

An **instructional challenge** is a problem or obstacle that hinders students as they attempt to achieve a learning outcome. Identifying instructional challenges that affect a course is the first step toward finding solutions for them.

<p>If the instructional challenge is <b>not applicable to you</b>, please circle <b>NA</b>. For example, if the challenge pertains to online courses, and you don't teach an online course, circle NA.</p> <p>If the instructional challenge does affect one of your courses, then <b>circle a number</b> whatever number corresponds to its severity.</p>	<p>0 = <b>not</b> a problem          1 = a <b>slight</b> problem          2 = a <b>moderate</b> problem          3 = a <b>serious</b> problem          4 = a <b>severe</b> problem</p>
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	Instructional challenge	Severity of the challenge					
<b>Motivation</b>	1. My students come to class <b>unprepared</b> (for example, without having finished assigned readings).	0	1	2	3	4	NA
	2. My students seem <b>uninterested</b> in the course content.	0	1	2	3	4	NA
	3. My students <b>don't ask questions</b> during class.	0	1	2	3	4	NA
	4. My students don't participate in <b>class discussions</b>	0	1	2	3	4	NA
	5. My students don't participate in <b>online discussions</b> .	0	1	2	3	4	NA
	6. My students are <b>reluctant to engage in group work</b> when I ask them to do so.	0	1	2	3	4	NA
	7. My students <b>drop out of the course</b> before completing it.	0	1	2	3	4	NA
	8. My students <b>lack confidence</b> in their ability to master the course content.	0	1	2	3	4	NA

<b>Attitudes</b>	9. My students just want to know " <b>the right answer.</b> "	0	1	2	3	4	NA
	10. My students submit <b>plagiarized work or cheat</b> during tests.	0	1	2	3	4	NA
	11. My students think the course content is <b>not relevant</b> to their program, career, or life.	0	1	2	3	4	NA

Learning skills and preparedness	12. My students have <b>pre-existing misconceptions</b> about the course content that interfere with their learning.	0	1	2	3	4	NA
	13. My students have difficulty breaking down their assignments into <b>manageable chunks</b> .	0	1	2	3	4	NA
	14. My students seem to <b>forget one unit</b> of material shortly after we move on to a new one.	0	1	2	3	4	NA
	15. My students underestimate <b>how much time</b> they need to devote to assignments.	0	1	2	3	4	NA
	16. My students lack <b>background knowledge</b> for the course.	0	1	2	3	4	NA

Assessment	17. I find it difficult to assess a student's contribution to <b>in-class discussion</b> .	0	1	2	3	4	NA
	18. I find it difficult to assign grades to individual students who have worked on a <b>group project</b> .	0	1	2	3	4	NA
	19. I have <b>too many students</b> to provide personalized feedback to all of them.	0	1	2	3	4	NA
	20. My students <b>don't read the feedback</b> that I (or my teaching assistants) put on their assignments.	0	1	2	3	4	NA
	21. After I finish giving a lecture, I <b>can't tell</b> whether my students have really understood the material.	0	1	2	3	4	NA

Class size	22. I have too many students to make <b>in-class discussions</b> feasible.	0	1	2	3	4	NA
	23. I have too many students to make <b>in-class group work</b> feasible.	0	1	2	3	4	NA
	24. I have too many students to make <b>online discussions</b> feasible.	0	1	2	3	4	NA

Logistics	25. I spend <b>too much time</b> responding to phone calls or emails from my students.	0	1	2	3	4	NA
	26. The <b>size and setup of the classroom</b> are not good for group work.	0	1	2	3	4	NA

Instructional Challenge	Ave. Rati	Scale
My students submit plagiarized work or cheat during tests.	2.7	0 = <b>not</b> a problem
My students come to class unprepared (for example, without having finished assigned readings).	2.4	1 = a <b>slight</b> problem
My students underestimate how much time they need to devote to assignments.	2.4	2 = a <b>moderate</b> problem
My students seem uninterested in the course content.	2.2	3 = a serious problem
My students don't ask questions during class.	2.2	4 = a severe problem
My students seem to forget one unit of material shortly after we move on to a new one.	2.1	
My students don't read the feedback that I (or my teaching assistants) put on their assignments.	2.1	
My students just want to know "the right answer."	2.1	
My students don't participate in class discussions	2.0	
My students lack background knowledge for the course.	2.0	
I find it difficult to assign grades to individual students who have worked on a group project.	1.8	
After I finish giving a lecture, I can't tell whether my students have really understood the material.	1.8	
My students have difficulty breaking down their assignments into manageable chunks.	1.8	
My students lack confidence in their ability to master the course content.	1.7	
I have too many students to provide personalized feedback to all of them.	1.7	
I find it difficult to assess a student's contribution to in-class discussion.	1.6	
My students think the course content is not relevant to their program, career, or life.	1.5	
My students don't participate in online discussions.	1.4	
My students are reluctant to engage in group work when I ask them to do so.	1.4	
I have too many students to make in-class discussions feasible.	1.3	
I have too many students to make in-class group work feasible.	1.3	
The size and setup of the classroom are not good for group work.	1.2	
My students have pre-existing misconceptions about the course content that interfere with their learning.	1.2	
My students drop out of the course before completing it.	0.8	

I spend too much time responding to phone calls or emails from my students.	0.8	
I have too many students to make online discussions feasible.	0.7	

# Question Facilitation Tools

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# Learning Outcomes for this Workshop

After this workshop you will be able....

- ▶ to explain the basic functionality of four question facilitation tools
- ▶ to identify which tool is most relevant to your teaching practice
- ▶ to describe how you might use a given tool to enhance your students' learning experience
- ▶ to locate additional resources for those tools that you want to learn more about.

# What this workshop won't do

- ▶ Get into the technical specifics of how to use these tools (for example, how to set up a clicker receiver, how to create a module in Top Hat, and so on)
- ▶ CTE has other resources to learn those details

# What you'll be doing in this workshop



- ▶ Listening (to learn about the functionality of the tools)
- ▶ Thinking (about how those tools can be used effectively)
- ▶ Sharing (your ideas)



# A Warm-Up Exercise



Based on its appearance, how could you use this tool?

# Question Cookie

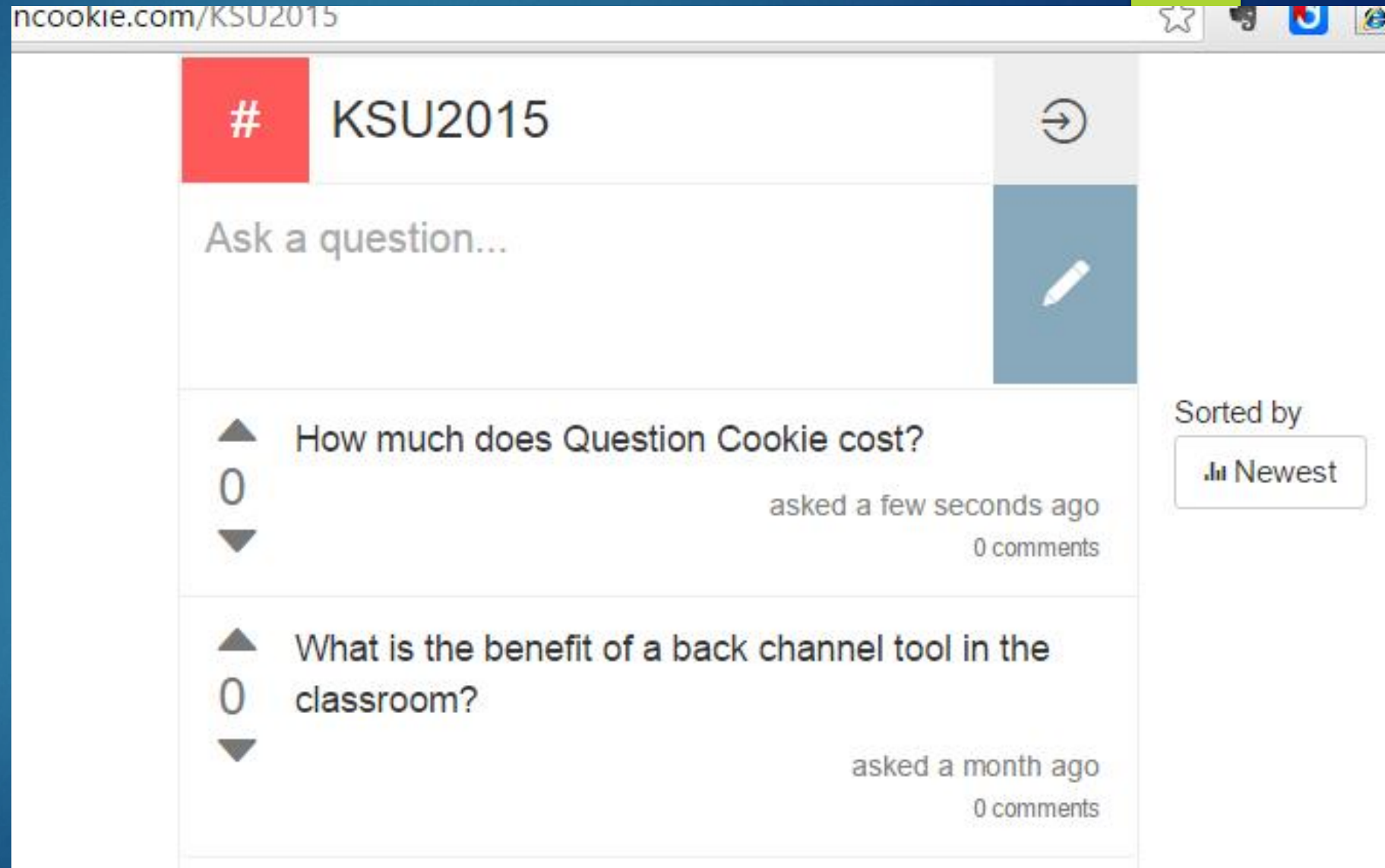
What does it do?

- It's an online space where students can post questions
- Other students can see the questions and vote them up or down
- Everyone can see how many students like a question and how many students don't like it
- Questions can be sorted from newest to oldest, or by the number of votes.
- The instructor and/or students can respond, in Question Cookie, to questions that are posted

# Question Cookie

What does it do?

It's an online space where students can post questions



The screenshot shows a web browser window with the address bar displaying "ncookie.com/KSU2015". The page features a header with a red square containing a white hash symbol (#) and the text "KSU2015". Below the header is a text input field with the placeholder "Ask a question..." and a blue button with a white pencil icon. The main content area displays a list of questions. The first question is "How much does Question Cookie cost?" with a vote count of 0 and the text "asked a few seconds ago" and "0 comments". The second question is "What is the benefit of a back channel tool in the classroom?" with a vote count of 0 and the text "asked a month ago" and "0 comments". On the right side of the page, there is a "Sorted by" dropdown menu with "Newest" selected.

ncookie.com/KSU2015

# KSU2015

Ask a question...

▲ 0 ▼ How much does Question Cookie cost? asked a few seconds ago 0 comments

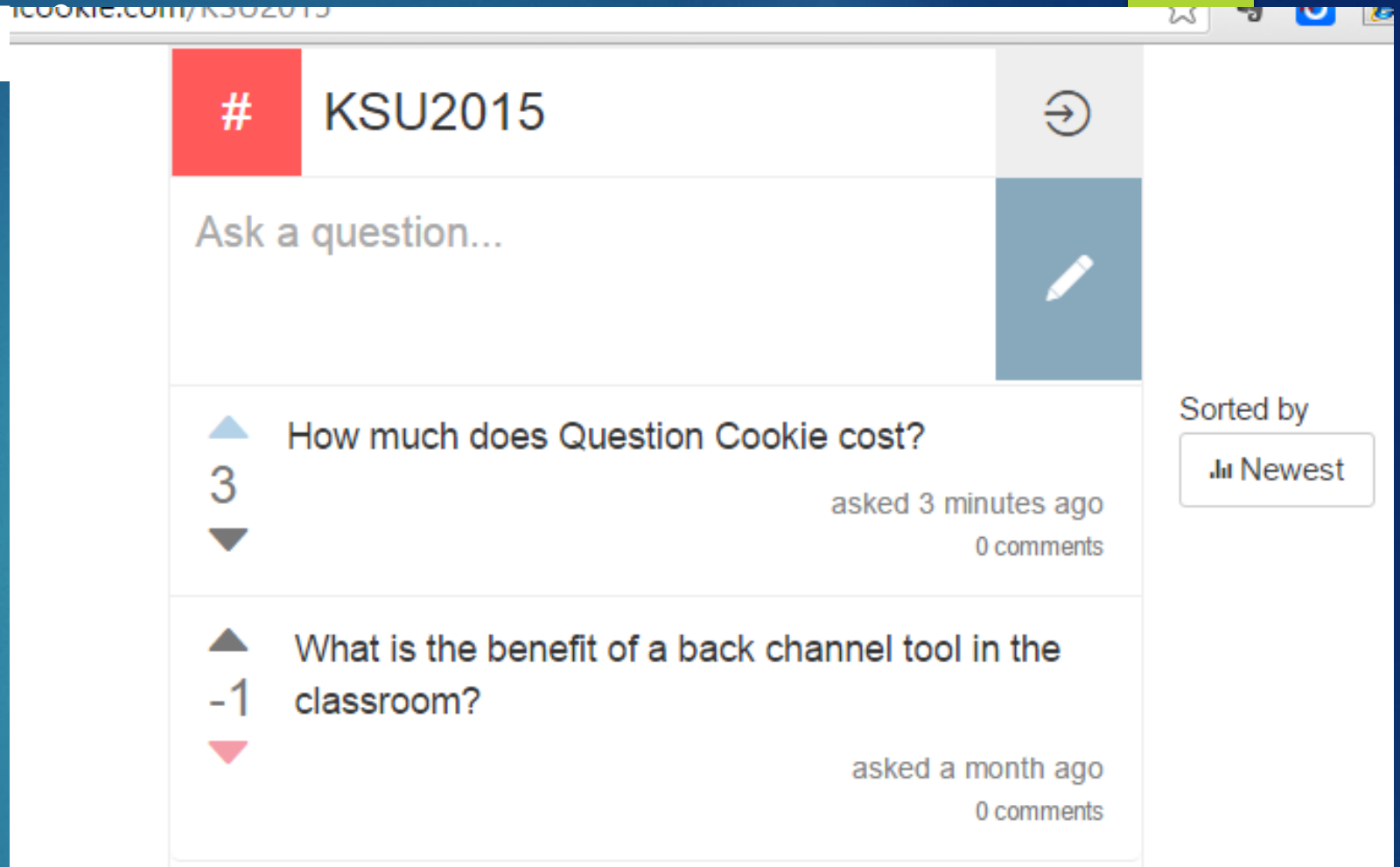
▲ 0 ▼ What is the benefit of a back channel tool in the classroom? asked a month ago 0 comments

Sorted by  
Newest

# Question Cookie

What does it do?

Other students can see the questions that are posted and vote them up or down.



The screenshot shows a web browser window displaying the Question Cookie interface for the channel #KSU2015. The interface includes a header with the channel name and a search icon, a text input field for asking questions, and a list of questions with up/down arrows and vote counts. A 'Sorted by' dropdown menu is visible on the right side, currently set to 'Newest'.

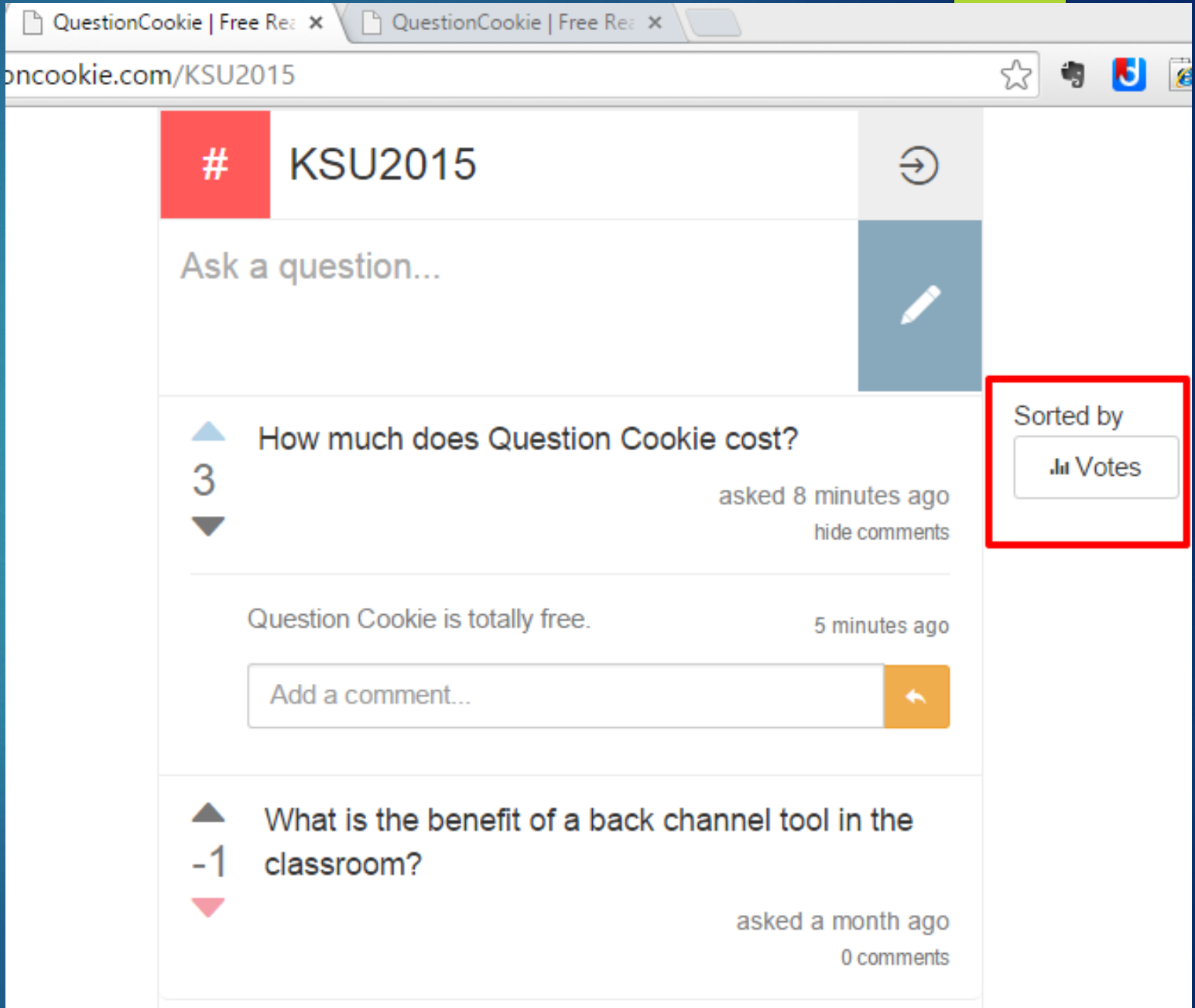
Channel	Question	Vote	Time	Comments
#KSU2015	Ask a question...			
	How much does Question Cookie cost?	3	asked 3 minutes ago	0 comments
	What is the benefit of a back channel tool in the classroom?	-1	asked a month ago	0 comments

Everyone is able to see how many students like a question and how many students don't like it

# Question Cookie

What does it do?

Questions can be sorted from newest to oldest, or by the number of votes they have received.



The screenshot shows a web browser window with two tabs open, both titled "QuestionCookie | Free Res...". The address bar shows the URL "oncookie.com/KSU2015". The page content includes a header with a red square containing a white hash symbol and the text "# KSU2015". Below the header is a text input field labeled "Ask a question..." with a blue pencil icon to its right. A list of questions follows:

- Question 1: "How much does Question Cookie cost?" with a blue up arrow, the number "3", and a blue down arrow. It was asked "8 minutes ago" and has a "hide comments" link.
- Question 2: "Question Cookie is totally free." with a timestamp of "5 minutes ago".
- Question 3: "What is the benefit of a back channel tool in the classroom?" with a red down arrow, the number "-1", and a red up arrow. It was asked "a month ago" and has "0 comments".

On the right side of the page, there is a "Sorted by" dropdown menu with a bar chart icon and the text "Votes". This menu is highlighted with a red rectangular border.

# Question Cook

What does it do?

The instructor and/or students can respond, in Question Cookie, to questions that are posted

The screenshot shows a web browser window with the address bar displaying "pokie.com/KSU2015". The main content area features a red header with a white hash symbol and the text "# KSU2015". Below this is a text input field labeled "Ask a question..." with a blue pencil icon to its right. A list of questions follows. The first question is "How much does Question Cookie cost?" with a blue up arrow, the number "3", and a blue down arrow. It was "asked 4 minutes ago" and has a "hide comments" link. A red box highlights a comment: "Question Cookie is totally free." posted "a few seconds ago". Below the comment is a text input field labeled "Add a comment..." and a yellow submit button with a white arrow. The second question is "What is the benefit of a back channel tool in the classroom?" with a grey up arrow, the number "-1", and a red down arrow. It was "asked a month ago" and has "0 comments". On the right side, there is a "Sorted by" dropdown menu currently set to "Newest".

# Question Cookie

Brainstorming: How could Question Cookie enhance your students' learning experience?

- ▶ Encourages “shy” students to ask questions in class
- ▶ You can see which questions are of most interest to the greatest number of students
- ▶ You can “check” the questions before responding to them
- ▶ You can copy questions that you don't answer in class into a discussion group in your Learning Management System, and respond to them there.

# Question Cookie

Over the next five days, in this training program, we will be using Question Cookie

- ▶ KSU instructors are welcome to ask questions verbally in class, but also try asking some of your questions in Question Cookie.
- ▶ Near the end of each workshop, or at the end of each day, I will review the questions in Question Cookie, and respond to some of them.
- ▶ The URL you need is this:  
[www.questioncookie.com/KSU2015](http://www.questioncookie.com/KSU2015) (KSU in capital letters)



# Clickers

What does it do?

The instructor projects a question on the classroom screen

Students use their clickers to respond to the question

The clicker system collects the responses and displays them as a bar chart



# Clickers

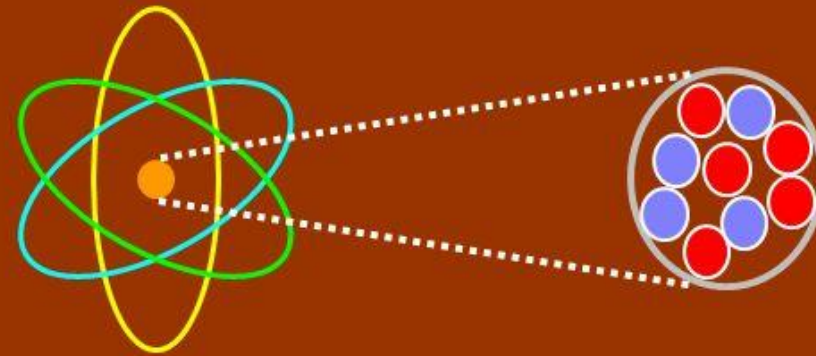
What does it do?

The instructor projects a question on the classroom screen

## ConcepTest 30.1 The Nucleus

There are 82 protons in a lead nucleus.  
Why doesn't the lead nucleus burst apart?

- 1) Coulomb repulsive force doesn't act inside the nucleus
- 2) gravity overpowers the Coulomb repulsive force inside the nucleus
- 3) the negatively charged neutrons balance the positively charged protons
- 4) protons lose their positive charge inside the nucleus
- 5) none of the above



# Clickers

What does it do?

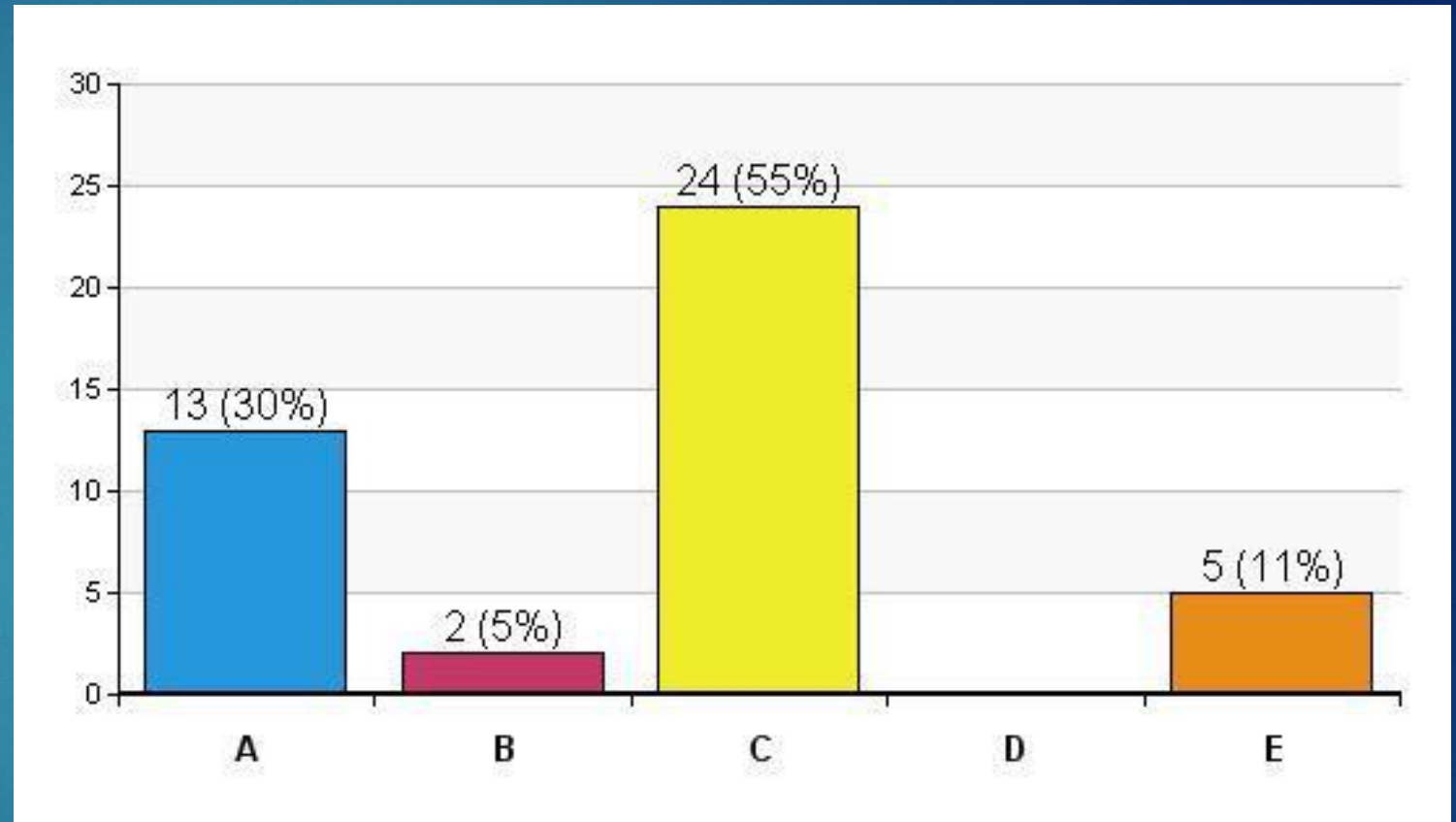
Students use their clickers to respond to the question



# Clickers

What does it do?

The clicker base unit collects the responses and displays them as a bar chart



# Clickers

Brainstorming: How can Clickers enhance your students' learning experience?

