Anyone who still didn’t understand would ask for help [NEXT] in the Facebook Group.
• In the end, out of the 5 sections who wrote a common final exam, my partners section scored the highest average mark.
So what would Clark & Kozma say about our fearless group of nursing students?

I think that they would both say that the Social Media technologies that the nursing students used enabled a new pedagogy.

We don’t know exactly why the class did so well, but I suspect that Facebook enabled them collaborate by sharing videos & engage in peer to peer tutoring. The probably spent more time working on the class than otherwise because they felt that they would fail on the final exam if they didn’t.
New EdTech + New Pedagogy = Significant Difference

A- Class Average

They were able to crowd source educational videos and peer tutor in order to make up for what they were not getting from their teacher. That lead to an A- class average.
Are MOOC's, 1 to 1 Laptop, Flipped Classrooms & iPads Worth the Investment?

• Are MOOC’s, 1 to 1 Laptop, Flipped Classrooms & iPads Worth the Investment? ... 
• Maybe... Depends...
Like many substantial questions, the answer is not a simple Yes or No.
That said, it’s important to remember as we discussed earlier, there are reasons to implement new Educational Technology other than to improve student performance…
However, if you implement New Educational Technology and use your Existing Pedagogy, and expect student performance to improve, you’re probably going to be disappointed.
• On the other hand, if you use a new Educational Technology to take advantage of a New Pedagogy that it enables, then it Might be worth the investment.
• Do some **Research**… Read up on EdTech studies in Language and Learning! -
• **Experiment**! See if new technology / pedagogy pairings work for you and your students…
• And then **Share** the results with the rest of us!
Comments or Questions?

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