- ▶ Clickers can make your class time more engaging: sustains student interest
- ▶ Use clickers to assess whether students are “getting it”
- ▶ Use them to ensure that students come to class fully prepared.
- ▶ Leverages Peer Instruction
  - ▶ The best way to learn something is to teach someone else
  - ▶ Overcomes “expertise bias”

# Clickers

Example of Peer Instruction using clickers

- ▶ **Grab an iClicker and get ready to use it!**

# Example of Peer Instruction using clickers

You have 1 cup of coffee and 1 cup of milk. You take 1 tablespoon of milk, drop it into the coffee, and mix it completely. Then you take 1 tablespoon of that coffee/milk mixture, drop it back into the milk, and mix it completely. **Is there now more milk in the coffee, or more coffee in the milk?**

- A. There is more milk in the coffee
- B. There is more coffee in the milk
- C. The amount of milk in the coffee is equal to the amount of coffee in the milk
- D. I don't know how to figure it out

**Step 1: Come up with an answer by yourself then select it using your clicker**

# Clickers

Step2: the instructor reveals the bar chart





# Clickers

Step 3: discuss the same question in a small group. Try to convince the others in your group that your answer is correct.

You have 1 cup of coffee and 1 cup of milk. You take 1 tablespoon of milk, put it into the coffee, and mix it completely. Then you take 1 tablespoon of that coffee/milk mixture, put it back into the milk, and mix it completely. **Is there now more milk in the coffee, or more coffee in the milk?**

- A. There is more milk in the coffee
- B. There is more coffee in the milk
- C. The amount of milk in the coffee is equal to the amount of coffee in the milk
- D. I don't know how to figure it out

# Clickers

Step 4: The instructor reveals the new bar chart



# Clickers

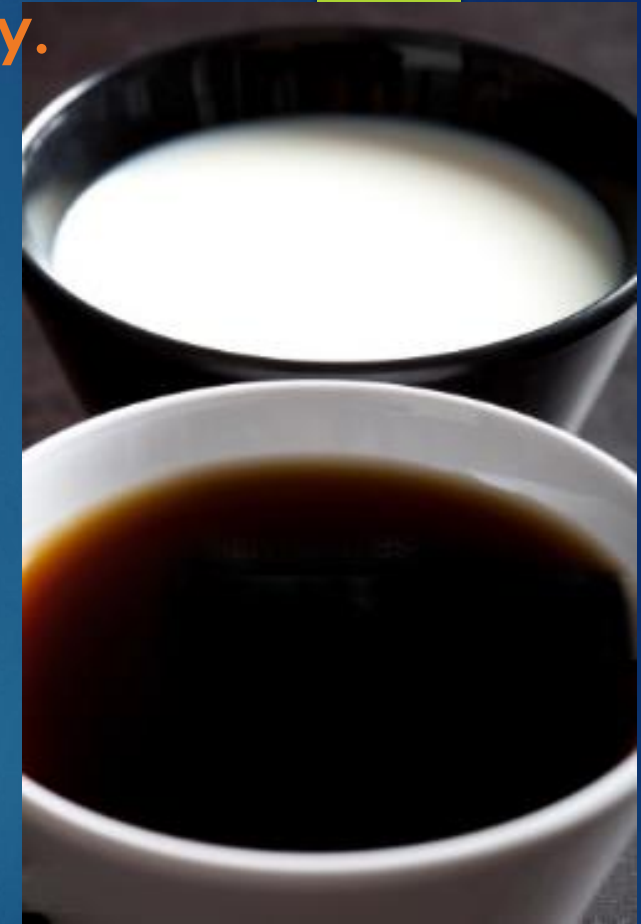
Step 5: the instructor reveals the answer, and explains why.

- c. The amount of milk in the coffee is equal to the amount of coffee in the milk

You can establish this algebraically:

	A	B
Coffee	$n - nk/(n+k)$	$nk/(n+k)$
Cream	$k - k^2/(n+k)$	$n - k + k^2/(n+k)$

Or you can establish it via a much more elegant method that will promote deep thinking....



# Clickers

Brainstorming: What made the peer instruction effective?

- ▶ The act of choosing an answer, after thinking about the question individually, established an emotional connection to the answer: we want to know if we are correct.
- ▶ The arguments and perspectives of others (even if they are incorrect) help us to see new ways of thinking about the problem.
- ▶ It's fun.

# Top Hat

What does it do?

- Top Hat is an online platform with clicker-like functionality.
- The instructor creates the questions in the online platform; many kinds of questions are supported.
- The instructor displays the questions on the classroom screen; or, students can view the questions on their laptops or smart phones.
- Students use their laptops or smart phones to respond to the questions.
- Top Hat collects the students' responses and displays them as a bar chart (or in other graphical forms)

# Top Hat

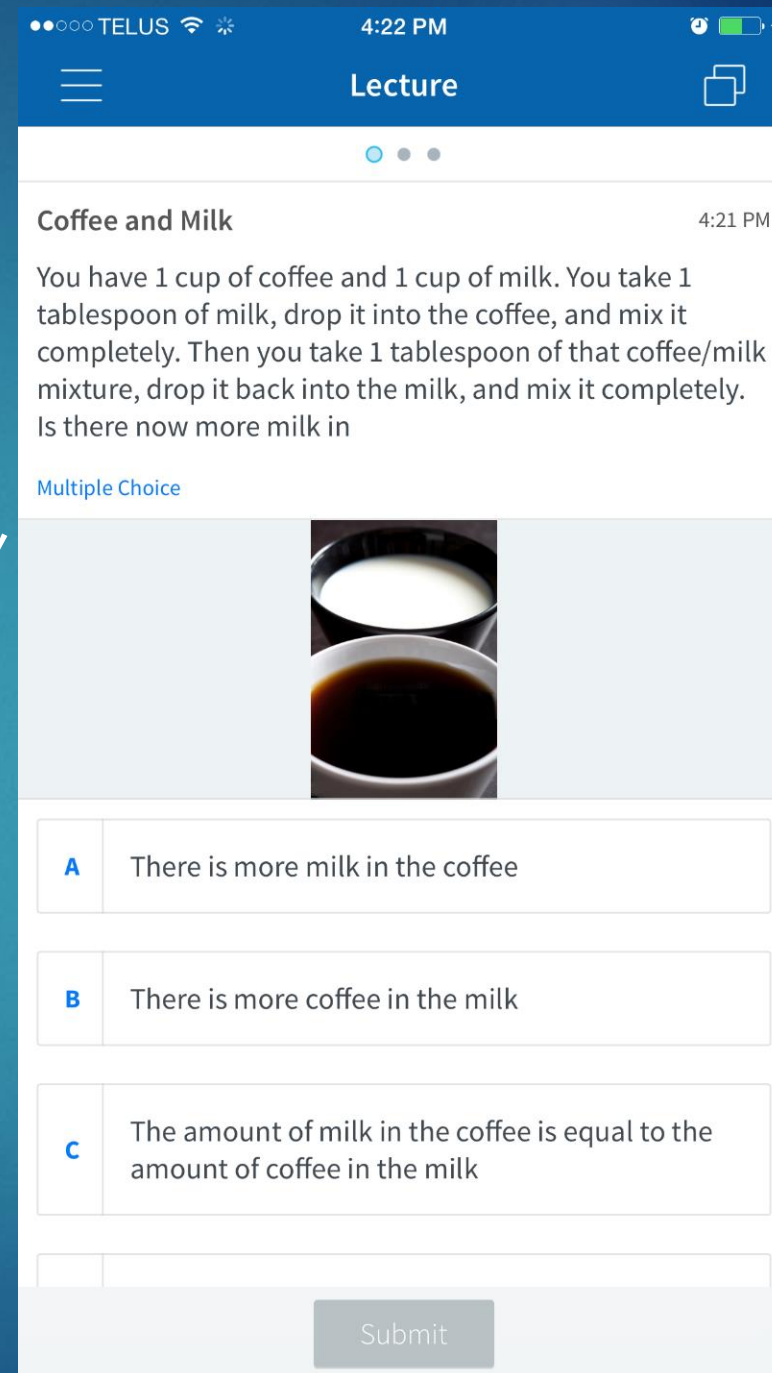
The instructor creates the questions in the online platform; many kinds of questions are supported.

The screenshot displays the Top Hat instructor interface. At the top, there are navigation tabs for 'Content', 'Gradebook', and 'Students'. The main header shows the course name 'Demonstration Course: Etymology'. A left sidebar contains various course management options: 'COURSE:', 'Course available' (with a green checkmark), 'Settings', 'Course Packs', 'Quick Reference Guide', 'Download Presentation Tool', 'ATTENDANCE:', and a 'Take Attendance' button. Below these is a 'QUESTIONS:' section with a 'Create' button highlighted by a yellow box. The main content area shows two question cards. The first question is 'WHICH OF THE FOLLOWING ASPECTS OF A LANGUAGE CAN CHANGE OVER TIME?'. It has a 'Details' tab selected and a 'Reports' tab. Below the question, there is a submission statistics bar showing '# Submissions 0' and '0% % Online'. The question text asks the user to 'Please select the correct choice, then click 'Submit':'. The options are: 'a Spelling', 'b Pronunciation', 'c Vocabulary', 'd Word meanings', and 'e All of the above'. Below the options, a message states 'The instructor has not enabled student submissions for this question'. At the bottom of the question card are buttons for 'Magnify', 'Enable Submissions', 'Show Answer', and 'Close'. The second question card is partially visible below, with the text 'WHAT DO YOU CALL THE STUDY OF WORD ORIGINS?'. It also has a 'Details' tab selected and a submission statistics bar showing '# Submissions 0' and '0% % Online'.

# Top Hat

The instructor displays the questions on the classroom screen; or, students can view the questions on their laptops, or smart phones.

Students use their laptops or smart phones to respond to the questions.




TELUS 4:22 PM

Lecture

Coffee and Milk 4:21 PM

You have 1 cup of coffee and 1 cup of milk. You take 1 tablespoon of milk, drop it into the coffee, and mix it completely. Then you take 1 tablespoon of that coffee/milk mixture, drop it back into the milk, and mix it completely. Is there now more milk in

Multiple Choice



A There is more milk in the coffee

B There is more coffee in the milk

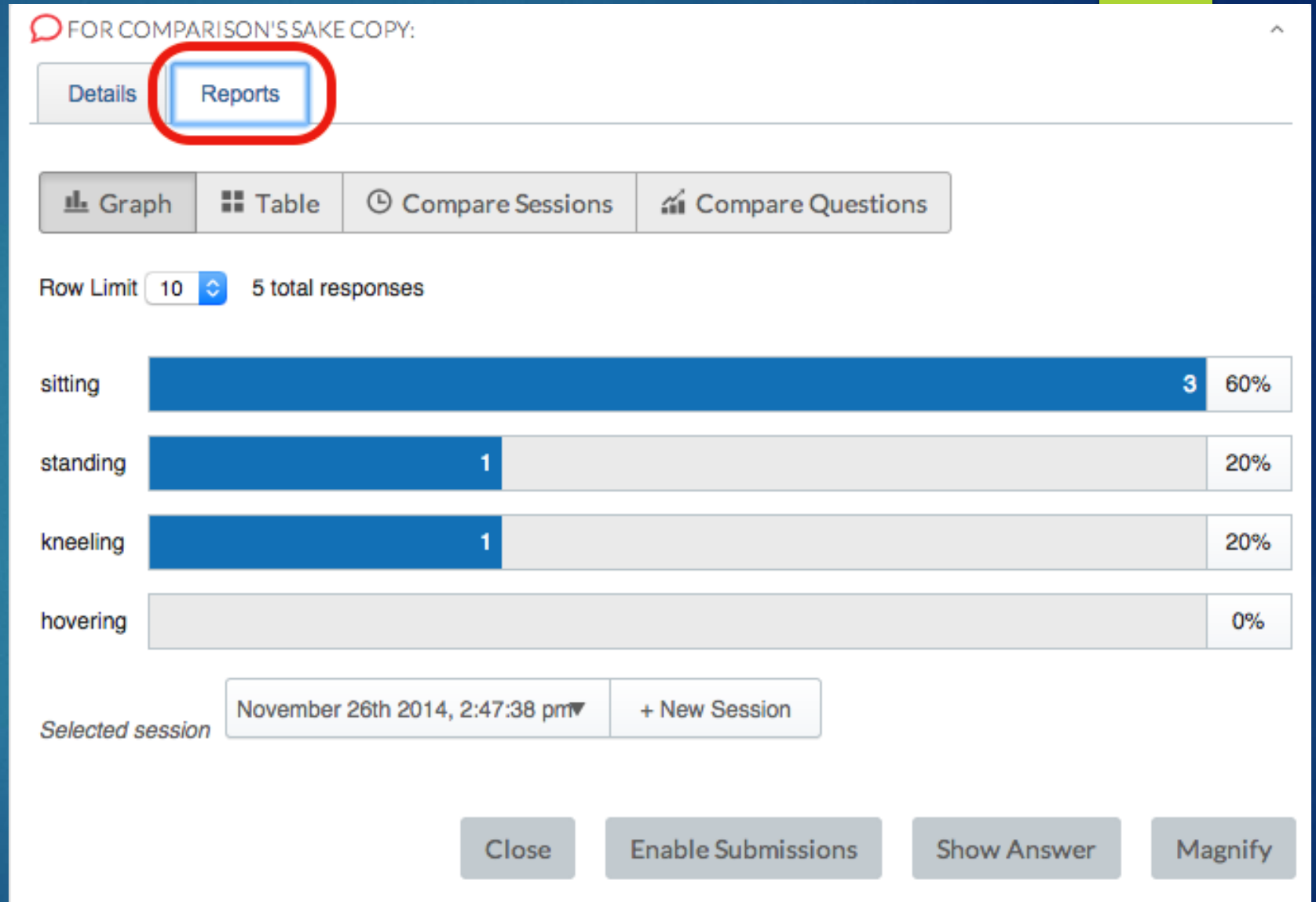
C The amount of milk in the coffee is equal to the amount of coffee in the milk

Submit

This is how a question looks in Top Hat on an iPhone

# Top Hat

Top Hat collects the students' responses and displays them as a bar chart (or in other graphical forms)





# Top Hat

## Additional functionality

- Instructors can create discussion forums in Top Hat where students can ask questions, vote on each others questions, and respond to each other's questions.
- In addition to using Top Hat to ask questions during class, an instructor can also set questions in Top Hat as “homework” which students complete outside of class.
- Create tournaments in which students compete with one another

# Brainstorming: What are the relative merits of Top Hat versus Clickers?

## Clickers

- ▶ Clickers have one purpose: to collect responses (they don't have other "distractions" built into them)
- ▶ Clickers are cheap (not all students can afford a mobile device, which is needed to use Top Hat)

## Top Hat

- ▶ Students never forget their smartphones but they might forget to bring their clickers
- ▶ Top Hat allows you to ask a wider variety of questions
- ▶ Top Hat seems more modern than clickers
- ▶ With Top Hat, each student can interact with simulations and animations
- ▶ Top Hat facilitates students asking (and voting on) their own questions
- ▶ Top Hat lets an instructor set questions as homework, and has a tournament mode.

# Piazza

What does it do?

- Piazza is an online space that blends the functionality of an online discussion forum with the functionality of a wiki.
- Students or the instructor post questions in Piazza. The questions appear in chronological sequence (like posts in a discussion forum).
- Students collaboratively solve the question in a single online space (like a wiki).
- The instructor can “endorse” the students’ solution when appropriate.
- The instructor can respond to the question.
- Follow-up questions or discussion can be posted.

# Piazza

What does it do?

Students or the instructor post questions to Piazza. The questions appear in a chronological sequence (like posts in a discussion forum).

The screenshot shows the Piazza interface for a course titled "STAT 230". At the top, there are navigation tabs for "Q & A" and "Re". Below this, a folder icon is followed by a list of homework assignments: "hw3 1", "hw4 2", "hw5 5", "hw7 4", "hw8 8", "hw9 6", "exam 59", and "oth". A search bar contains the text "Search or add a post...". A "New Post" button is located to the left of the search bar. The main content area displays a list of questions, each with a title, a brief description, a date, and a status icon. The questions are:

- 9.1 a)** (12/13/14) Status: S (green square)
- 10.5** (12/13/14) Status: 3 (grey square) S (green square)
- 10.3** (12/13/14) Status: 4 (grey square) S (green square)
- Pg 178.** (12/13/14) Status: 2 (grey square) i (orange square)
- 9.25** (12/12/14) Status: 5 (grey square) Menu icon (grey square)

On the right side, a partial view of a question titled "9.1 a)" is visible, along with a "chapter\_9" button and an "edit" button.

# Piazza

What does it do?

Students collaboratively solve the question in a single online space (like a wiki).

The instructor can “endorse” the students’ solution when appropriate. The instructor can respond to the question.

The screenshot shows a Piazza interface with a question and two answers. The question is titled "Q 3.7" and asks for help. The first answer, marked with a green 'S' icon, provides a mathematical solution for the probability of all  $r$  people having different birthdays. It includes the formula for the probability and an endorsement from instructor Cynthia Struthers. The second answer, marked with an orange 'i' icon, provides a different perspective on the problem, stating that the event is equivalent to all  $r$  people having different birthdays and gives the probability as  $(365^r)/(365^r)$ . Red boxes highlight the 'S' and 'i' icons, the student's answer text, the instructor's endorsement, and the instructor's answer text.

? question ☆

Q 3.7  
Could anyone pls help with this?

chapter\_3

edit · good question | 0 Updated 5 months ago

**S** the students' answer, *where students collectively construct a single answer*

Its the exact same question as 3.2 a) ii).  
Denominator:  $365^r$  number of ways to choose birthdays for  $r$  people with replacement  
Numerator:  $365^r$  number of ways to choose birthdays for  $r$  people without replacement  
without replacement means you cannot choose the same date twice

~ An instructor (Cyntha Struthers) endorsed this answer ~

edit · thanks! | 3 Updated 5 months ago

**i** the instructors' answer, *where instructors collectively construct a single answer*

No two people in the room have the same birthday is equivalent to the event that all  $r$  people have different birthdays.  
probability is  $(365^r)/(365^r)$ .

thanks! | 1 Updated 5 months ago by Cyntha

# Piazza

What does it do?

Follow-up questions and discussion can be posted.

**i** the instructors' answer, *where instructors collectively construct a single answer*

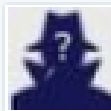
No two people in the room have the same birthday is equivalent to the event that all  $r$  people have different birthdays. The probability is  $(365 \times 364 \times \dots \times (365 - r + 1)) / (365^r)$ .

thanks! | 1

Updated 5 months ago

**followup discussions** *for lingering questions and comments*

Resolved  Unresolved



**Anonymous** 5 months ago As a followup, wouldn't 365 choose  $r$  make more sense

If  $r$  was 2 for example, let's call the two people  $p$  and  $q$ . if  $p$  is Jan 1 and  $q$  is Jan 2, is  $p$  placed only once? Wouldn't taking the permutation count this twice, once for  $p$  being placed first and once for  $q$  being placed first?

The question seems to only care about the final state.

Reply to this followup discussion

# Piazza

Brainstorming: How could Piazza enhance your students' learning experience?

- ▶ It empowers students: they collaborate on developing their own answers to their own questions.
- ▶ It leverages peer instruction:
  - ▶ The best way to learn something is to teach someone else
  - ▶ Overcomes “expertise bias”
- ▶ Students get just-in-time responses to their questions, usually within a few minutes.

# A Quick Quiz about Question Cookie, Clickers, Top Hat, and Piazza

- ▶ Which tool(s) can you use to facilitate peer instruction?
  - ▶ Clickers, Top Hat, Piazza
- ▶ Which tool lets students ask questions during a lecture, and vote on those questions?
  - ▶ Question Cookie
- ▶ Which tool helps students ask questions and answer each other's questions?
  - ▶ Piazza
- ▶ Which tool is an app that students use on a smart phone or laptop?
  - ▶ Top Hat



# Questions and Discussion



# Course Design for Blended Learning

Training Program in Instructional Technologies

July 27, 2015

## Ten Questions to consider when redesigning a course for blended teaching and learning

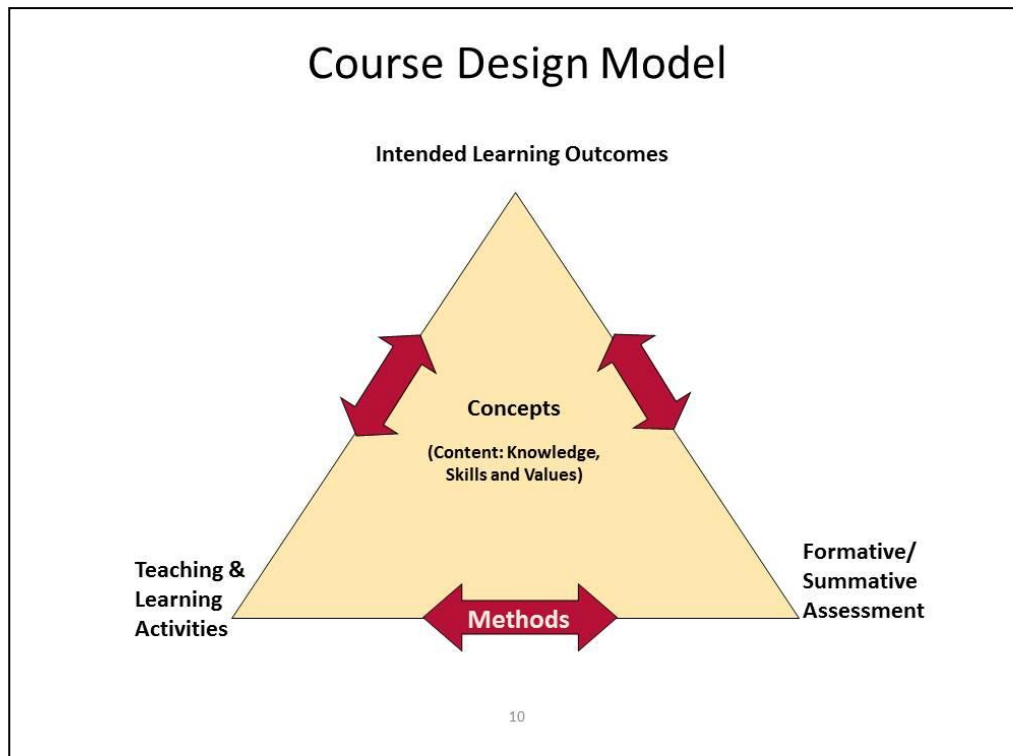
A blended course often reduces face-to-face "seat time" so that students can pursue additional teaching and learning activities online. To be successful, a blended course requires careful pedagogical redesign. These ten questions offer you a way to start thinking about some of these design issues.

1. What do you want students to know when they have finished taking your blended course? What are the intended learning outcomes?
2. As you think about these outcomes, which would be better achieved online and which would be better achieved face-to-face (f2f)?
3. Blended teaching is not just a matter of transferring a portion of your traditional course to the Web. Instead it involves developing challenging and engaging online teaching and learning components and activities that complement your f2f activities. What types of teaching and learning activities do you think you will be using for the online portion of your course? For the f2f part of the course?
4. Online asynchronous discussion can be an important part of blended courses. What new learning opportunities will arise as a result of using asynchronous discussion? What challenges do you anticipate in using online discussions? How would you address these?
5. How will the f2f and time out of class components be integrated into a single course? In other words, how will the work done in each component feed back into and support the other?
6. When working online, students frequently have problems scheduling their work, managing their time, and understanding the implications of the hybrid course module as related to learning. What do you plan to do to help your students address these issues?
7. How will you divide the percent of time between the f2f portion and the online portion of your course? How will you schedule the percent of time between the f2f and online portion of your course, e.g. one two-hour f2f class followed by one two-hour online session each week?
8. How will you divide the course-grading scheme between f2f and online activities? What means will you use to assess student work in each of these two components?
9. Students sometimes have difficulty acclimating to the course website and to other instructional technologies you may be using for f2f and online activities. What specific technologies will you use for the online and f2f portions of your course? What proactive steps can you take to assist students to become familiar with your website and those instructional technologies? If students need help with technology later in the course, how will you provide support?
10. There is a tendency for faculty to require students to do more work in a hybrid course than they normally would complete in a purely traditional course. What are you going to do to ensure that you have not created a course and one-half? How will you evaluate the student workload as compared to a traditional class?

Adapted from [http://www4.uwm.edu/ltc/hybrid/faculty\\_resources/questions.cfm](http://www4.uwm.edu/ltc/hybrid/faculty_resources/questions.cfm)



**5. Alignment?** Do the course activities and assessments line up with the intended learning outcomes of the course? Look back at you course learning outcomes and crosscheck to make sure that the learning activities and assessments are helping your students achieve the course learning outcomes. If your outcomes/objectives are numbered, use the numbers to identify which activity is linked to which outcome.



Adapted from: Ellis, D. & Light, T. (2006) *Teaching Excellence Academy*. University of Waterloo.

**6. Final Thoughts.** Does your plan address any of the challenges that you might have identified with your course before this workshop? For example, my students come to class unprepared, my students can't manage the pace of their learning, my students don't seem engaged by the material, my students seem reluctant to participate in class discussions, my students lack prerequisite knowledge and skills for the course, etc. Are you proposing a reasonable workload for your students?



**If you are designing a new course for blended teaching and learning, be sure to define your intended learning outcomes and consider your context prior to developing your activities.**

Start by defining the context of your course (situational factors):

1. Course name and number:
2. Where does the course fit in the program's curriculum? (e.g., required or elective course, service course for another program, professional accreditation requirements)
3. Who are your potential students? (e.g., background knowledge, experience, interests, expectations about course and how it is taught, etc.)
4. How many students will you have? Do you consider this to be a large class?
5. What kind of learning space might you have? (e.g., classroom, lab, fixed or movable furniture, available media equipment)
6. What support and resources are available to you? (e.g., TA support, teaching with other instructors)

Next, define your intended learning outcomes (ILOs):

When developing your ILOs, remember to consider the question "What do I want my students to be able to do, know, &/or feel by the end of my course?" Review your outcomes statements to make sure they are specific, attainable and measurable (SAM). The Centre for Teaching Excellence has tips for writing intended learning outcomes at <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/planning-courses/course-design/writing-learning-outcomes>

You are now ready to start using the **Blended Learning – Triple Alignment** chart to start developing your course assessments and teaching and learning activities.

## References

- Anderson, L. W., & Krathwohl, D. R., 2001. *A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives*. New York, NY: Longmans.
- Bloom, B. S. & Krathwohl, D.R., 1956. *Taxonomy of educational objectives: The classification of educational goals, by a committee of college and university examiners*. New York, NY: Longmans.
- Chickering, A. & Gamson, S.C., 1996.; Implementing the Seven Principles: Technology as a Lever, *AAHE Bulletin*, October, pp.3-6.
- Dziuban, C., Hartman, J., & Moskal, P., 2004. Blended learning. *EDUCAUSE Center for Applied Research Research Bulletin*.
- Garrison, D. R., Anderson, T., & Archer, W., 2000. Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.
- Garrison, D. & Vaughan, N., 2008. *Blended learning in higher education: Framework, principles, and guidelines*. San Francisco, CA: John Wiley & Sons.
- Ragan, L., 2010. Prepared for Success: Competencies and Skills Required for Online and Blended Teaching. EDUCAUSE, ELI 2010 Online Fall Focus Session, Sept 16<sup>th</sup>, 2010
- Wiggins, G. & McTighe, G., 2005. *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development.

## Useful Websites:

Centre for Teaching Excellence – Teaching with Technology

[http://cte.uwaterloo.ca/teaching\\_with\\_technology/index.html?tab=1](http://cte.uwaterloo.ca/teaching_with_technology/index.html?tab=1)

University of Wisconsin Hybrid Course Website - <http://www4.uwm.edu/lrc/hybrid/index.cfm>

Centre for Teaching Excellence – Online activities and assessment for the flipped classroom

<https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/lecturing-and-presenting/delivery/online-activities-and-assessment-flipped-classroom>

Centre for Teaching Excellence – In-class activities and assessment for the flipped classroom

<https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/lecturing-and-presenting/delivery/class-activities-and-assessment-flipped-classroom>

Centre for Teaching Excellence – Nine alternatives to lecturing

<https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/alternatives-lecturing/active-learning/varying-your-teaching-activities>

Centre for Teaching Excellence – Developing online learning activities for blended courses

<https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/developing-assignments/blended-learning/developing-online-learning-activities>

# BLENDED LEARNING

## TRIPLE ALIGNMENT

<b>Learning Outcome</b> <small>What should your students be able to do?</small>	<b>Assessment</b> <small>How will you assess whether your students have achieved the Learning Outcome?</small>	<b>Teaching and Learning Activity</b> <small>What activity will help your students achieve the learning outcome?</small>
	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; border-right: 1px dashed black; padding-right: 5px;"> <b>Formative</b> <input type="checkbox"/>  <small>(provides feedback so students can improve their learning)</small> </div> <div style="width: 45%; padding-left: 5px;"> <b>Summative</b> <input type="checkbox"/>  <small>(provides a grade to a student)</small> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 70%; border-right: 1px dashed black; padding-right: 5px;"> <b>Online/Offline</b> <input type="checkbox"/>  <small>(means in the LMS or by means of some other web-based tool or course work outside of class time)</small> </div> <div style="width: 25%; padding-left: 5px;"> <b>Inclass</b> <input type="checkbox"/>  <small>(in the classroom)</small> </div> </div>
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Note that a single Learning Outcome can be supported by one, or more than one, Learning Activities. Likewise a single Learning Activity can support one, or more than one, Learning Outcomes.



# COURSE DESIGN FOR BLENDED LEARNING

## THE BEST OF BOTH WORLDS



July 27, 2015  
Samar Mohamed,  
Monica Vesely  
and Christine Zaza



# BY THE END OF TODAY YOU WILL BE ABLE TO:

- describe different kinds of blended learning
- identify the advantages and challenges of developing and teaching blended courses
- start to identify some common tools available for designing and creating content and activities for blended courses
- align the intended learning outcomes, assessments and teaching and learning activities for a given course
- consider a plan for implementing a blended task and/or a blended course



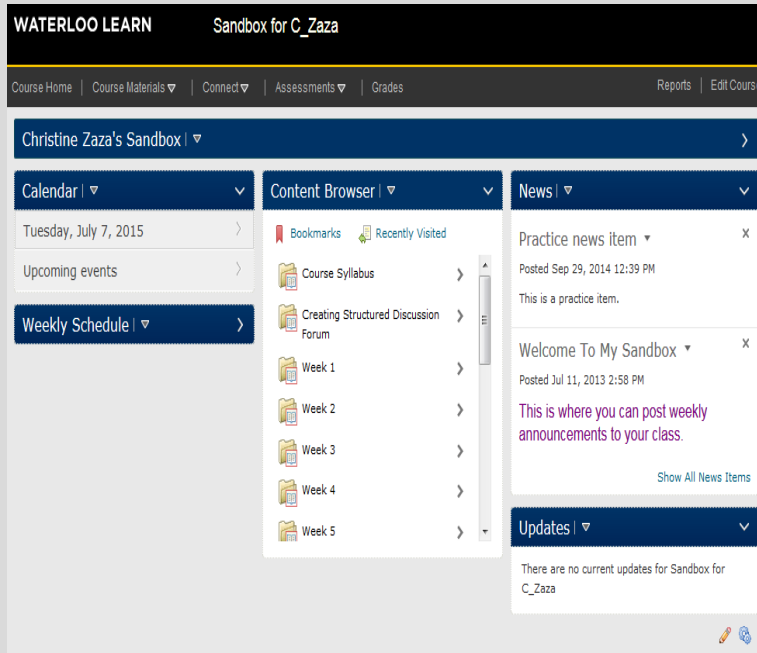
# WHAT IS BLENDED LEARNING?

**Online Learning:** All course materials, interaction and activities take place online and students do not have to be present on campus

**Blended Learning:** Many definitions - Courses that thoughtfully integrate structured online activities into face-to-face (F2F) courses, sometimes there is a reduction of class time



# ONLINE COMPONENTS



Blended learning is a thoughtful, intentional, integration of online and F2F components.

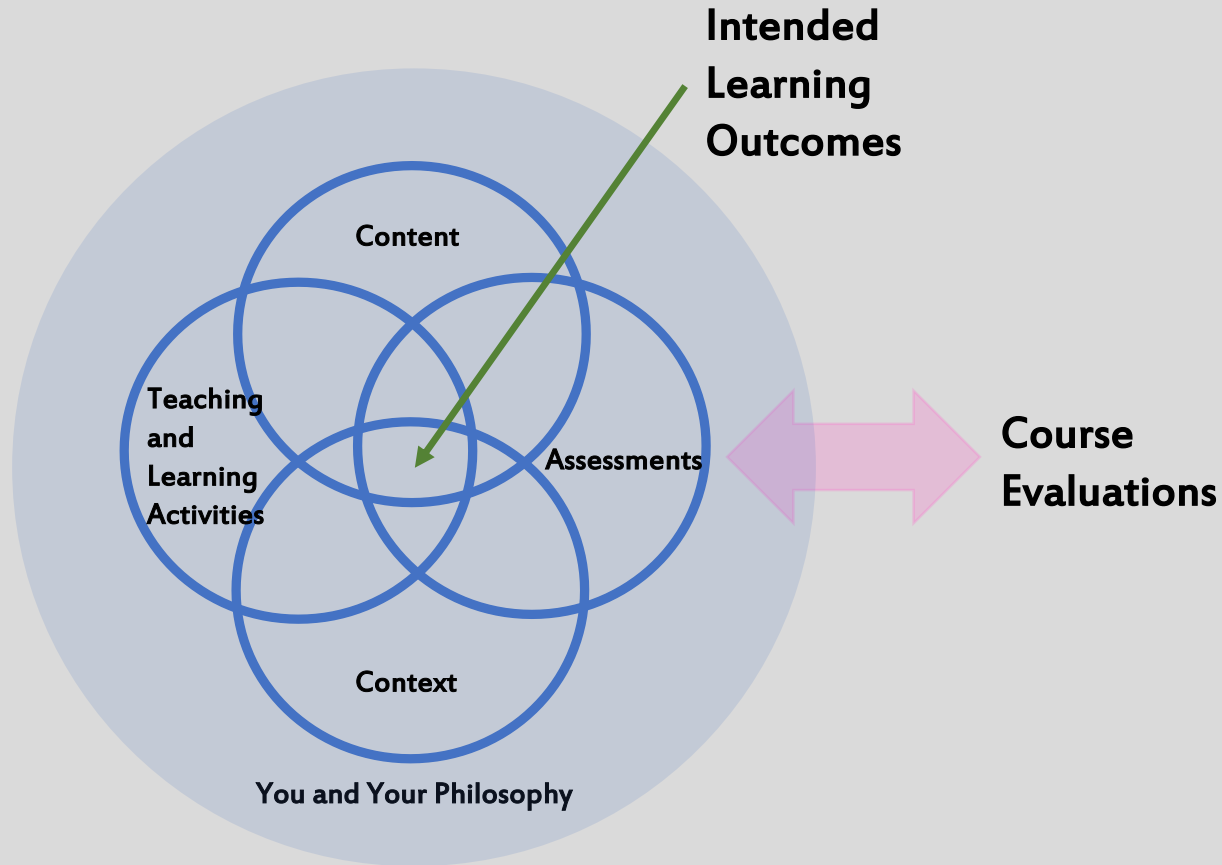
# F2F COMPONENTS



<http://www.public-domain-image.com/free-images/interiors-and-exterior-design/lecture-theatre-perth-college-of-tafe>



# THINGS TO CONSIDER

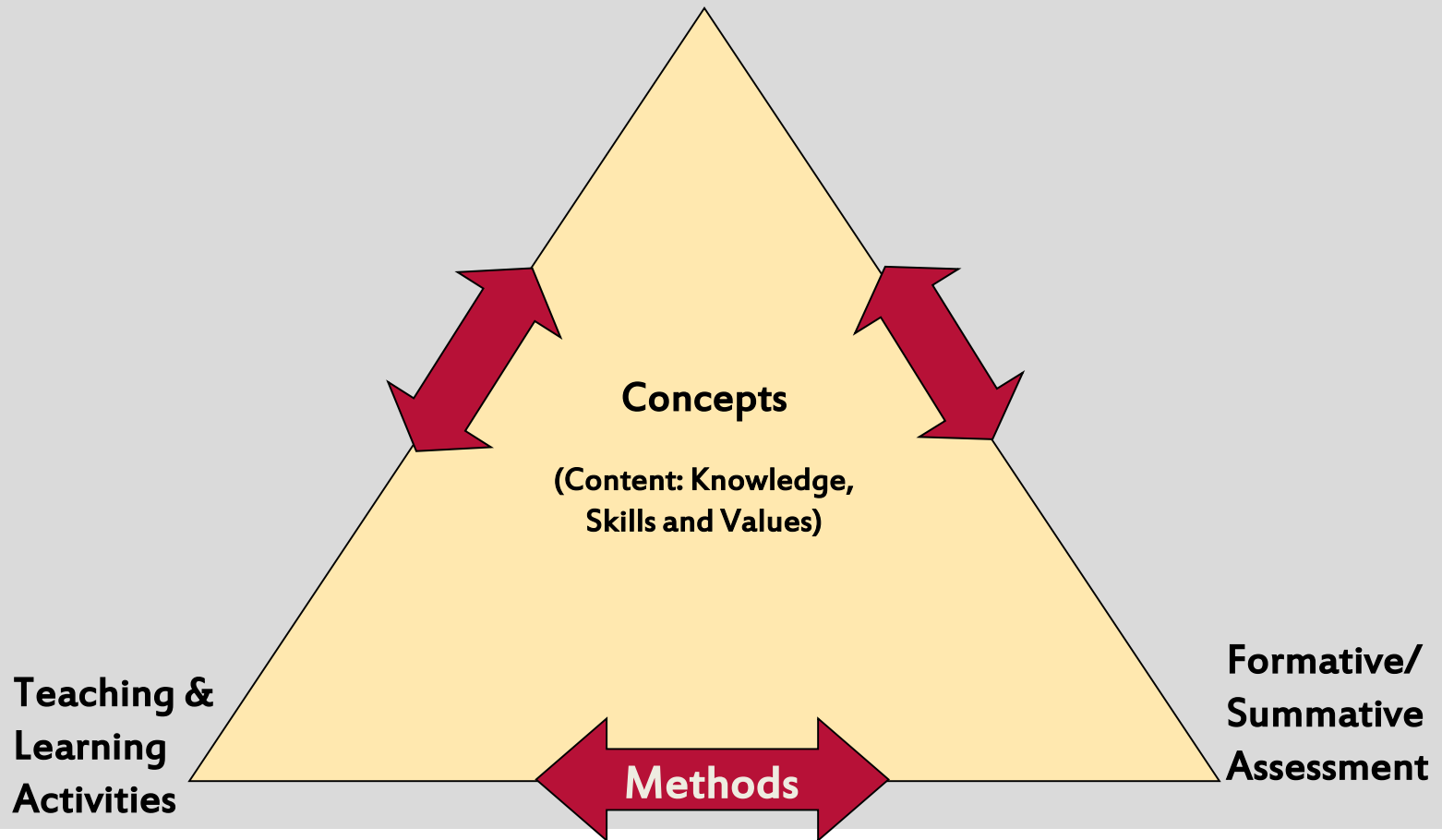


Adapted from Ellis, Light and Pryde, 2005



# COURSE DESIGN MODEL

Intended Learning Outcomes



# ELEMENTS TO CONSIDER IN BLENDED LEARNING

- Assessments
- Learning Activities
- Teaching Activities

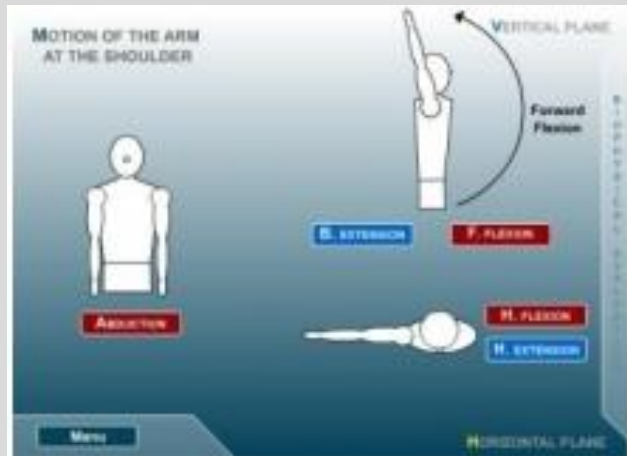
The position of each element will need to be considered on the [online-F2F continuum](#).



# KIN 101L BIOPHYSICAL EVALUATION LAB

One Week

Online – Before each lab



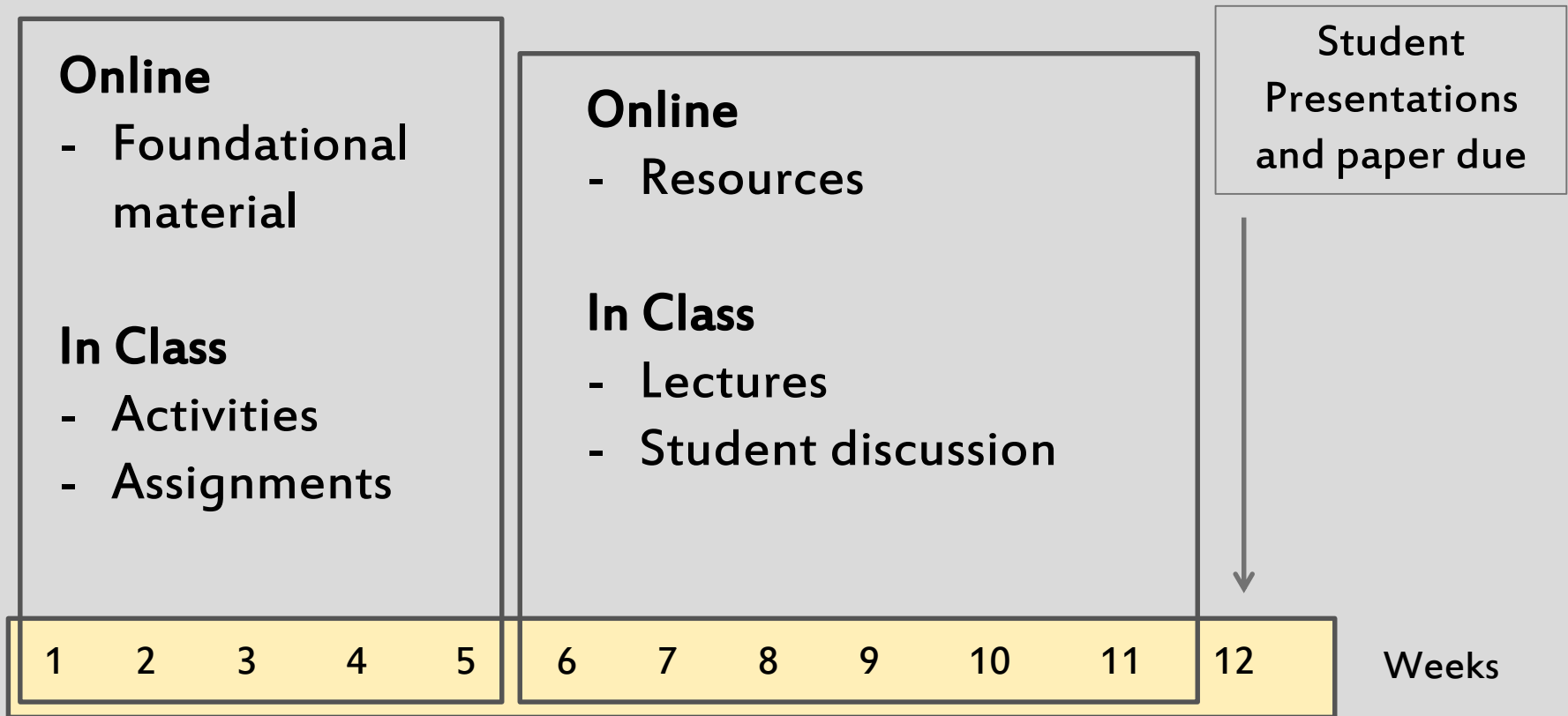
- Interactive Online Animations
- Pre-lab Quiz
- Quizlet [https://quizlet.com/\\_1fstjw](https://quizlet.com/_1fstjw)

In the Lab





# GRADUATE COURSE: “EPIDEMIOLOGIC METHODS IN AGING RESEARCH”



# REC 100: INTRODUCTION TO THE STUDY OF RECREATION AND LEISURE SERVICES (> 300 STUDENTS)

## Week 4: Social Class & Leisure

### Online:



### In Class:

- Lecture
- Top Hat
- Report on poll responses
- Small group discussion related to the Ted Talk video
- Small group activity – compose an exam essay question and answer key



# ONLINE TEACHING ACTIVITIES

- You can provide **all** or just **some** concepts online
- Using the learning management system (LMS) for content delivery can be particularly useful when:
  - » there's a wide variation in what your students know at the beginning of the course (pre-requisite material)
  - » there are complex or challenging concepts
  - » several good online resources already exist
  - » there are exciting in class activities that you want to do



# ONLINE LEARNING ACTIVITIES

- You can use the LMS for discussions, quizzes, practice problems, worksheets, etc.
- Using the LMS for learning activities can be particularly useful for:
  - » assigning low stakes, graded tasks that motivate students to come to class prepared
  - » including low stakes, or no stakes, formative assessment activities
  - » providing students with opportunities for individual practice and reflection



# TOOLS FOR CREATING ONLINE LEARNING ACTIVITIES

- Small Group Discussion Forums
- Blogs, Wikis, Polls
- Online game-creation tools
- Quizzes
- Drop boxes
- ePortfolios
- Practice quiz/exam questions
- Quizlet.com
- Peer evaluation

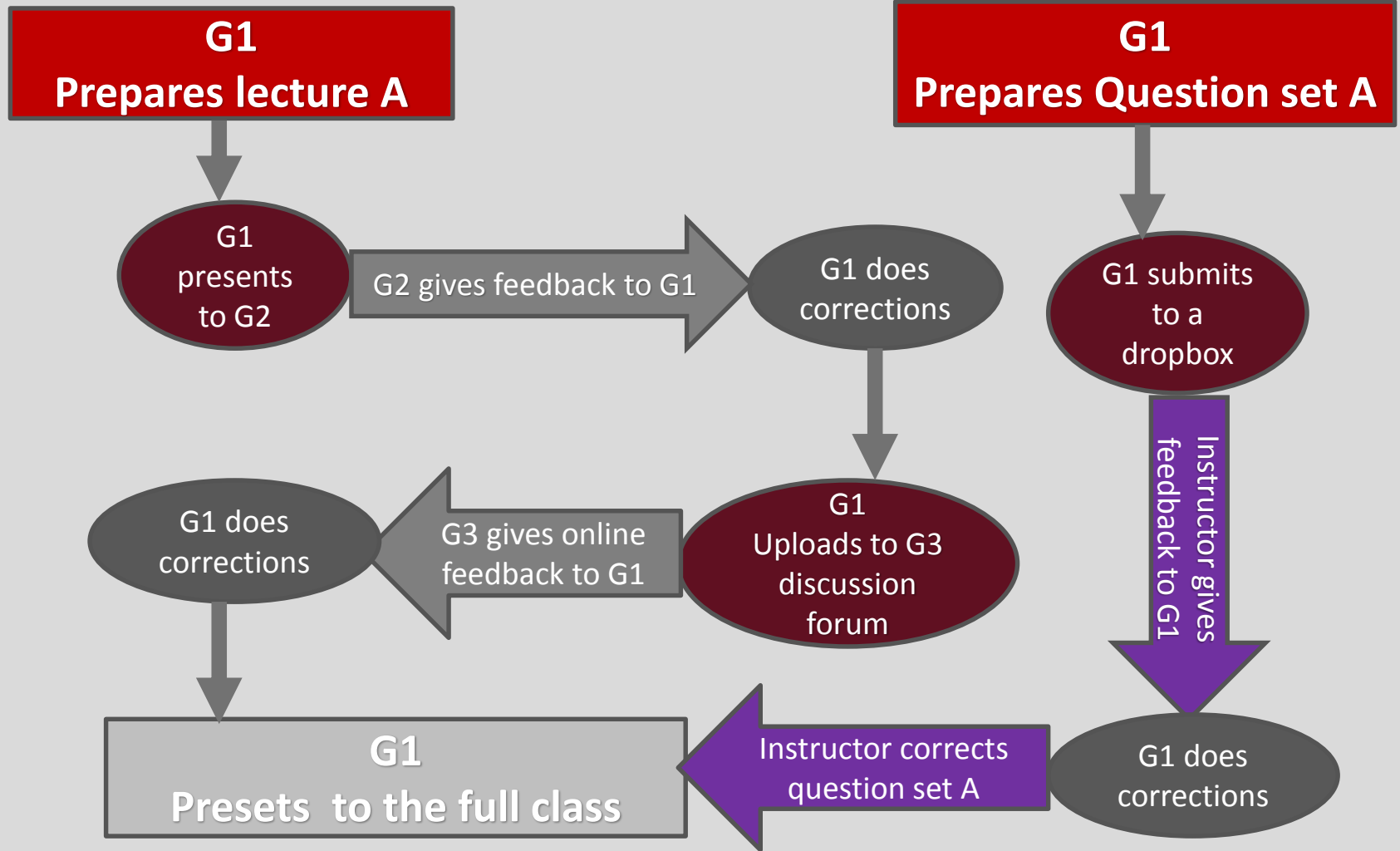


# QUIZLET

- <http://quizlet.com/>
- Free, practice quizzing tool (\$25 annual fee for enhanced teacher version)
- Mobile apps (iphone, ipad, Android)
- If you want to play:  
<http://quizlet.com/70416109/assessment-technologies-flash-cards/>



# Ask the Presenters



# ADVANTAGES AND CHALLENGES OF BLENDED LEARNING

## Advantages:

- 
- 
- 
- 

## Challenges:

- 
- 
- 
- 





# ADVANTAGES

- Can increase the amount and quality of instructor- student and student- student interaction
- Allows students to access course materials when and where they want, at their own pace
- Allows more time to be spent on active learning activities

# CHALLENGES

- In class activities can be compromised if students do not come to class prepared
- Online interactions and engagement depends on student participation
- Can be a lot of work ahead of time to prepare online materials (presentations, activities, etc.)



# QUESTIONS FOR THE BIKE RACK

We invite you to add any questions or comments you may have to the bike rack. We will return to them after lunch.

## Prayer Break and Lunch



# BIKE RACK DISCUSSION



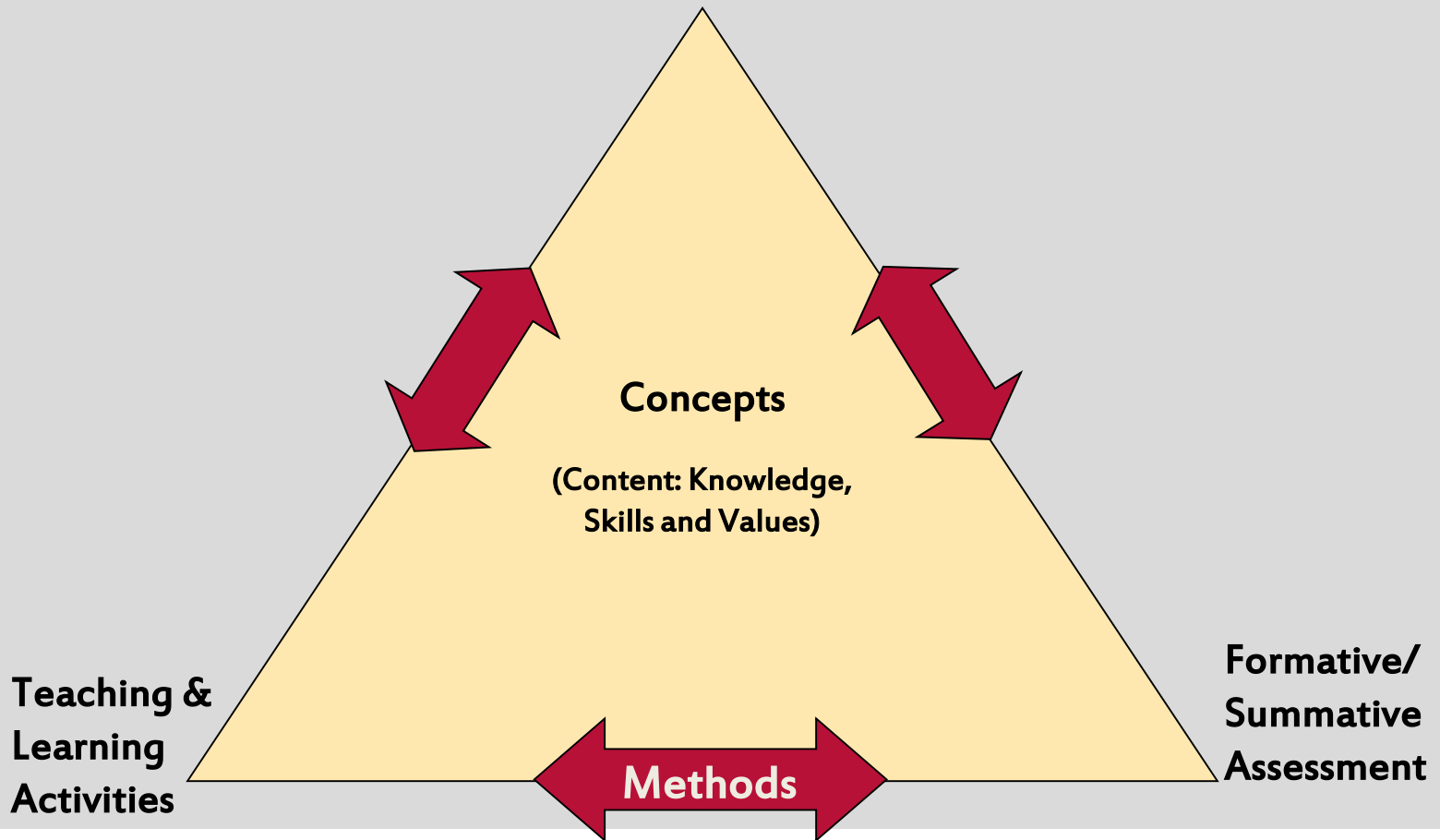
# BACKWARDS DESIGN PROCESS

- What do I want my students to be able to know/do by the end of the course?
- What learning activities will enable them to achieve the outcomes?
- What evidence or documentation do I require to demonstrate my students' learning?
- What learning activities/assessment opportunities will provide this evidence or documentation?



# COURSE DESIGN MODEL

Intended Learning Outcomes



# INTENDED LEARNING OUTCOMES

## Developing ILOs:

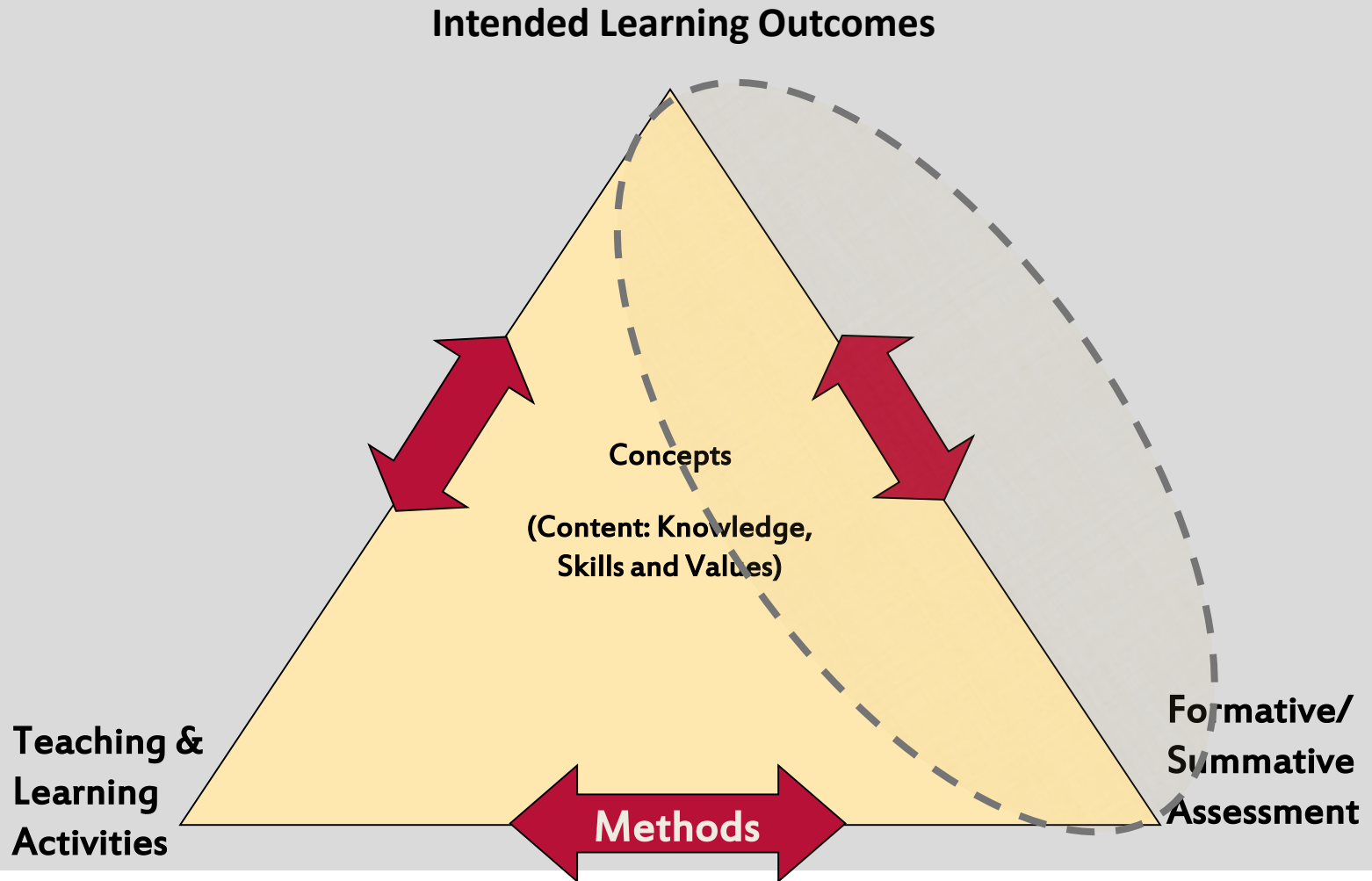
What do I want my students to be able to do, know, &/or feel by the end of my course?

## Use SAM as a reminder of 3 key criteria:

- Specific
- Attainable
- Measurable



# COURSE DESIGN MODEL



# FORMATIVE AND SUMMATIVE ASSESSMENT

## Formative Assessment:

- Is given to students during the course
- Involves dialogue
- Is often ungraded

## Summative Assessment:

- Occurs during the term and/or at the end
- Involves little to no dialogue
- Is graded

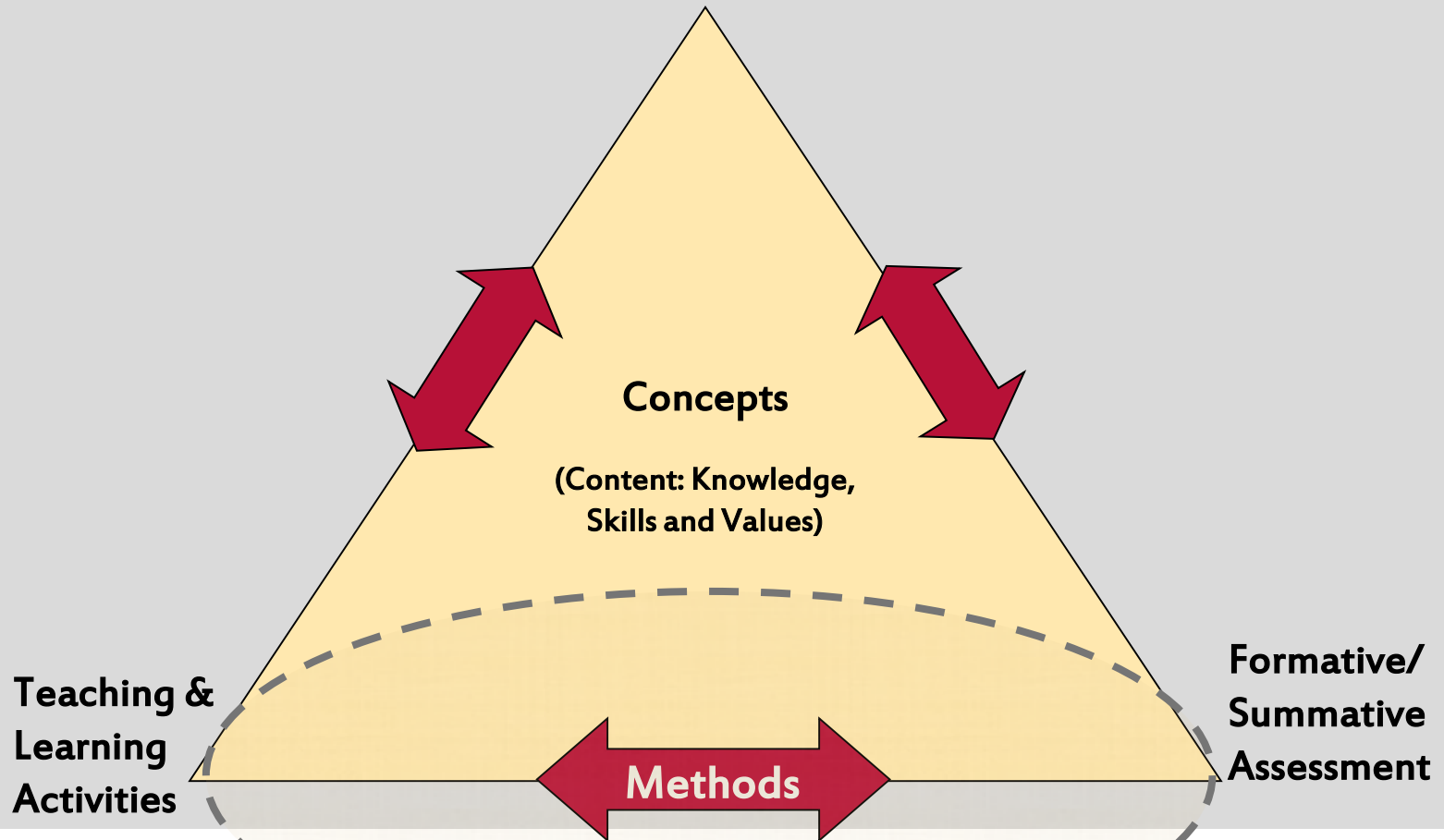
(Definitions adapted from: Fink, L.D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.)





# COURSE DESIGN MODEL

Intended Learning Outcomes



Course Design for Blended Learning



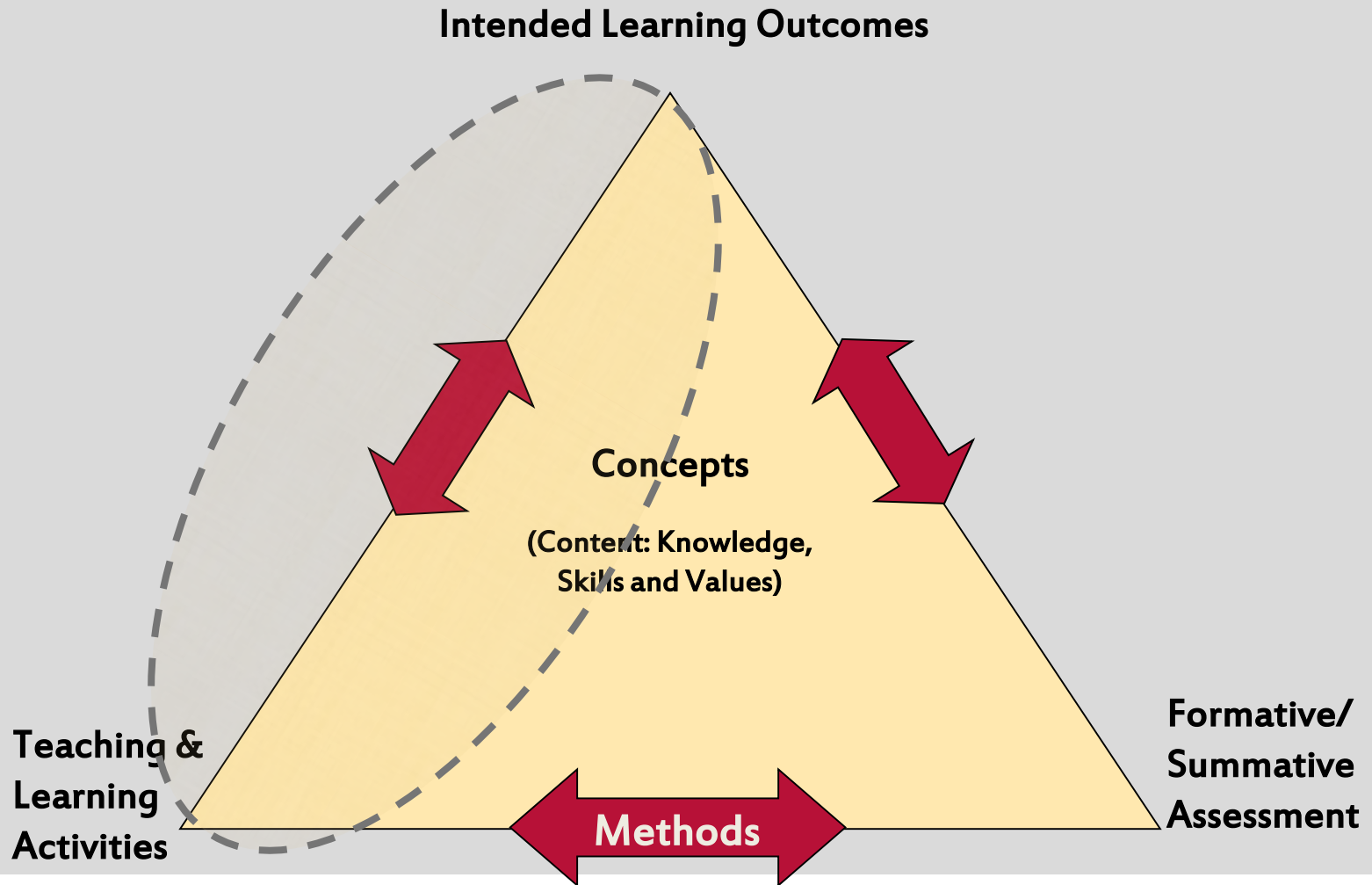
UNIVERSITY OF  
**WATERLOO**

# Teaching and Learning Activities

- Assessments/ Surveys
- Polls
- Videos -YouTube
- Images/maps
- Online lectures
- Narrated PowerPoint presentations
- Screencasts
- Learning objects
- Small Group Discussion
- Forums
- Blogs & Wikis
- Online game-creation tools
- Drop boxes
- ePortfolios
- Practice quiz/exam questions
- Quizlet.com
- Peer evaluation



# COURSE DESIGN MODEL



# DESIGNING A BLENDED LEARNING COURSE

Start with your Intended Learning Outcomes (ILOs).

1. What will your students do?
2. What will you do during the course?
3. How will you provide feedback to students?
4. Which activities would be best carried out in-class vs. out-of-class?
5. Are your course design components aligned?
6. Are the face-to-face and online components integrated?
7. Have you considered your instructional challenges?



**Table 1 - What will your students do?**

<b>Activity</b>	<b>Which outcome(s) does this address?</b>	<b>Formative Assessment? (yes/no)</b>	<b>Summative Assessment? (% of overall grade)</b>	<b>Where? F2F/ Online/ Offline</b>

**Table 2 - What will you do?**

<b>Activity</b>	<b>Time Required (#hours/week or #hours during course)</b>	<b>F2F/ Online/ Offline</b>	<b>Reusability (% or high, med , low)</b>

**Table 1. What will your students to do?**

Activity	Which outcome does this address?	Formative Assessment? (yes/no)	Summative Assessment? (% overall grade)	Where? F2F/ Online/ Offline
<b>Weekly Team project work</b>	<b>1, 2, 3</b>	yes – during class time and formative on the returned work	<b>33%</b>	<b>F2F</b>
<b>Engaging in Online Lectures (12)</b>	<b>1,3</b>	no		<b>Online</b>
<b>Weekly Online Quizzes (12)</b>	<b>1</b>	yes – automatic feedback after due date	<b>33%</b>	<b>Online</b>
<b>Reading Assignments (Textbook)</b>	<b>1,3</b>	yes – weekly team projects address understanding of readings		<b>Offline</b>
<b>Final Exam</b>	<b>1,2,3</b>	no	<b>33%</b>	<b>F2F</b>



**Table 2. What will you do?**

<b>Activity</b>	<b>Time Required(#hours/week or #hours during course)</b>	<b>F2F/ Online/ Offline</b>	<b>Reusability (% or high, med, low)</b>
<b>Create online lectures</b>	<b>~ 60 – 50 hours before course</b>	<b>Online</b>	<b>90 - 100%</b>
<b>Create online tests</b>	<b>12 – 24 hours before course</b>	<b>Online/Offline</b>	<b>90 - 100%</b>
<b>Plan group activities and create resource materials</b>	<b>~ 40 – 30 hours before course</b>	<b>Online/Offline</b>	<b>90 – 100%</b>
<b>Grading group activities</b>	<b>5 hrs/week during course</b>	<b>Online</b>	<b>5%</b>
<b>Create Final Exam</b>	<b>.....</b>		
<b>Grade Final Exam</b>	<b>.....</b>		



# BLENDED LEARNING

## TRIPLE ALIGNMENT

<b>Learning Outcome</b> <small>What should your students be able to do?</small>	<b>Assessment</b> <small>How will you assess whether your students have achieved the Learning Outcome?</small>	<b>Teaching and Learning Activity</b> <small>What activity will help your students achieve the learning outcome?</small>	
	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <b>Formative</b> <input type="checkbox"/>  <small>(provides feedback so students can improve their learning)</small> </div> <div style="width: 45%;"> <b>Summative</b> <input type="checkbox"/>  <small>(provides a grade to a student)</small> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <b>Online/Offline</b> <input type="checkbox"/>  <small>(means in the LMS or by means of some other web-based tool or course work outside of class time)</small> </div> <div style="width: 35%;"> <b>Inclass</b> <input type="checkbox"/>  <small>(in the classroom)</small> </div> </div>	
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Note that a single Learning Outcome can be supported by one, or more than one, Learning Activities. Likewise a single Learning Activity can support one, or more than one, Learning Outcomes.  
 Centre for Teaching Excellence, University of Waterloo.



# BLENDED LEARNING

## TRIPLE ALIGNMENT

<b>Learning Outcome</b> <small>What should your students be able to do?</small>	<b>Assessment</b> <small>How will you assess whether your students have achieved the Learning Outcome?</small>	<b>Teaching and Learning Activities</b> <small>What activity will help your students achieve the learning outcome?</small>
Identify problems interpreting epidemiological data: chance, bias, confounding and effect modification;	<b>Formative</b> <input checked="" type="checkbox"/> (provides feedback so students can improve their learning)	<b>Summative</b> <input type="checkbox"/> (provides a grade to a student)
	The instructor or TAs read the postings and provide feedback on the submissions and select 2-3 that will be discussed by the class as a whole.	
All outcomes in the course	<b>Formative</b> <input type="checkbox"/> (provides feedback so students can improve their learning)	<b>Summative</b> <input checked="" type="checkbox"/> (provides a grade to a student)
	Weekly online quizzes are taken after engaging with the online lectures and readings. These quizzes make up 30% of the final grade	
		<b>Online/Offline</b> <input checked="" type="checkbox"/> (means in the LMS or by means of some other web-based tool or course work outside of class time)
		<b>Inclass</b> <input checked="" type="checkbox"/> (in the classroom)
		Pairs of students work together to find a website or internet resource that provides an example of epidemiological data that illustrates how data can be misinterpreted. Students submit the link to a discussion forum with a 250 word posting on how the data is misinterpreted.  2-3 examples derived from the discussion forum activity are discussed by the class in class time.
		Online Adobe Presenter lectures and text book readings. Students watch presentations and make notes on course concepts in preparation for the weekly in class group work.

Note that a single Learning Outcome can be supported by one, or more than one, Learning Activities. Likewise a single Learning Activity can support one, or more than one, Learning Outcomes.  
 Centre for Teaching Excellence, University of Waterloo.

# IMPLEMENTATION PLAN

Work individually for 20 minutes.....

Start to devise a plan for implementing a blended task and/or a blended course and consider your course alignment

1. If you are redesigning a course for blended learning, consider using the combination of **Table 1. What will your students to do? and Table 2. What will you do?** to guide your planning
2. If your developing a new blended course, consider using the **Blended Learning Triple Alignment Chart** to guide your planning

Present your draft to your small group –flipcharts, white board etc. are available (20 minutes).



# EVALUATING YOUR BLENDED COURSE

- Student feedback during term
- Course evaluations



# ADDITIONAL RESOURCES: CTE TEACHING TIP SHEETS

- [Online Activities and Assessment for the Flipped Classroom](#)
- [In Class Activities and Assessment for the Flipped Classroom](#)
- [Nine Alternatives to Lecturing](#)
- [Developing Online Activities for Blended Courses](#)



# Concept Mapping Tools

Dr. Mark Morton

Centre for Teaching Excellence

University of Waterloo

[mmorton@uwaterloo.ca](mailto:mmorton@uwaterloo.ca)

[www.markmorton.ca](http://www.markmorton.ca)

# Learning Outcomes for this Workshop

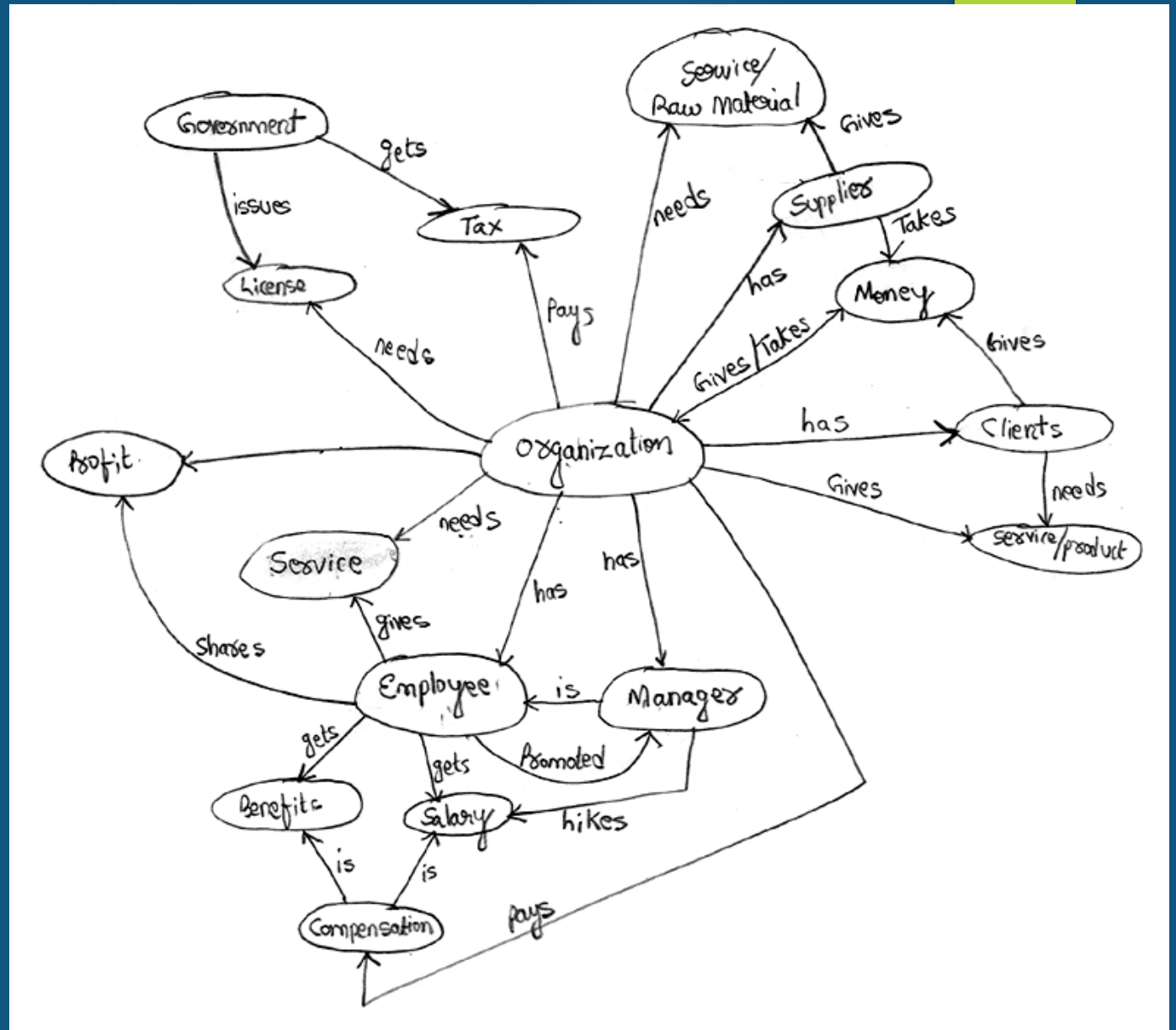


After this workshop you will be able to....

- ▶ describe the basic functionality that is common to most concept mapping tools (such as CmapTools, Novamind, Vue, and others)
- ▶ explain why concept maps can enhance learning
- ▶ develop effective learning activities and teaching strategies involving concept maps
- ▶ list best practices for using concept maps in your courses
- ▶ explain how a concept map can be used as a presentation tool

# What is a concept map?

- ▶ A visual representation of the relationships among things, ideas, or procedures.



# Visual thinking

- ▶ Concept maps are a form of **visual thinking**, which seems to be “hard-wired” into humans. We’ve been doing it for **thousands of years**.



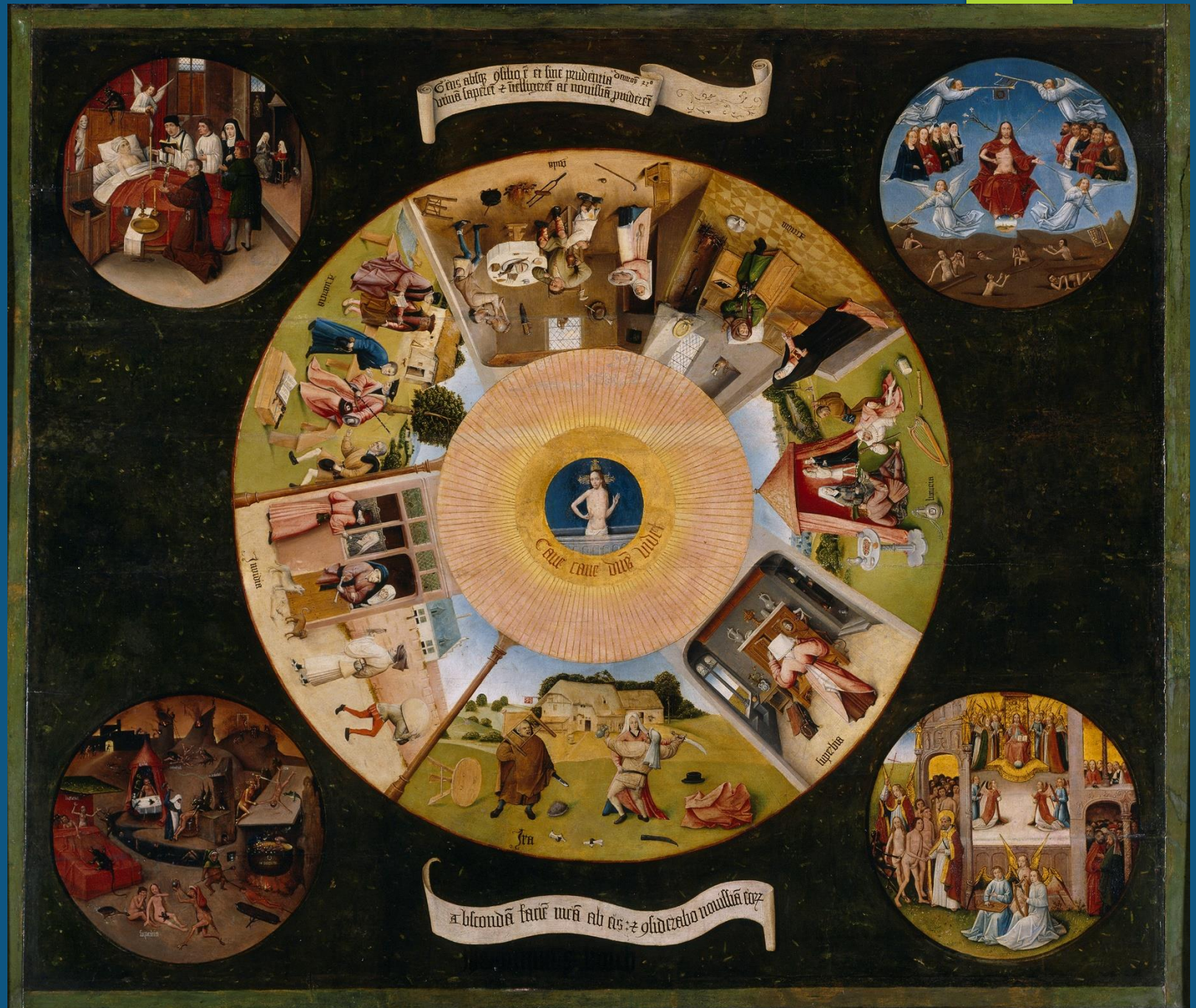
Ancient rock carvings, created around 100 AD in what is now Utah



# Visual thinking

- ▶ And we've continued to use concept maps in more recent centuries.

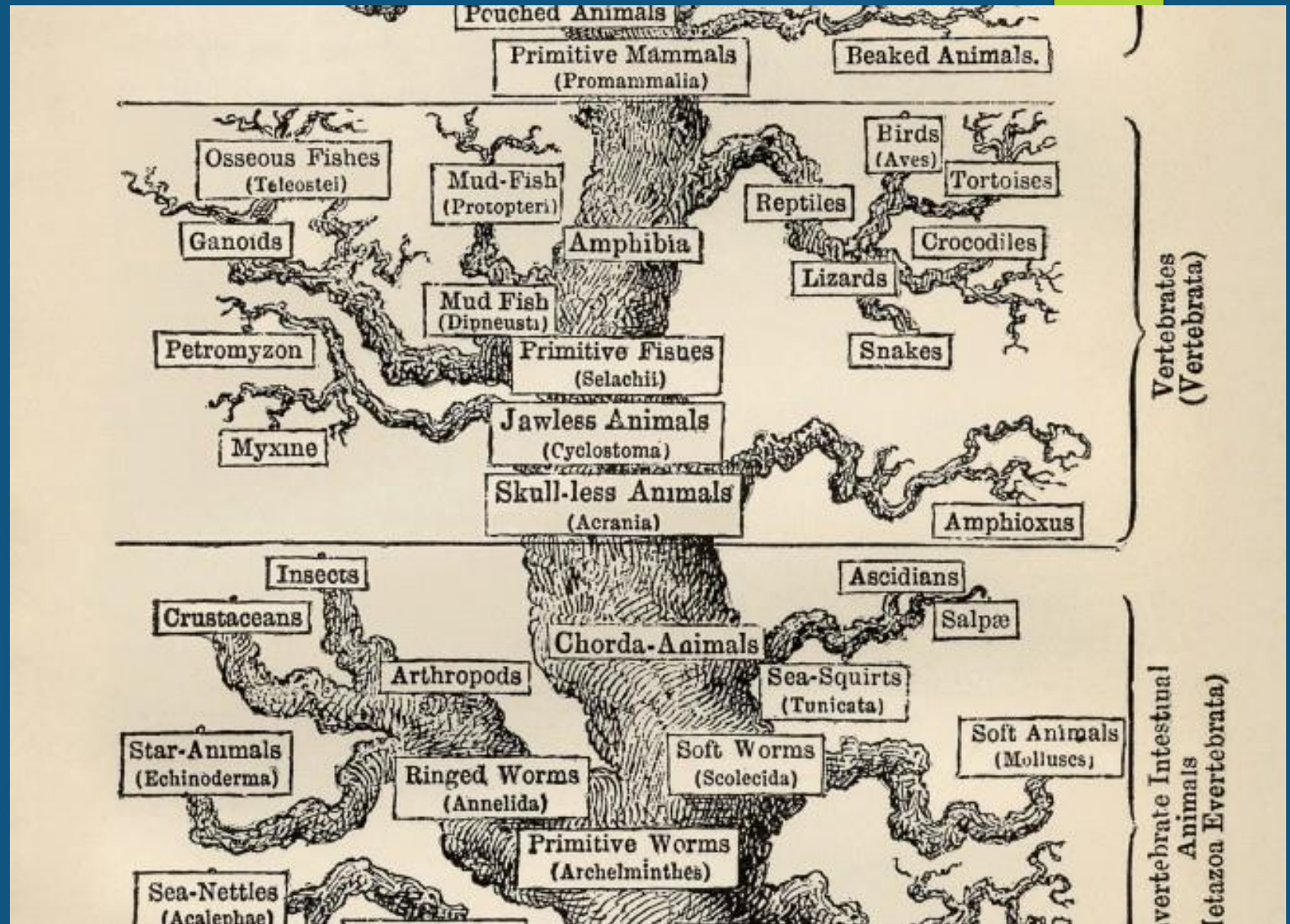
Painting of the Seven Deadly Sins by Hieronymus Bosch, around 1525



# Visual thinking

- ▶ Humans have also used concept maps in the **sciences** for centuries

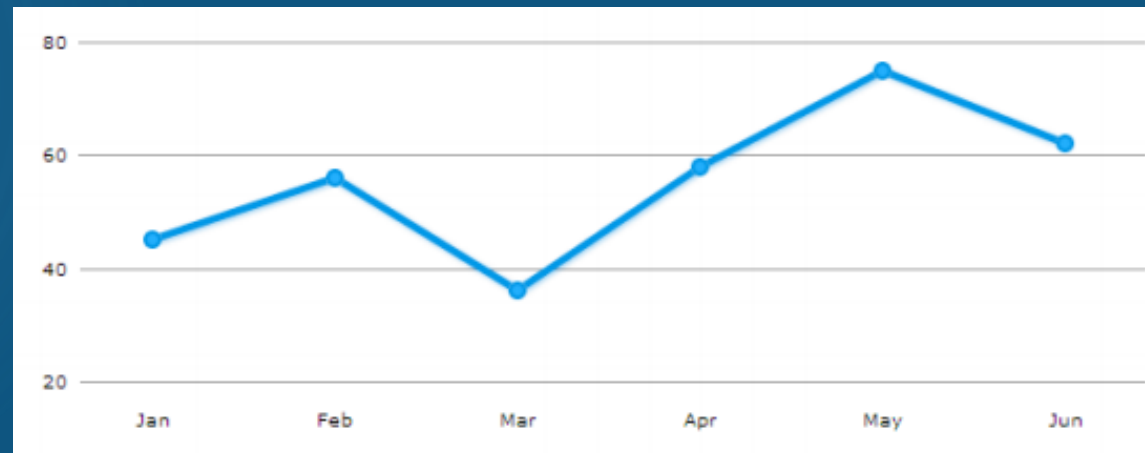
Tree of Life.  
Ernst Haeckel,  
1871



# Visual Thinking: Why is it Effective?

- ▶ Our brain's visual cortex is able to process an image much more quickly than our cerebral cortex can process data.
- ▶ Most people are better able to remember a visual representation – such as an image or a graph – than a chart full of numbers.

Month	Jan	Feb	Mar	Apr	May	Jun
Sales	45	56	36	58	75	62



These two items present the same information, but which one is easier (and faster) to interpret? Which one are you more likely to remember tomorrow?

# Evidence of Effectiveness

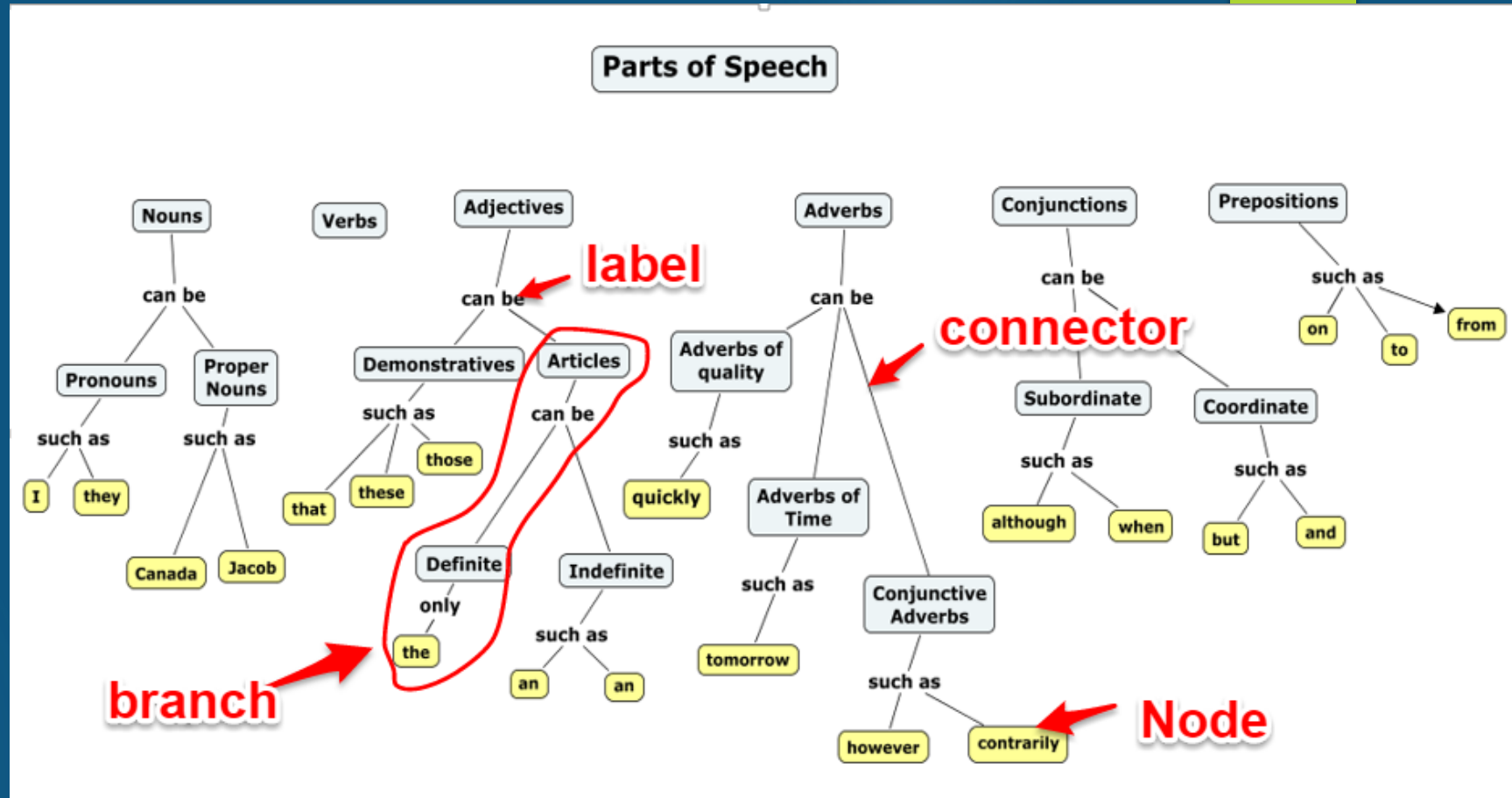
- ▶ “The meta-analysis found that, in comparison with activities such as reading text passages, attending lectures, and participating in class discussions, **concept mapping activities are more effective for attaining knowledge retention and transfer.**” — [Nesbitt](#), 2006.
- ▶ “The vast majority of articles in this meta-review indicate that **concept maps foster the development of meaningful learning, critical thinking and problem solving** in the learner.... meaningful learning occurs when the student links new knowledge with previous knowledge, thereby creating more integrated cognitive knowledge structures.” — [Daley](#), 2010

# Evidence of Effectiveness

- ▶ “Concept Mapping appears to be **particularly beneficial when it is used in an on-going way to consolidate or crystallize educational experiences** in the classroom, for example, a lecture, demonstration, or laboratory experience. In this mode, learners experience an educational event and then use Concept Mapping in a reflective way to enhance the learning from the event.” — [Canas](#), 2003
- ▶ “Use of the concept mapping software proved to be a powerful tool for improving students’ ability to generate, visualize and organize ideas.... Users of the concept mapping software became **faster and more efficient in generating and organizing ideas.**” — [Al-Jarf](#), 2009

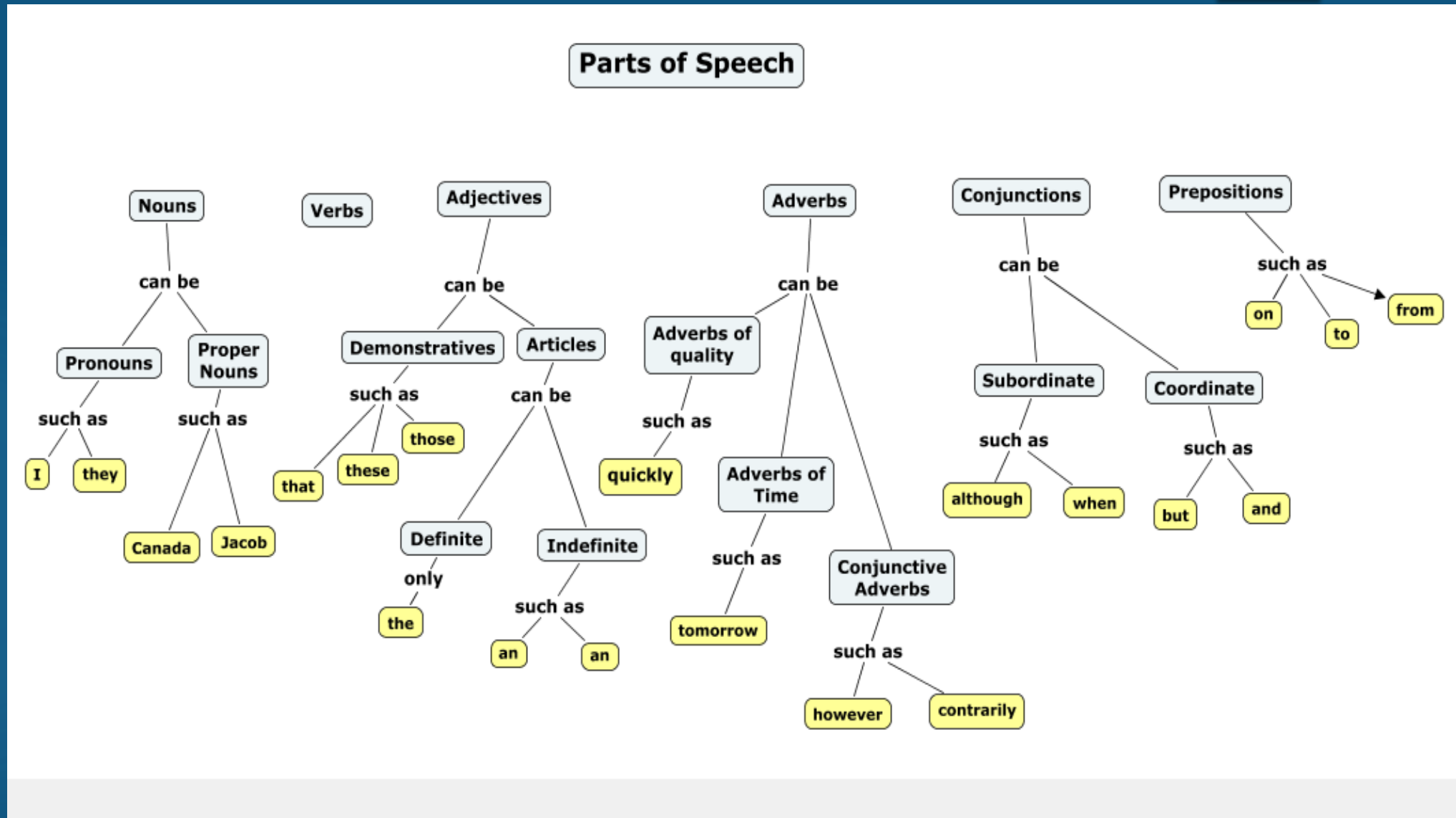
# Terminology

- ▶ A shape that contains a word or phrase is called a “**node**”
- ▶ A line that connects two shapes is called a “**connector**”
- ▶ The word or phrase that is appears on a connector is called a “**label**”
- ▶ A sequence of shapes connected by a series of connectors is called a “**branch**”
- ▶ A line that connects two nodes from separate branches is called a “**cross link**”



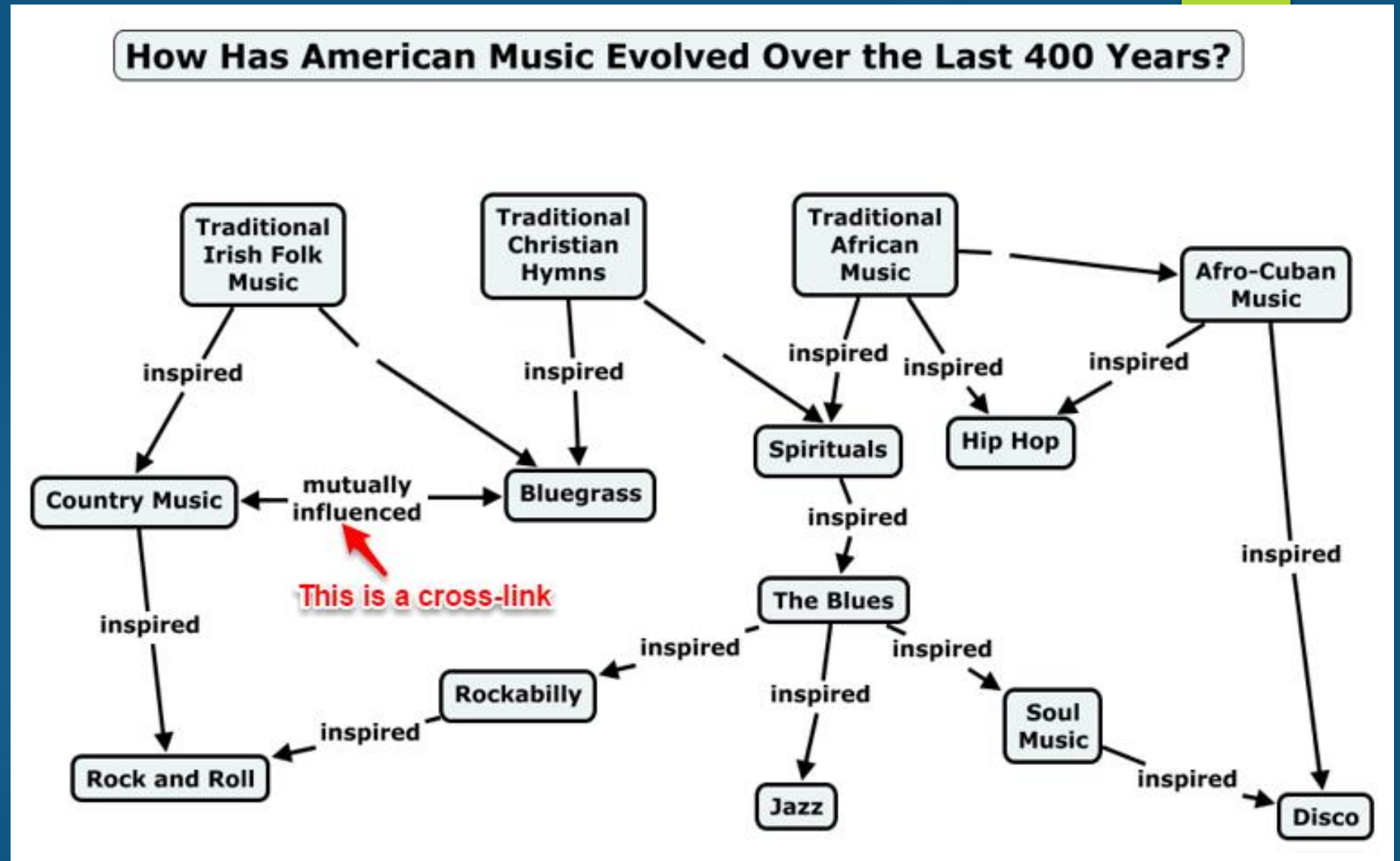
# Types of concept maps

Concept maps can have a **strict hierarchy** – that is, clear “levels” along the branches.



# Types of concept maps

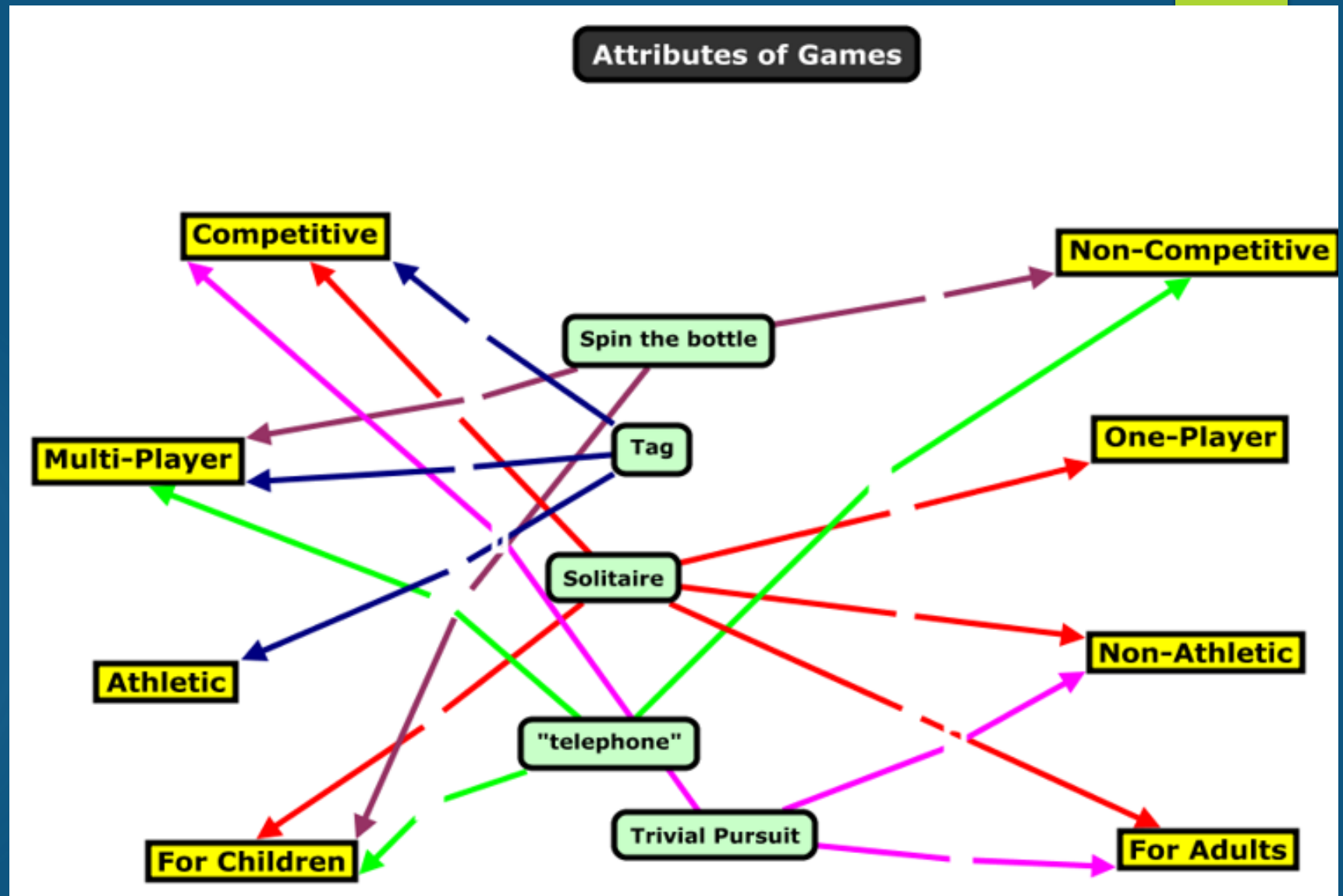
Or concept maps can be **semi-hierarchical** – often, these have cross-links between nodes belonging to separate branches.





# Types of concept maps

Or, concept maps can have **no hierarchy** – they might simply represent a network.



# Advantages of computer-based concept mapping tools over paper & pencil:

- ▶ Infinite size and complexity
  - ▶ With large concept maps, a user can pan around its various parts
  - ▶ With detailed concept maps, a user can zoom in on specific parts
- ▶ Dynamic branches
  - ▶ A branch can be closed (to hide its sub branches) and then opened (to reveal the sub branches). Here is a quick [example](#).
- ▶ Hyperlinked nodes
  - ▶ Nodes can have hyperlinks attached to them, which a user can click to access further resources that are relevant to that node

We'll see examples of all of these later in the presentation

# Advantages of concept mapping tools over paper & pencil:

- ▶ Rollover text
  - ▶ Nodes can have descriptive or explanatory texts that is not visible until a user puts the cursor over the node
- ▶ Presentation mode
  - ▶ The creator of the map can create a “path” that leads a user through the concept map in a logical and linear manner

**We'll see  
examples of all  
of these later in  
the presentation**

# Learning Activity #1

In small groups, share some ideas about how you could use concept mapping tools in your courses. What learning activities could be based on concept maps? How could they enhance your teaching?

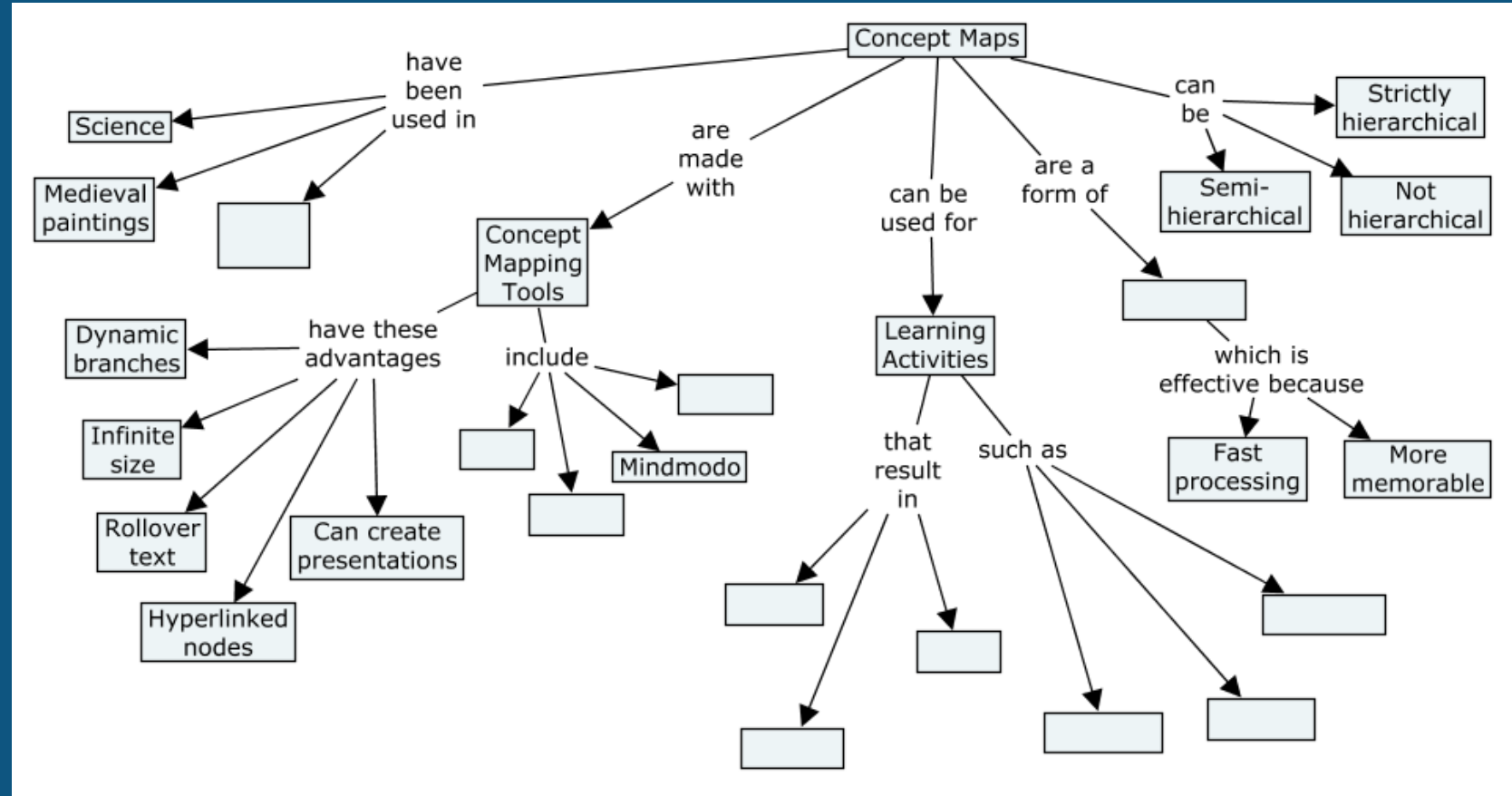
After coming up with a few ideas, be prepared to have one person in your small group share those ideas with the large group.

- ▶ Have students create a concept map to assess their **prior knowledge** of a topic.
- ▶ Once a week, have students build concept maps that visually represent the ideas that were covered in **that's week's classes**.
- ▶ Have students build a concept map of the course content over the **duration of the term**, one that maps their growing understanding of the course content.
- ▶ When lecturing, give students a **partially finished concept map**:
  - ▶ Give them a map of empty nodes and lines, and have them add the correct terms to the nodes during a lecture (or as homework).
  - ▶ Give them a list of terms with no map, and have them create the map during a lecture (or as homework).
- ▶ Have students **collaborate** on making a concept map.

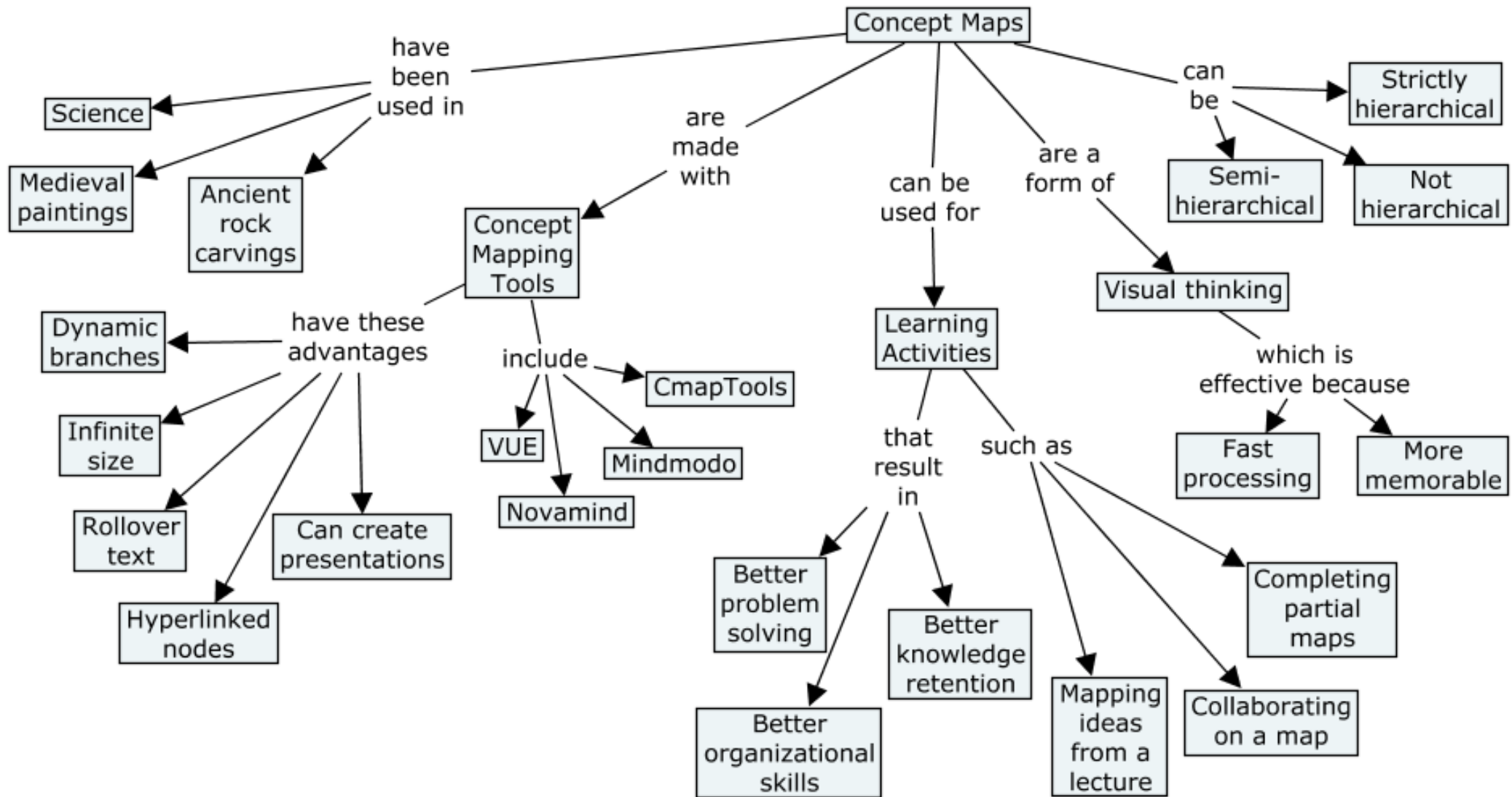
# Learning Activity #2

Complete the partially completed concept map that you have been given using these words or phrases (each word or phrase becomes a node):

- Ancient rock carvings
- Better knowledge retention
- CmapTools
- NovaMind
- Better problem solving
- Mapping ideas from a lecture
- Collaborating on a map
- Better organization skills
- Completing partial maps
- VUE
- Visual thinking



The completed map might look something like this:



# Demonstration

- ▶ A quick demonstration of two concept mapping programs:
  1. **MindMeister** (I will do a live demo, but if you are viewing this presentation after the workshop, you can watch a demonstration [here](#))
  2. **Popplet** (I will do a live demo, but if you are viewing this presentation after the workshop, you can watch a demonstration [here](#))

# Learning Activity

Create a concept map that shows the relationships among the major topics or ideas in **one of your courses**. You can do this in one of two ways:

1. Use a **sheet of paper** and a pencil or pen.

OR

2. Use an **online tool**:

If you have **laptop**, go to [www.mindmeister.com](http://www.mindmeister.com) . Create a free account. Within a couple of minutes, you will be sent an email that confirms your account. Click the link in that email, then sign into Mindmeister with the username and password you created.

If you have an **iPad**, go to the App Store, search for **Popplet Lite**, and install it.



# Best Practices for using concept maps

- ▶ Explain to students why you are having them create concept maps.
- ▶ Use concept maps consistently through the term.
- ▶ Have students collaborate on creating concept maps
- ▶ Where appropriate, show students how the same body of knowledge can be represented equally well in different concept maps.

# Turning concept maps into presentations

- ▶ [Mindomo](#) (Watch all of this 7-minute video)
- ▶ [CmapTools](#) (Watch the first 5m30s of this 8 min video)
- ▶ [Visual Understanding Environment \(VUE\)](#) (Watch the first 5m40s of this 9-min video)
- ▶ [Novamind](#) (Similar to Mindomo, so don't watch any of this 8-minute video during the workshop)

# Resources

- ▶ Novamind

- ▶ [Home](#)

- ▶ [Video tutorial](#)

- ▶ VUE

- ▶ [Home](#)

- ▶ [Video tutorials](#)

- ▶ CmapTools

- ▶ [Home](#)

- ▶ [Video tutorial](#)

- ▶ Mindomo

- ▶ [Home](#)

- ▶ [Video tutorial](#)

- ▶ A [CTE Teaching Tip](#) on concept maps

- ▶ A [CTE screencast](#) on concept maps

- ▶ [Learning activities](#) involving concept maps developed by Harvard University

- ▶ An [overview of research](#) on concept maps, developed by Harvard University

## **The Tools of Blackboard**

The dynamic concept map that was used for this workshop can be found here:

<http://bit.ly/blackboard-tools>

## **Peer Assessment with peerScholar**

A video version of Steve Joorden's presentation can be found here:

<http://bit.ly/peerScholar>



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# Peer Assessment Tools: peerScholar

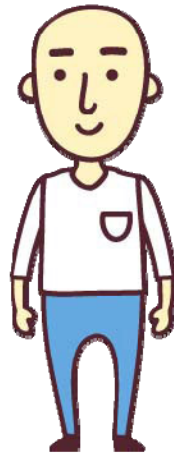
Steve Joordens & Dwayne E. Pare  
Advanced Learning Technologies Lab  
University of Toronto Scarborough



ADVANCED  
LEARNING  
TECHNOLOGIES



peerScholar®



Tim Cho-Kin  
Cheng



Lisa-Marie  
Collimore



Rob  
Walker



Steve & Sue  
Joordens



Dwayne  
Paré



ADVANCED  
LEARNING  
TECHNOLOGIES

## Find stuff that works, then build technology around it



An online multiple-choice like tool that assesses learning in a manner that reinforces factual knowledge while simultaneously correcting misconceptions before they become entrenched



An active learning assessment that allows students to form and test hypotheses, replicate the tests done by classmates, and provide theoretical explanations for interesting or unexpected findings, all in the context of data they themselves provide.



A powerful, easy to use platform that exercises (and can assess) critical, creative and self-reflective thought and both expressive and receptive communication in even very large class contexts.





Research Support



Partners



Awards

- National Technology Innovation Award
- 3M National Teaching Fellowship
- Inventors of the Year Award (University of Toronto)
- City of Toronto Excellence Award
- MITACS Commercialization award
- Society for Teaching and Learning in Higher Education Award
- President's Teaching Award
- Principal's Special Commendation for Innovation in Teaching

+ Many More

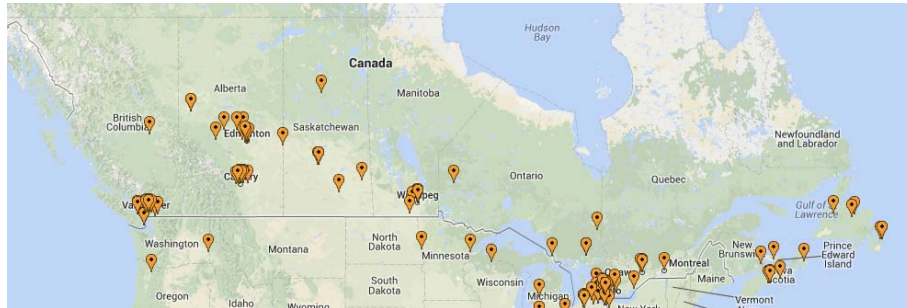
# Research & Efficacy

## Selected Publications:

- ✓ Paré, Dwayne E., Velji, Aly, Joordens, Steve, & Collimore, Lisa-Marie (Submitted) Defining and quantitatively measuring critical thinking skills in terms of quality discrimination: Implications for research and application. *Journal of the Learning Sciences*.
- ✓ Paré, Dwayne E., Collimore Lisa-Marie, and Joordens, Steve. (in press). Put Students' Minds Together and their Hearts Will Follow: Building a Sense of Community in Large-Sized Classes via Peer- and Self-Assessment. Toronto: *Higher Education Quality Council of Ontario*.
- ✓ Collimore Lisa-Marie, Paré, Dwayne E., Joordens, Steve. (in press). The SWDYT: So What Do You Think? Canadian Students' Attitudes about peerScholar, an online Peer-Assessment Tool. *Learning Environments Research*.
- ✓ Joordens, Steve, Paré, Dwayne E., & Collimore, Lisa-Marie. (2014). Taking Learning Outcomes to the Gym: An Assignment-Based Approach to Developing and Assessing Learning Outcomes. Toronto: *Higher Education Quality Council of Ontario*.
- ✓ Cheng, Cho Kin, Paré, Dwayne E., Collimore, Lisa-Marie, & Joordens, Steve. (2011) Assessing the effectiveness of a voluntary online discussion forum on improving students' course performance. *Computers & Education*, 56, 253-261.
- ✓ Paré, Dwayne E., & Joordens, Steve. (2009) The Invisible Researcher: Using Educational Technologies as Research Tools for Education. *The Journal on Systemics, Cybernetics and Informatics (JSCI)*, 5(7).
- ✓ Joordens, Steve, Desa, Shakinaz, & Paré, Dwayne E. (2009) The Pedagogical Anatomy of Peer-Assessment: Dissecting a peerScholar Assignment. *The Journal on Systemics, Cybernetics and Informatics (JSCI)*, 5(7).
- ✓ Joordens, Steve, Paré, Dwayne E., & Pruesse, Ky. (2009) peerScholar: An Evidence-Based Online Peer-Assessment Tool Supporting Critical Thinking and Clear Communication. *Proceedings of the 4<sup>th</sup> International Conference on e-Learning*, 236-240.
- ✓ Paré, Dwayne E., & Joordens, Steve. (2008) Peering into Large Lectures: Examining Peer and Expert Mark Agreement Using peerScholar, an Online Peer Assessment Tool. *Journal of Computer Assisted Learning*, 24(6), 526-540.

**peer**Scholar.®

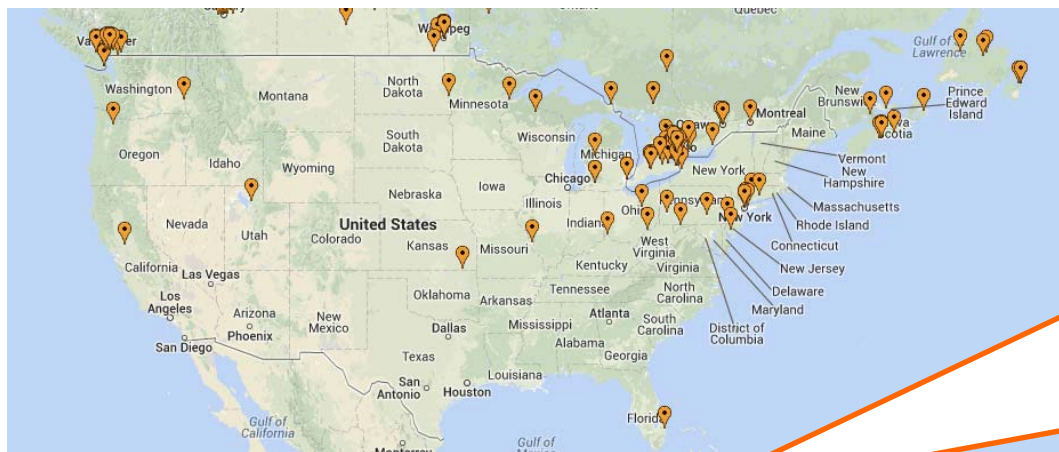
# peerScholar Usage



**CANADA:** 163 Institutions



**INTERNATIONAL:** 33 Institutions



**USA:** 25 Institutions

- |                              |  |
|------------------------------|--|
| New York University          | Washington University in St. Louis             |
| BPC school                   | West Linn High School                          |
| St. Mary's School            | The American College of Financial Services     |
| WAYNE STATE UNIVERSITY       | UNIV OF CALIF - DAVIS                          |
| CUMBERLAND COUNTY COLLEGE    | FERRIS STATE UNIVERSITY                        |
| NORTH DAKOTA ST UNIVERSITY   | MARIETTA COLLEGE                               |
| NYU SCHOOL OF EDUCATION      | WESTERN CONN STATE UNIV                        |
| Southeastern College         | OHIO STATE U AGR/TECH INS                      |
| FROSTBURG STATE UNIVERSITY   | CENTRAL PA COLLEGE                             |
| UNIV OF WISCONSIN - SUPERIOR | ST JOHNS RIVER STATE COLLEGE - ORG PARK CAMPUS |
| WASHINGTON STATE UNIVERSITY  |  |
| CARNEGIE MELLON UNIVERSITY   |  |
| SUNY AT BUFFALO              |  |

# Learning Outcomes



## 2 CRITICAL AND CREATIVE THINKING\*

SUBCOMPETENCY		TWO-YEAR DIPLOMA	THREE-YEAR DIPLOMA	BACHELOR'S DEGREE	MASTER'S DEGREE
2.1	<b>Critical Thinking</b>	Identify and compare assumptions and arguments	Evaluate assumptions and arguments, and defend a standpoint	Evaluate underlying assumptions and arguments; develop and support a standpoint	Evaluate underlying assumptions and arguments in own work relative to your field; develop and support a standpoint
2.2	<b>Creativity</b>	Adapt existing ideas or techniques to respond to a specific issue	Adapt existing ideas or techniques to respond to a specific issue	Devise innovative approaches which may build on existing ideas or techniques	Devise innovative approaches which may build on existing ideas or techniques and discuss the implications for the field
2.3	<b>Problem Identification</b>	Identify and define a problem	Identify and define a problem	Identify and define a problem and the associated constraints and objectives	Identify and define a complex problem and the associated constraints and objectives
2.4	<b>Problem Solving</b>	Compare a prescribed set of solutions to a problem; choose and implement the most suitable approach	Evaluate possible solutions to a problem; adapt and implement the most suitable approach	Independently evaluate possible solutions to a problem; develop and implement a suitable approach	Independently evaluate a comprehensive range of possible solutions to a complex problem; develop and implement a suitable approach
2.5	<b>Analysis of Risks and Benefits</b>	Mitigate possible risks associated with solving a problem using prescribed methods	Anticipate and mitigate potential risks associated with a problem using prescribed methods	Compare and contrast the risks and benefits of different strategies for responding to various problems	Evaluate risks and benefits of different strategies, including broader implications of available options
2.6	<b>Evaluation</b>	Assess the quality of results and draws conclusions	Assess the relevance and reasonableness of assumptions and quality of results, draw conclusions and recommend directions for future work	Assess the relevance, reasonableness and effectiveness of assumptions, methods and quality of results, draw conclusions and recommend directions for future work	Assess the relevance, reasonableness and effectiveness of assumptions, methods and quality of results; draw conclusions and recommend directions for future work

Core Competencies  
Transferable Skills  
Learning Primitives?

Critical Thinking

Analyze, Compare, Evaluate, Question,  
Differentiate, Categorize

Creative Thinking

Build, Modify, Solve, Improve

Communication  
(Expressive / Receptive)

Structure, Clarity, Efficiency, Impact

Collaboration

Social Interactions, Cooperation, Respect

Content

MetaCognition

Self-Analysis, Identification of Weakness,  
Strategies for Change

# Benefits of Peer (and Self) Assessment



Provides palpable and personal feedback that is critical to the development of self-reflection and metacognition



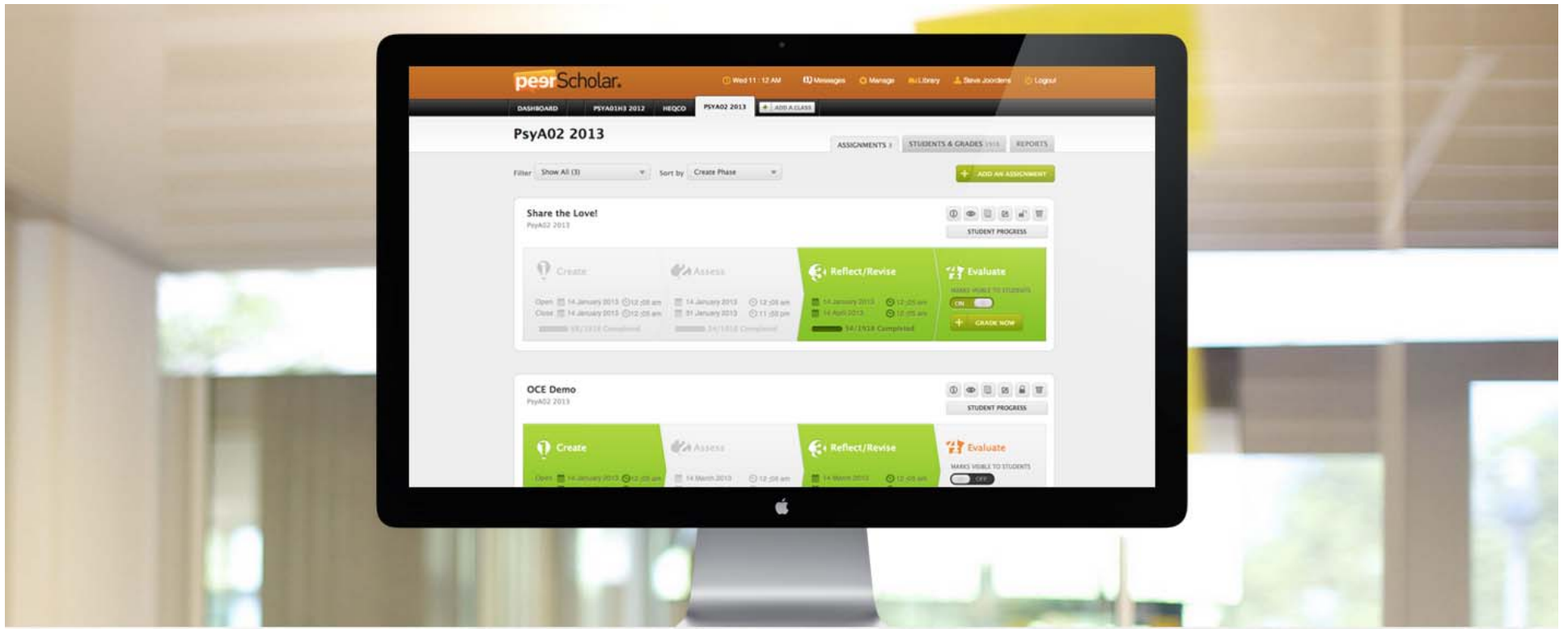
Provides structured practice with critical thought, creative thought and clear efficient communication



When quality of feedback is emphasized it gives students structured practice both in terms of providing effective feedback in addition to practice in receptive communication



When all of this is combined with content relevant assignments, it marries the learning of knowledge and cognitive skills in a way that highlights the importance of working with knowledge, rather than simply possessing it







**peerScholar.** Fri 1:40 PM Messages Demo Student Logout

DASHBOARD GRADE 9 ENGLISH HISTORY VISUAL ARTS MUSIC SOCIAL SCIENCE JOIN A CLASS

### Cellphones and Learning — Opinion Piece instructor Demo Teacher << Back to Grade 9 English

Create Instructions & Tips Create Self-Assess 100% Complete

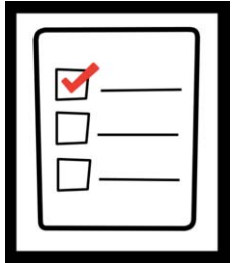
word count: 454 words ASSIGNMENT RUBRIC GRAPHIC ORGANIZER

**Do cellphones help or hurt student learning? Maybe!**

Do cellphones help or hurt student learning? I think the answer to this is clear, and the answer is ... it depends! Like almost everything in life, some new technology is just that, a new technology. Whether it is good or bad with respect to some other thing depends on how that technology is used. This is the point I will argue in this essay, hopefully quite persuasively.

First I'd like to talk about another technology that was likely a big part of your life when you were young. That technology is television. Did television help or hurt your learning? Well, I expect that some kids only ever watched junk television. They watched shows about nothing, maybe just music videos or silly comedies that didn't include educational information. But other kids might have watched documentaries, or nature shows, or even Sesame Street. The television probably hurt the first group of students, but helped the second group.

peerScholar.



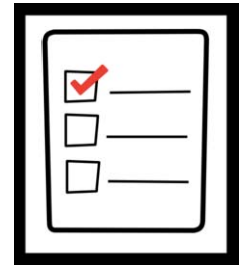
Learning Objectives

?



The screenshot shows the peerScholar website interface. At the top, there is a navigation bar with the peerScholar logo, the time 'Fri 1 : 40 PM', and links for 'Messages', 'Demo Student', and 'Logout'. Below this is a secondary navigation bar with categories: 'DASHBOARD', 'GRADE 9 ENGLISH', 'HISTORY', 'VISUAL ARTS', 'MUSIC', 'SOCIAL SCIENCE', and 'JOIN A CLASS'. The main content area features the title 'Cellphones and Learning — Opinion Piece' by 'Instructor Demo Teacher', with a '<< Back to Grade 9 English' link. A progress bar shows '100% Complete' with steps: 'Assess', 'Instructions & Tips', 'Give Feedback (3/3)', and 'Self-Assess'. Below the progress bar are buttons for 'ASSIGNMENT', 'RUBRIC', and 'GRAPHIC ORGANIZER'. A section for 'Peer 1' is highlighted, showing an assignment titled 'Assignment by Peer 1' with the text: 'Cellphones are Beneficial to Student Learning'. The text continues: 'Cellphones are a powerful learning tool for today's student population. In a 2004 report by Marc Prensky on cellphone usage and learning in America, Prensky noted that in American high schools over 75 percent own a cellphone, and in some schools it is almost 100 percent. In elementary and junior high schools the'. A comment box on the right shows a timestamp '2012-02-01 03:44:13', the text 'Nice and simple title', and an 'Edit' button.

peerScholar.



Learning Objectives

- Critical Thought
- Creative Thought
- Communication
- Collaboration
- metaCognition



peerScholar. Fri 1:40 PM Messages Demo Student Log

DASHBOARD GRADE 9 ENGLISH HISTORY VISUAL ARTS MUSIC SOCIAL SCIENCE JOIN A CLASS

### Cellphones and Learning — Opinion Piece

 Instructor Demo Teacher << Back to Grade 9 English

Reflect/Revise

Instructions & Tips Review Feedback (3/3) Revise Reflect Self-Assess 100% Complete

**e** Peer 1

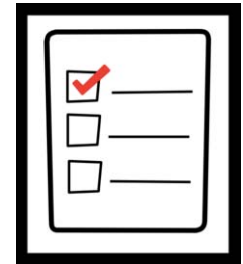
**Give at least one positive comment about your peer's assignment.**  
I really liked that TV comparison. It made your argument sound clear and hard to argue against. Got me thinking.

**Give at least one constructive comment to help your peer improve the assignment.**  
Your main point is clear and strong but sometimes it got a little hidden by other things you were saying. I think you could say less while actually producing a better argument.

Rating  
3 Out of 4 Stars

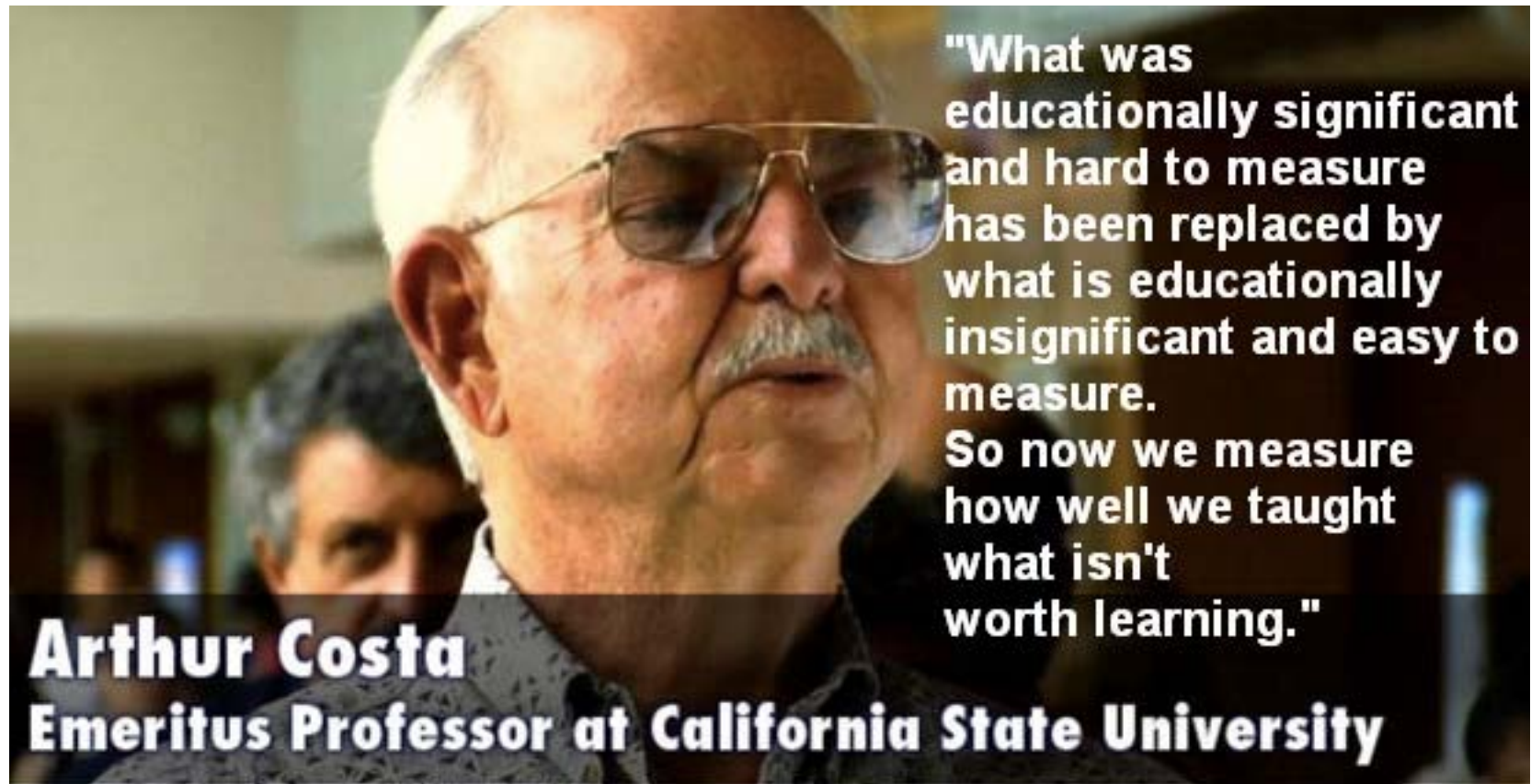
How useful is this feedback?  
Useful

peerScholar.



Learning Objectives

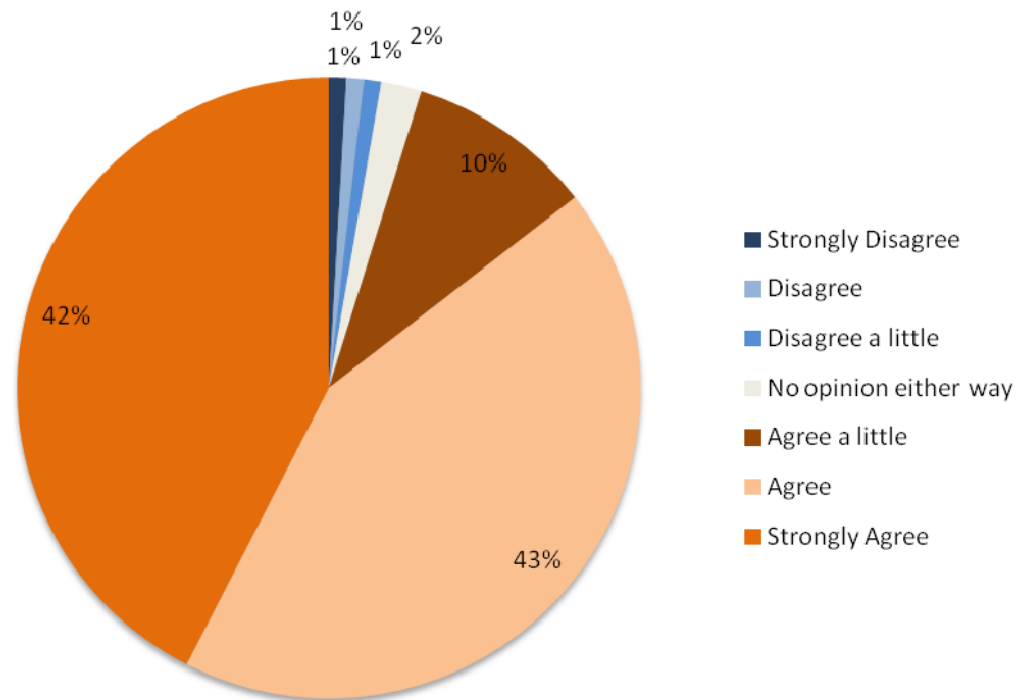
- Communication
- Critical Thought
- Creative Thought
- metaCognition



**"What was educationally significant and hard to measure has been replaced by what is educationally insignificant and easy to measure. So now we measure how well we taught what isn't worth learning."**

**Arthur Costa**  
**Emeritus Professor at California State University**

While assessing the work of my peers, I thought about the quality of my own work.



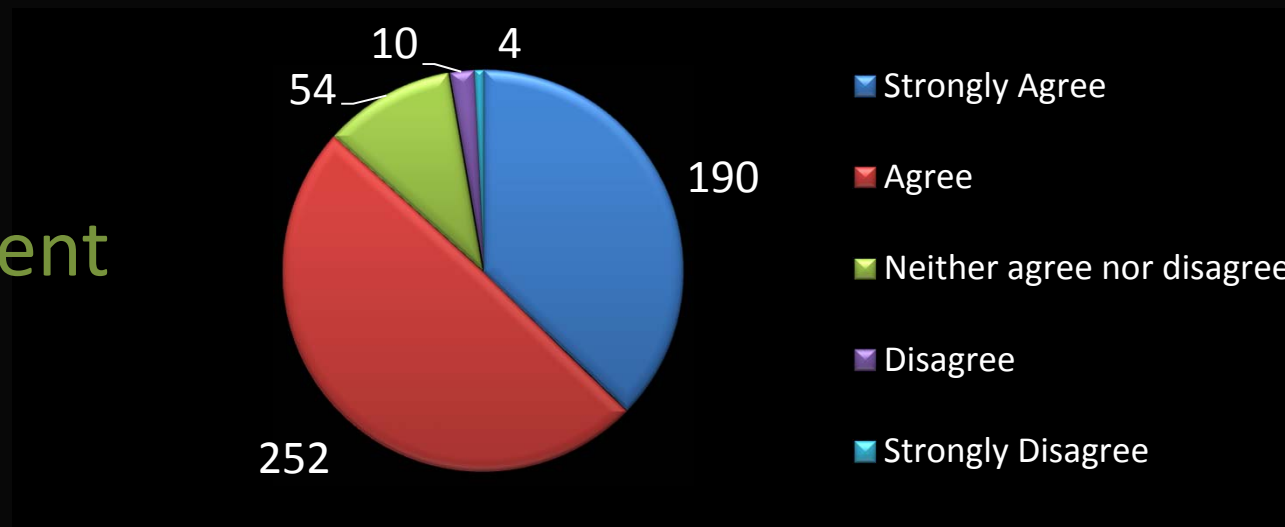
# Content

Surveys and Questionnaires



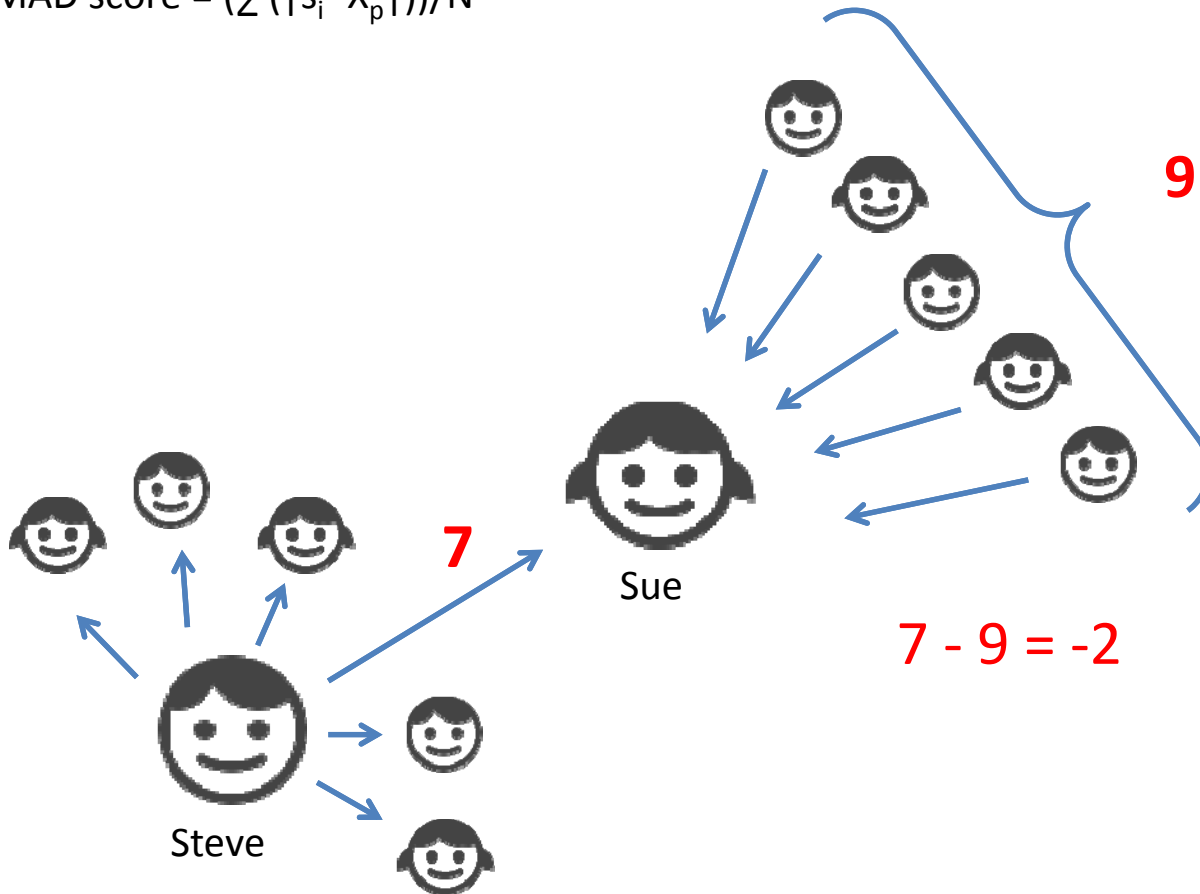
Student attitudes on the benefits of using pS in the Intro Psych Course to learn course material:

Content



# Critical Thinking

$$\text{MAD score} = (\sum (|s_i - \hat{X}_p|))/N$$



$$7 - 9 = -2$$

$$3 - 3 = 0$$

$$6 - 6 = 0$$

$$8 - 9 = -1$$

$$9 - 6 = 3$$

$$4 - 9 = -5$$

$$(2 + 0 + 0 + 1 + 3 + 5)/6$$

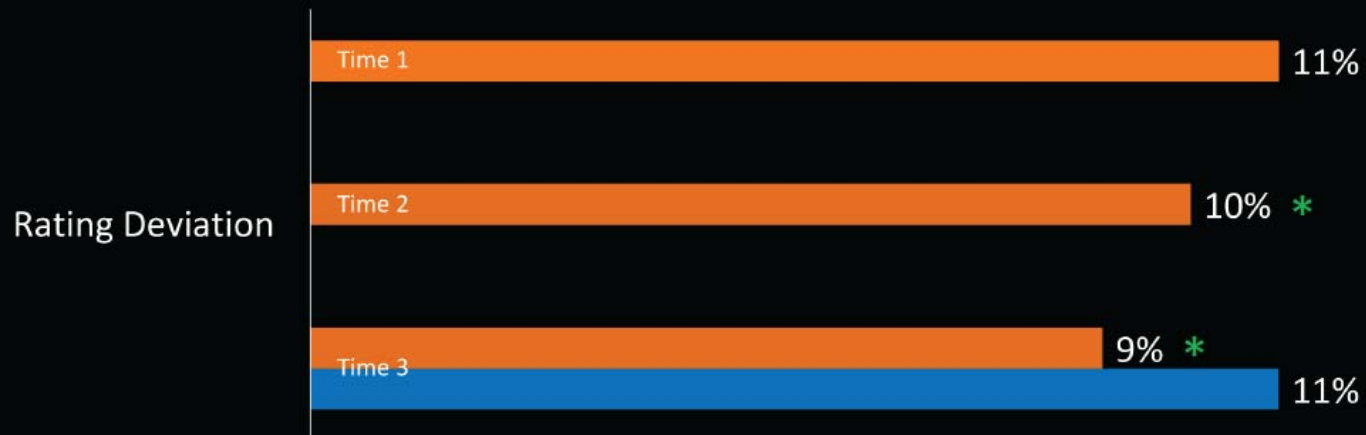
$$= 1.83$$



peerScholar is an evidence-based online peer & self-assessment tool. Our research has shown that use of peerScholar can enhance students' ...

## Critical Thinking Skills

Students significantly improved in their ability to rate the quality of peers' work across three peerScholar assignments. This is likely due to the peer assessment process and not the content of the assignment as the two groups (peer assessment & no peer assessment) were not different at Time 1 and Time 3.

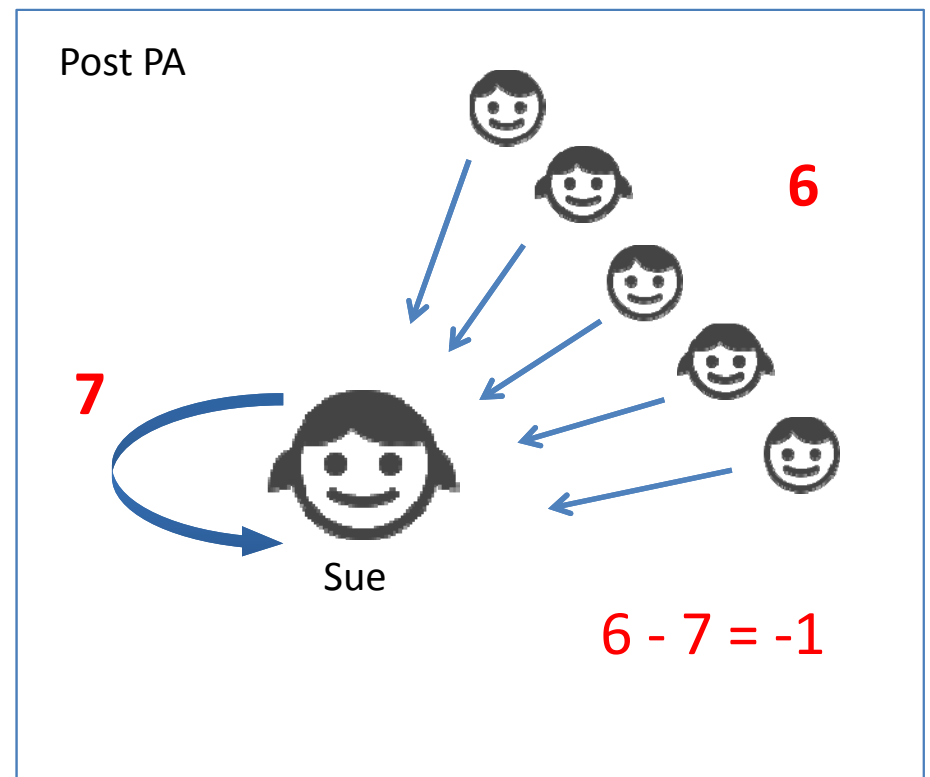
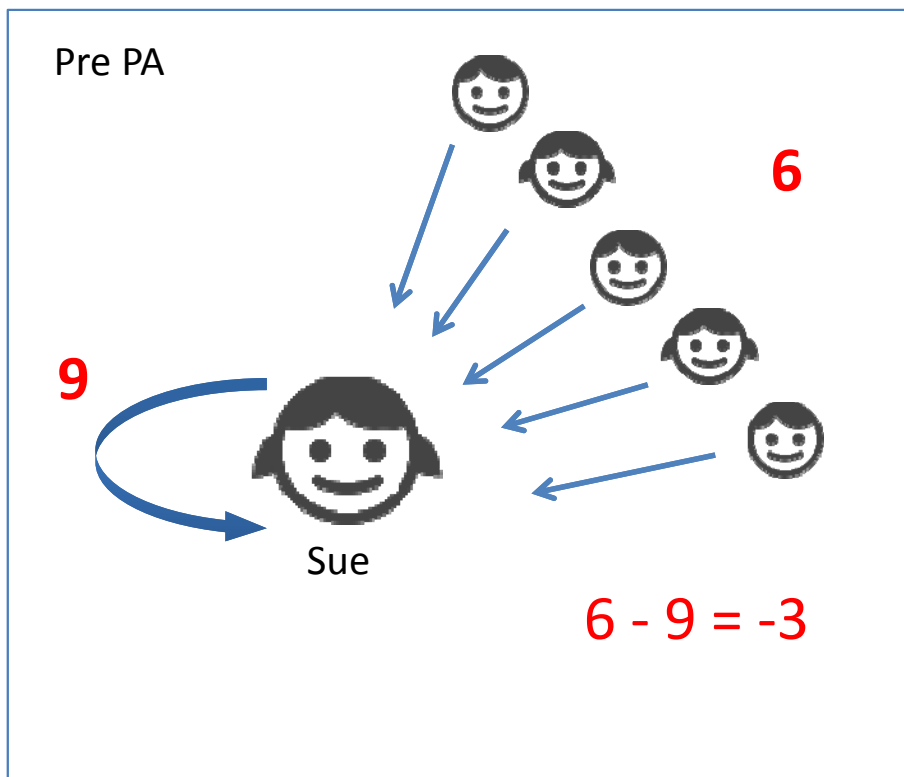


■ No Peer Assessment

■ Peer Assessment

# Meta Cognition

$$\text{mC score} = [\text{SAs (prePA)} - \text{As}] / [\text{SAs (postPA)} - \text{As}]$$



# Meta Cognition

Students were significantly more accurate at rating the quality of their own work (i.e. closer to their actual grade) after rating the work of their peers.

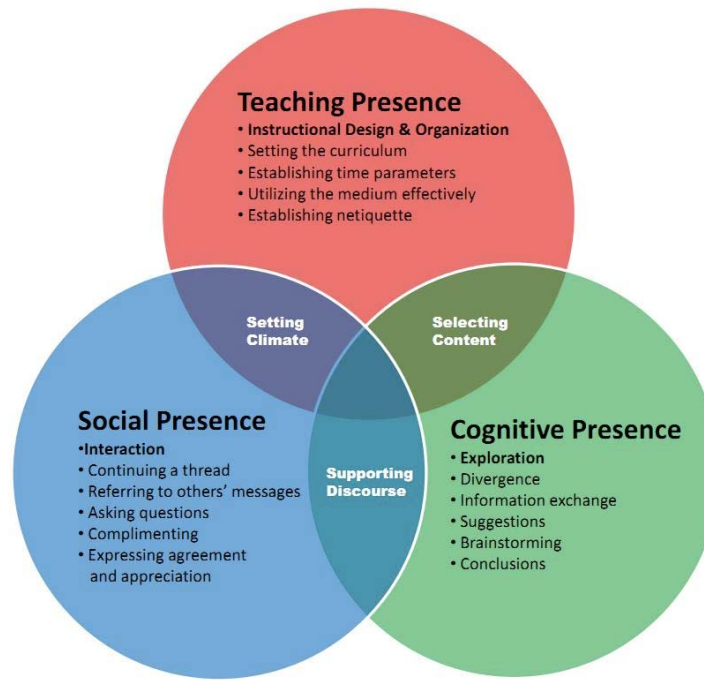


■ No Peer Assessment

■ Peer Assessment

# Community

Community of Inquiry (CoI)



**Community of Inquiry**

# Sense of Community

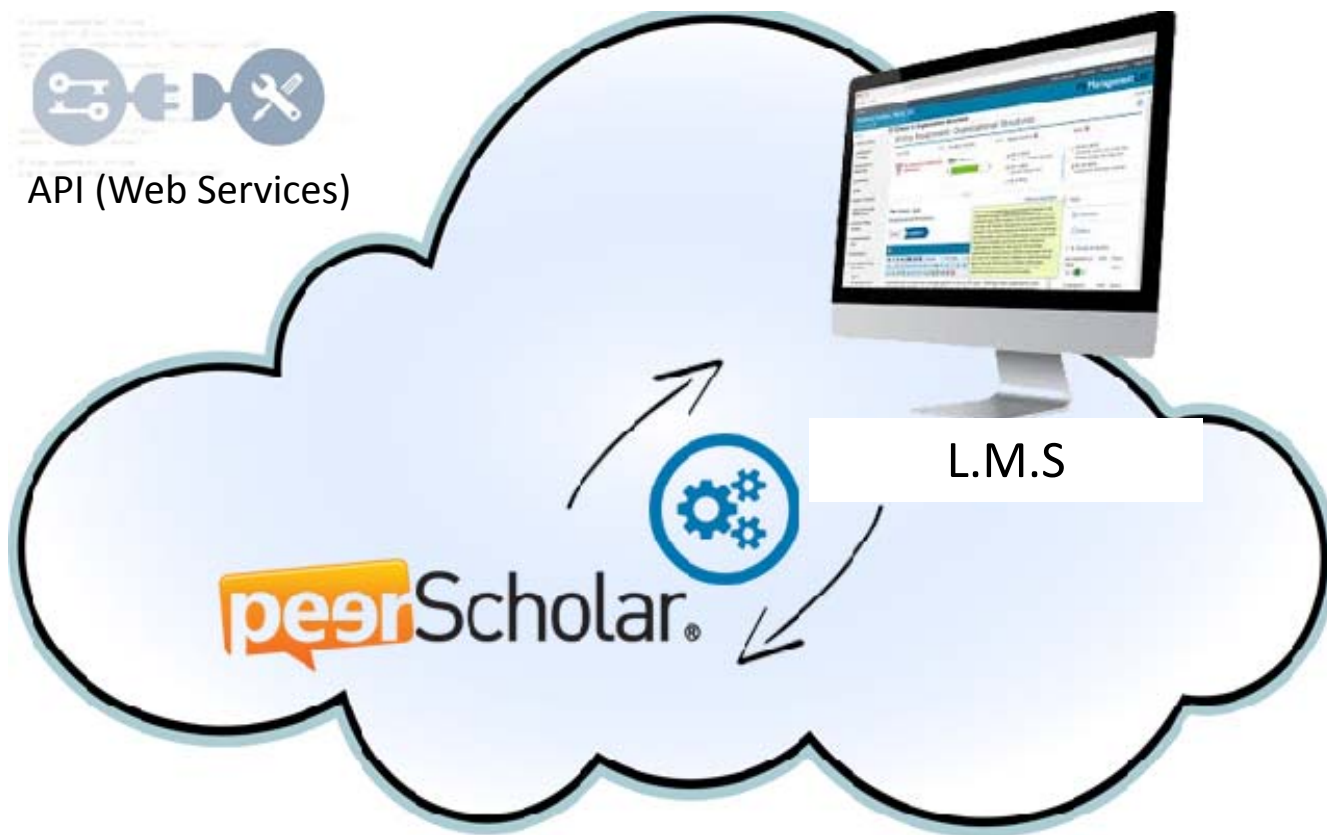
Students who used peerScholar to participate in a peer assessment assignment were significantly more likely to say they felt more group cohesion on the Community of Inquiry survey.



■ No Peer Assessment

■ Peer Assessment

# The Relationship Between peerScholar and Learning Management Systems



### In an automated way:



Grades for compositions provided by average peer rating (Paré & Joordens, 2008)



Grades for “quality of feedback” provided by average peer rating for quality of feedback



Or, students can submit a revision and the teacher grade based on their own combination of expert and peer feedback



[www.peerScholar.com](http://www.peerScholar.com)



[@peerScholar](https://twitter.com/peerScholar)



[www.facebook.com/peerScholar](https://www.facebook.com/peerScholar)



# ENHANCING LEARNING WITH ASSESSMENT TOOLS

Mary Power [m2power@uwaterloo.ca](mailto:m2power@uwaterloo.ca)

Paul Kates [pkates@uwaterloo.ca](mailto:pkates@uwaterloo.ca)

Steve Joordens [steve@sharpscholar.com](mailto:steve@sharpscholar.com)

August 2015



# WORKSHOP OUTCOMES

By the end of this workshop, you will be able to:

- Summarize research on using assessment as learning
- Use assessment tools such as mTuner, IF-AT cards and online quizzes to enhance student's learning



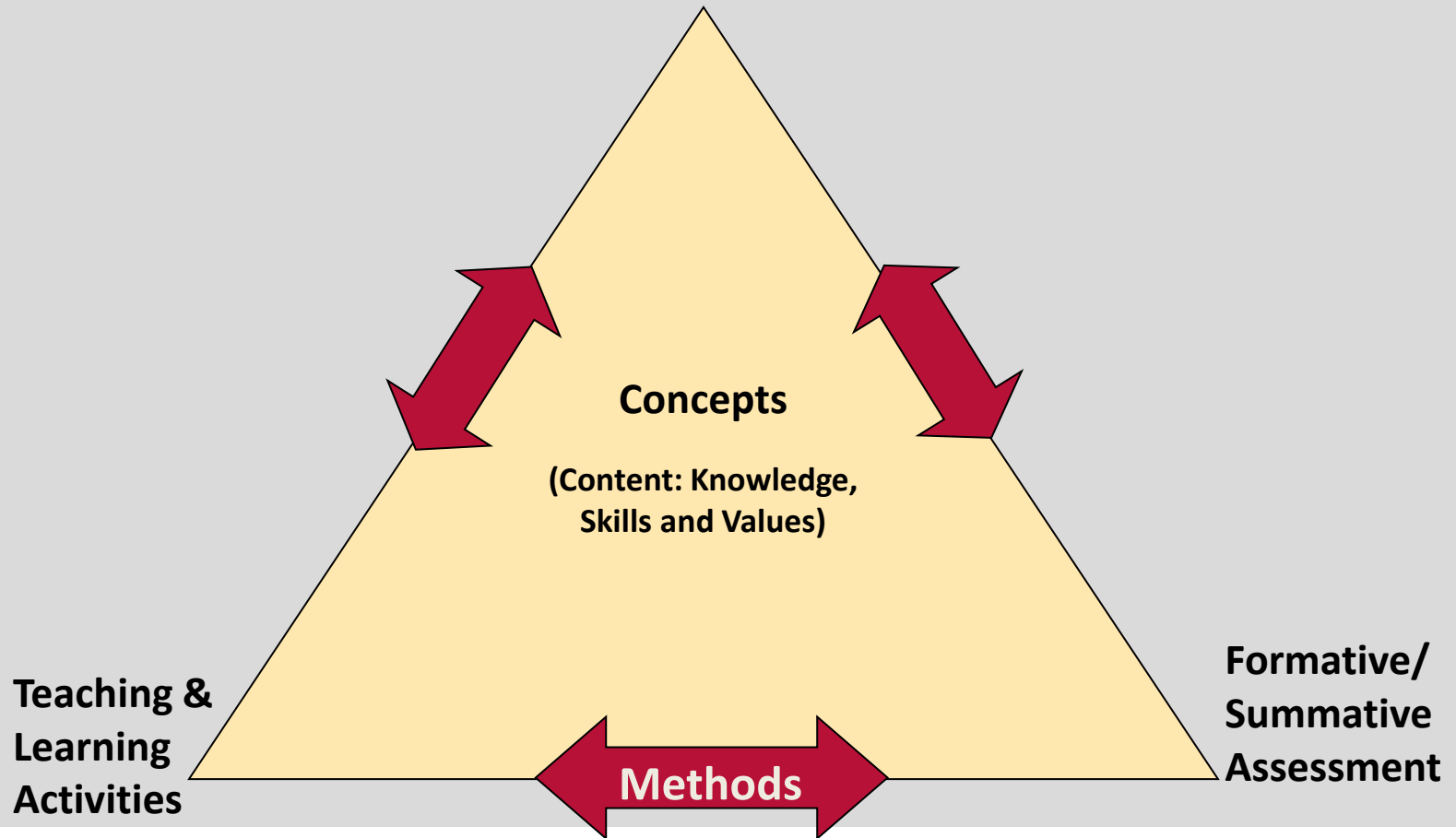
# OUTLINE

- Introduction to assessment for learning
- Overview of Sample Tools for Learning
  - mTuner
  - Quizlet
  - MapleTA
  - IF-AT cards



# COURSE DESIGN MODEL

Intended Learning Outcomes



# ASSESSMENT FOR LEARNING

- Testing effect/test enhanced learning : retrieval practice using active recall results in long term retention (review Roediger and Butler, 2011)
- Students most receptive to learning in assessment situation (McDaniel et al., 2007)
- Review of literature of learning strategies suggest practice testing and distributed practice (spacing) are most effective (Dunlofsky, 2008)
- Immediate feedback enhances learning (Butler et al., 2008) and prevents incorrect answer from being “cemented” (Roediger and Marsh, 2007)
- How students are assessed dictates what they learn (Biggs, 1999; Mazur, 2014)





- On line quizzing tool developed by Steve Joordens,
  - » First stage retrieval practice
  - » Then question options
  - » If incorrect hint (cue) followed by second attempt
  - » Feedback given to all
- <https://mtuner.ca/> (teststudent1 –user name and password)

# mTUNER

Some of the cells in a single organism have 22 chromosomes and some have 21 chromosomes and some have 23 chromosomes. How could this situation arise?

Type your answer here...

Submit

Some of the cells in a single organism have 22 chromosomes and some have 21 chromosomes and some have 23 chromosomes. How could this situation arise?

nondisjunction at meiosis I

nondisjunction during mitosis in the first cell division in the embryo

nondisjunction at meiosis II

nondisjunction events during mitosis in some somatic cells

If the signal sequence of a protein destined for the mitochondria were deleted where would the protein end up?

in the nucleus

randomly localized to any organelle

secreted by the cell

in the cytosol

## Explanation

The normal diploid  $2n$  number must be 22, and the haploid  $n=11$ . Chromosome numbers of 21 and 23 are aneuploids. This pattern of aneuploidy in a single organism indicates it could not have happened in meiosis. Non-disjunction events in meiosis would have produced gametes of 10 OR 12, resulting in aneuploid offspring of numbers 21 OR 23, not both in the same individual. Nondisjunction events during meiosis always create organisms that are entirely aneuploidy. This points to a problem in mitosis during early embryo development. The majority of the cells will remain at 22, but nondisjunction events in one (or a few) of the cells during mitosis can cause the resulting daughter cells to have an abnormal chromosome number (of 23 and 21). These chromosome numbers will be faithfully maintained by normal mitosis throughout the cell generations, causing the whole organism to be affected.

Close

Some of the cells in a single organism have 22 chromosomes and some have 21 chromosomes and some have 23 chromosomes. How could this situation arise?

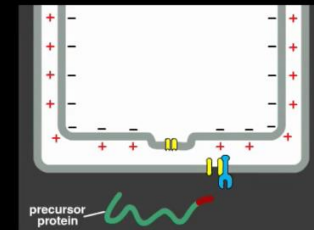
nondisjunction at meiosis I

nondisjunction during mitosis in the first cell division in the embryo

nondisjunction at meiosis II

nondisjunction events during mitosis in some somatic cells

## Hint



Close



# mTUNER

## Pros

- Students see questions without prompts
- Multiple “types” of hints possible
- Feedback provided after each question

## Cons

- MCQ so must be thoughtful to develop higher order questions





# QUIZLET <http://quizlet.com/>

- Free, practice quizzing tool available in 18 languages including Arabic (\$25 annual fee for enhanced teacher version which includes voice recording)
- Mobile apps (iphone, ipad, Android)
- If you want to play:  
<http://quizlet.com/70416109/assessment-technologies-flash-cards/>  
<https://quizlet.com/87630942/language-flash-cards/?new>



# QUIZLET

## Pros

- Students can test as often as they like, whenever they like
- Audio and various language capabilities
- Gaming features

## Cons

- Primarily lower order questions



# IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF-AT)

- <http://www.epsteineducation.com/home/>
- immediate feedback received - affirmative or corrective
- Provide the benefits of testing effect with the potential for peer learning
- IF-AT cards ~ \$125 per 500 forms



# IF-AT TEST

- Answer the following questions on your own, and then decide upon an answer as a group
- Score according to the following:
  - » First choice correct = 2 points
  - » Second choice correct = 1 point
  - » Third or fourth choice correct = 0 points

IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF AT®)

Name \_\_\_\_\_ Test # \_\_\_\_\_

Subject Phy 100A Total 175/200

SCRATCH OFF COVERING TO EXPOSE ANSWER

	A	B	C	D	E	Score	
1.					*	10	10
2.	*					10	20
3.		*				0	20
4.			*			10	30
5.					*	10	40
6.	*					10	50
7.					*	10	60
8.				*		10	70
9.					*	10	80
10.			*			10	90
11.					*	10	100
12.	*					10	110
13.				*		10	120
14.					*	10	130
15.					*	10	140
16.		*				0	140
17.			*			10	150
18.	*					5	155
19.			*			10	165
20.	*					10	175

# IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF-AT)

- Team Based Learning <http://www.teambasedlearning.org/>
- Two stage exams  
[http://www.cwsei.ubc.ca/resources/files/Two-stage\\_Exams.pdf](http://www.cwsei.ubc.ca/resources/files/Two-stage_Exams.pdf)
- Integrated testlets
  - *Slepkov A.D. (2013) Integrated testlets and the immediate feedback assessment technique. Am. J. Phys. 81 782-791*



# IF-AT ASSESSMENT

## Pros

- Peer learning possibility
- Immediate feedback
- Active classroom learning

## Cons

- Some manual grading required



# QUIZZES WITHIN LMS

- As a part of the LMS (ie Blackboard) , no need to login elsewhere, no additional cost and familiar environment
- Variety of question types possible including MC, T/F, MS, matching, ordering and quantitative
- Similar to mTUNER hints and feedback are possible



# LEARN – HINTS AND FEEDBACK

## Question 4 (1 point)

Which of the following represents a hydroxyl group?

- R-SH
- R-NH<sub>2</sub>
- R-OH
- R-CH<sub>3</sub>

∨ [Hide hint for Question 4](#)

O represents oxygen

C represents carbon

N represents nitrogen

S represents sulfur

R represents the carbon backbone

## Question 4

Which of the following represents a hydroxyl group?

- R-SH
- R-CH<sub>3</sub>
- R-OH
- R-NH<sub>2</sub>

∨ [Hide Feedback](#)

The hydroxyl group is composed of one hydrogen atom bonded to one oxygen atom. Its chemical formula is written as **-OH**.





# MapleTA ([click for video](#))

Understands math (core of STEM)

- Algebra, Calculus, Statistics, Finance,...
- Math notation (input and display): numbers, expressions, equations, lists, vectors, matrices
- Visualizations: 2d. 3d. animations, charts, apps

Quiz types

- Quiz: tests, practice: savable, printable, many settings
- Adaptive: advance/retreat among pools of questions depending on performance
- Study session: no set number of questions – try again if wrong

<http://courseware.cemc.uwaterloo.ca/>



# LET'S CONSIDER AN APPLICATION

**Work individually for 3 minutes.**

- Consider how you might use one of the tools presented today in your own teaching.
- How would you leverage the tool to provide a learning opportunity?
- Where and how would you use it?

**Share your ideas with a partner (6 minutes per person).**

- Allow your partner to ask questions . These questions may help you to better define your own ideas.
- Discuss the advantages and/or disadvantages to using the selected tool for your selected context.



# TOOL COMPARISON

mTuner	Quizlet	IF-AT	LMS	MapleTA
<ul style="list-style-type: none"> <li>• Retrieval practice</li> <li>• Hints (many options)</li> <li>• Immediate detailed feedback</li> </ul>	<ul style="list-style-type: none"> <li>• Good for practice</li> <li>• Gaming</li> <li>• Free</li> </ul>	<ul style="list-style-type: none"> <li>• Immediate feedback</li> <li>• Group learning</li> </ul>	<ul style="list-style-type: none"> <li>• hints and feedback</li> <li>• Paid by institution</li> <li>• Conditional release</li> </ul>	<ul style="list-style-type: none"> <li>• STEM</li> <li>• Free at UW</li> <li>• Test and Practice questions</li> <li>• Adaptive</li> </ul>
<ul style="list-style-type: none"> <li>• MCQ</li> <li>• Fees</li> </ul>	<ul style="list-style-type: none"> <li>• Primarily memory questions</li> </ul>	<ul style="list-style-type: none"> <li>• In class only</li> <li>• fees</li> </ul>	<ul style="list-style-type: none"> <li>• Most have many settings and can be confusing to set up</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced question types are complicated to set up</li> </ul>



# REFERENCES

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- <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/assessing-students>
- <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/developing-assignments/exams/exam-preparation>



# Introduction to the Flipped Classroom

Kyle Scholz  
Christine Zaza

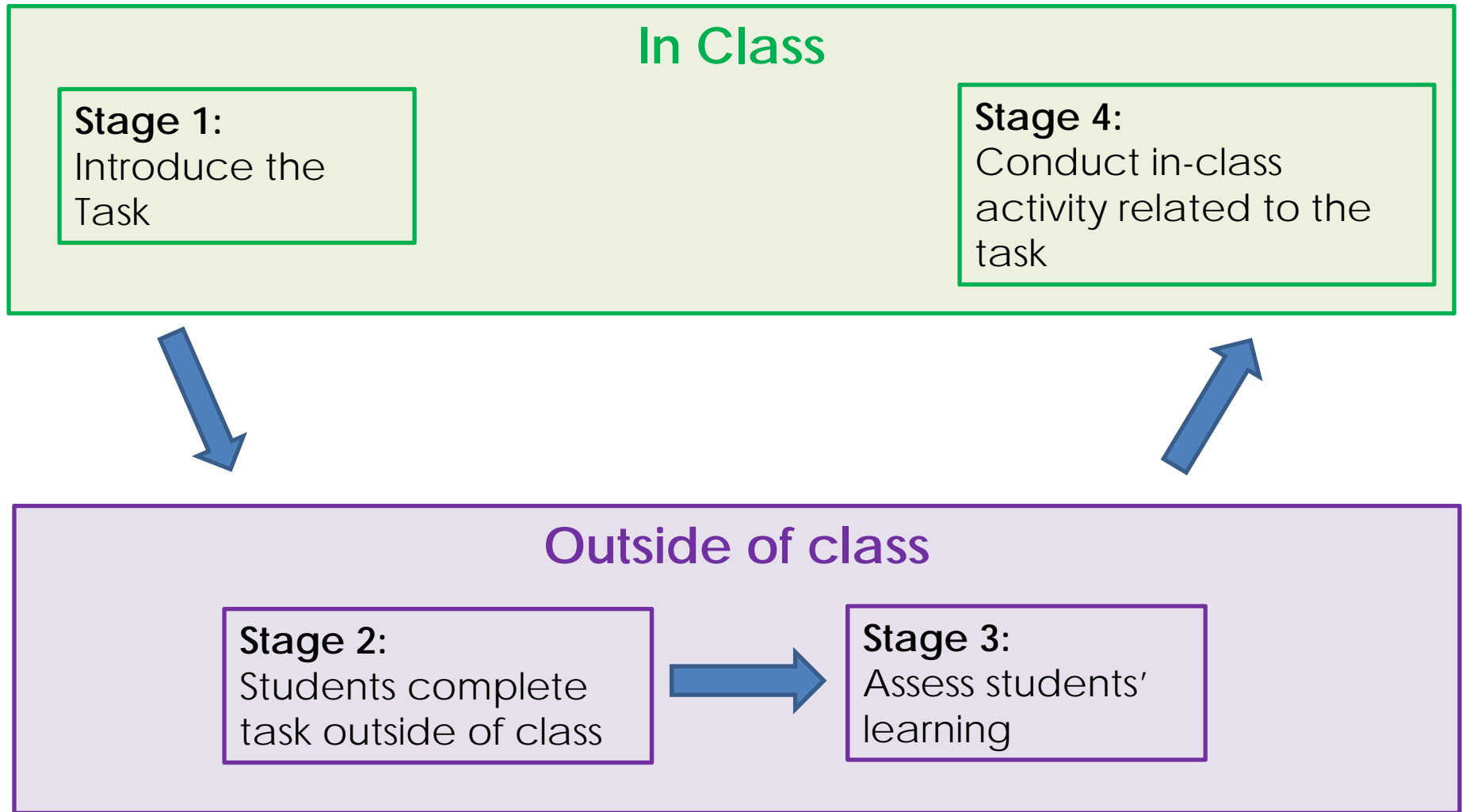
# Our plan for this morning:

- Engage you in a flipped class experience
- Identify what makes a class a “flipped” class
- Discuss the advantages and challenges of teaching a flipped class
- Identify which concepts might be taught more effectively in a flipped class in one of your courses

# Your “out-of-class” learning activity

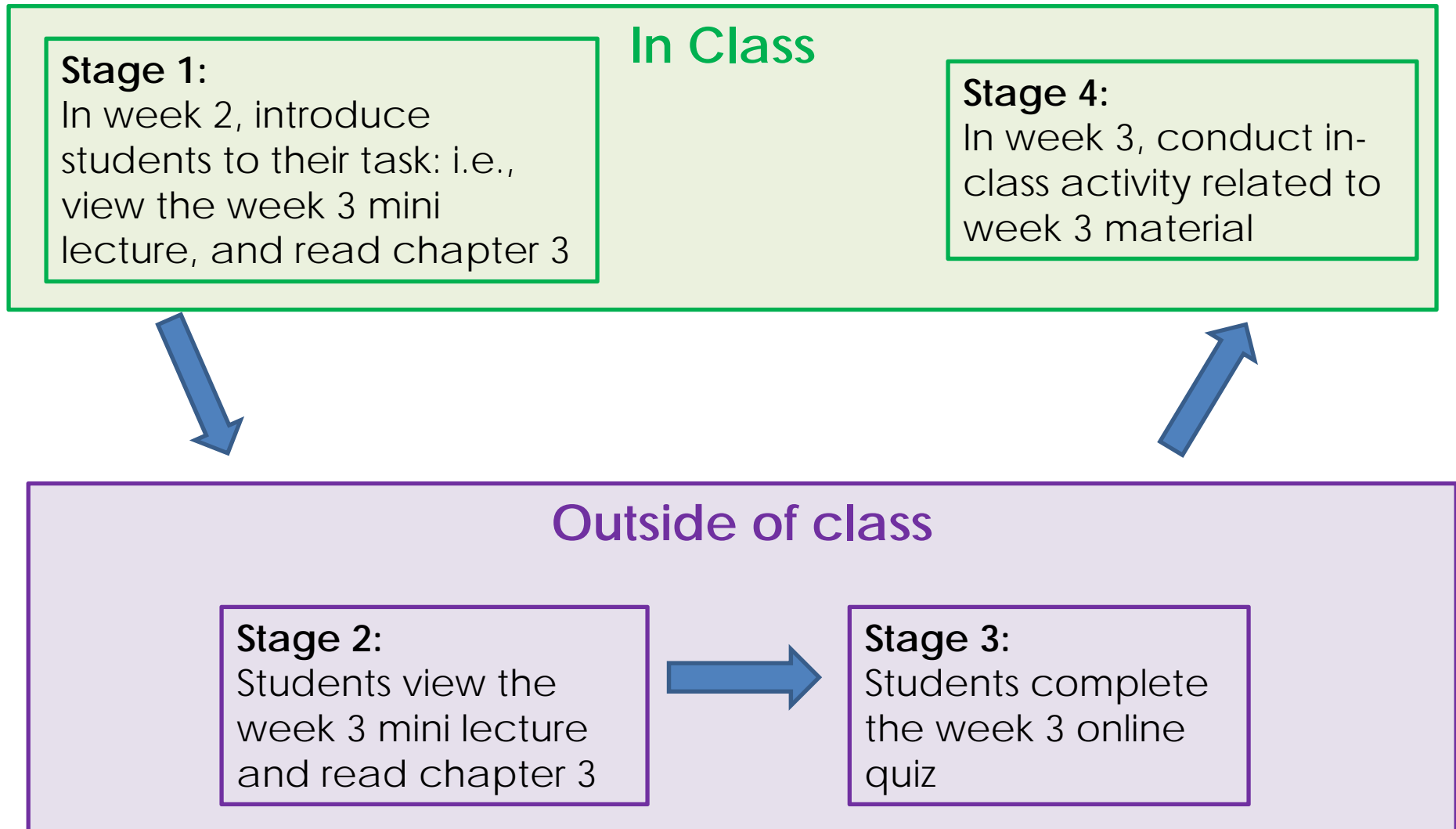
- Let’s get you onto LEARN ([www.learn.uwaterloo.ca](http://www.learn.uwaterloo.ca))
- Go into LEARN – find Advanced Session sandbox – you should all be students in this course
- Go to the Introduction to the Flipped Classroom folder
- Watch the video (see the guiding questions), read the article and submit the quiz as outlined in the instructions

# Flipped Class Model





# Example



## Stage 1: Introduce the Task

In Class:

- In the first class, introduce the flipped model
  - Communicate clear goals and expectations
  - Explain why you want students to do this
  - Tell students how long it will take them
  - How the task will be used in class
- Introduce the out of class task

Consider:

- time commitment and degree of challenge

## Stage 2: Out of Class Task

- Choose media carefully (videos, readings, podcasts, etc.)
- Create your own materials or pull in outside resources
- Create guiding questions or prompts for students
- Include a way for students to submit questions about difficult concepts to facilitate Just-in-Time Teaching (JITT)

## Stage 2: Out of Class Task

- You can teach **all** or just **some** specific core concepts online
- Using Blackboard for teaching activities is particularly useful when:
  - there's a wide variation in what your students know at the beginning of the course (pre-requisite material)
  - there are complex or challenging concepts
  - several good online resources already exist
  - you want to make time for exciting in class activities

## Stage 3: Assess the Out of Class Task

- Check for evidence of preparation for the in class activity
- Self assessment quizzes online can include questions that provide information about students' conceptual understanding and provide opportunities for providing formative feedback
- Low stakes assessment at the beginning of class can motivate preparation

### Consideration:

- Because students are more likely to remember and value what is assessed, assessing helps with learning

## Stage 4: In-Class Activity Related to the Task

- Answer students' questions from the out of class task
- The activity builds on the out-of-class task
- The objectives of activity are linked to course objectives and assessments
- Peer-to-peer and student-instructor dialogue is encouraged
- Create opportunities for collaboration and peer learning in a low risk environment
- Design well planned activities (discussion, problem solving, exploration)

# Advantages

- Can increase the amount and quality of instructor-student and student-student interaction in the classroom
- Allows students to access course materials at their own pace, when and where they want
- Assesses student work before they come to class
- Encourages better preparation for student and instructor
- Allows more class time to be spent on active learning activities
- Can foster peer learning

# Challenges

- In-class activities can be compromised if students do not come to class prepared
- Students' initial reaction may be challenging
- It can be time-consuming for instructors to prepare online teaching materials before the course
- Instructors need to be proficient with at least one of the technological tools for creating online material
- Instructors may need the support of the university before making this change

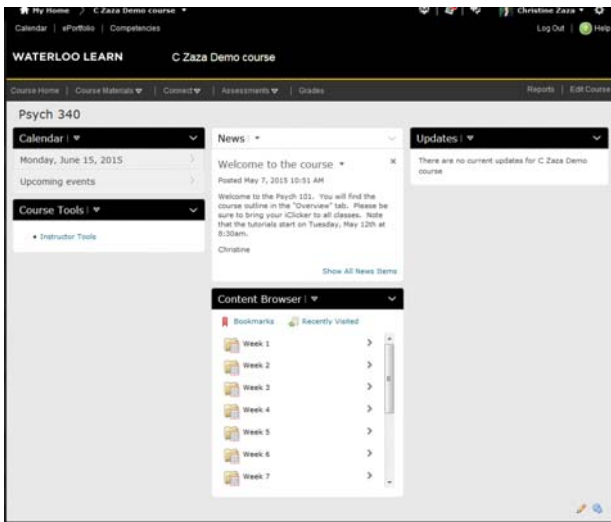


Examples from UWaterloo

# Psych 340 Training & Development (60 to 100 students)

## Online, Before Class

- Audio narrated slides
- Weekly quiz before class



## In Class

- Hands-on, team based, authentic learning activities



One Week

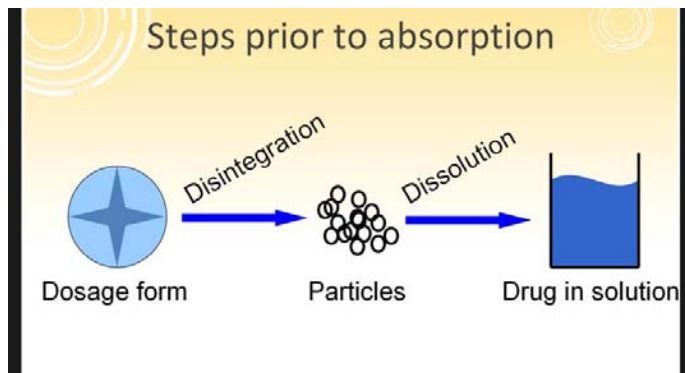
# PHARM 224 Pharmacokinetic Fundamentals

## Online Before Class

- Weekly lectures
- Weekly quizzes for self-assessment
- Weekly written problem sets for self-assessment

## In Class

- Bi-weekly, instructor-led tutorials, where students solve problems
- Bi-weekly mini sessions (“Mighty Minutes”) on challenging concepts



# Break

<http://bit.ly/flip-loop>

# Screencasting Tools

- Go back into LEARN
- Go to the Introduction to the Flipped Classroom folder again - Examples of videos
- Check out different types of videos – which could work in your course?

# Recommendations for Creating Online Teaching Material

Keep it **short** (< 10 minutes)

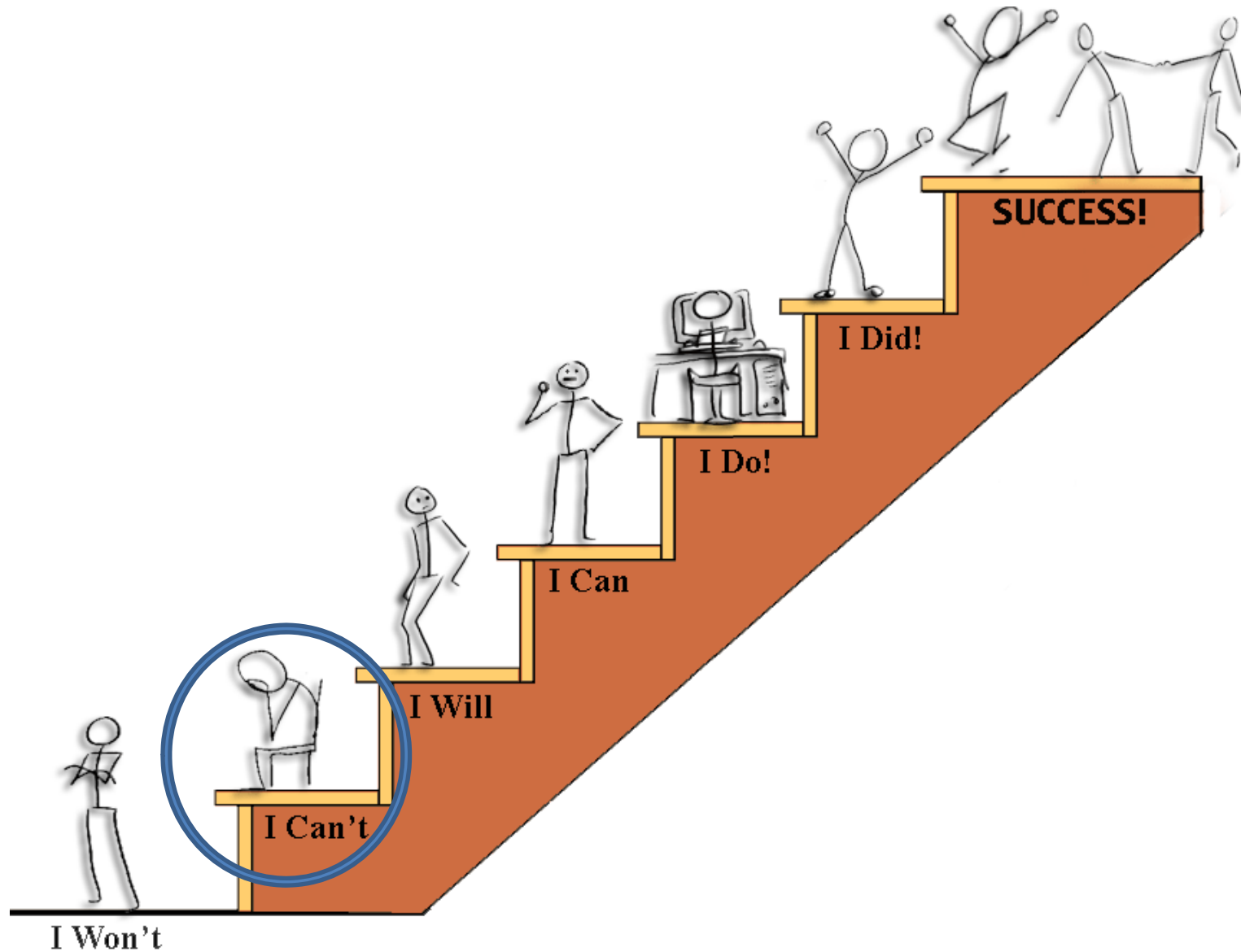


Ensure that **audio** is good quality





# Make it Accessible



# Font Size

This is 8 point font

This is 9 point font

This is 12 point font

This is 14 point font

This is 16 point font

This is 20 point font

# Use of Colour

This colour contrast is hard to read

This colour contrast is easier to read

Reading long passages with this colour contrast is fatiguing to the eye.

Don't rely only on colour when you want to emphasize important words because some people are colour blind.

Use lots of white space on slides.

Avoid red and green and yellow (because yellow is hard to read)

# Placement of Text

Keep text outside of the image



Model good practice for  
using and referencing  
copyrighted material



# Group activity

- Look at the cards with various in-class and out-of-class activities that could be used to structure a flipped classroom
- Choose 4 as a group
- Apply them to a classroom environment you are familiar with to create flipped classroom designs
- Prepare to share your thoughts with everyone else

# Flipping your own teaching

- Are there any specific activities that would work best for your teaching?
- On the handout provided, indicate which ones you would like to try in your own teaching.

# Final Words

- Start small
  - Flip only 1 or 2 classes
- Make learning meaningful



# Additional Resources: CTE Teaching Tip Sheets

- [Online Activities and Assessment for the Flipped Classroom](#)
- [In Class Activities and Assessment for the Flipped Classroom](#)
- [Nine Alternatives to Lecturing](#)
- [Developing Online Activities for Blended Courses](#)

# ePortfolios: Process and Product

Mark Morton  
Kyle Scholz





# Learning Outcomes of this Workshop

After the session, participants will be able to:

- explain how ePortfolios can enhance student learning
- describe how ePortfolios can contribute to a student's career success
- discover how ePortfolios might be integrated into their courses and/or program

# Structure of This Workshop

1. What are ePortfolios?
2. Why do ePortfolios work?
3. Evidence of Effectiveness
4. ePortfolios at the University of Waterloo
5. Assessing ePortfolios
6. Best Practices
7. Choosing an ePortfolio Platform
8. Resources



# What are ePortfolios? (A Description)

## A Product

A collection of digital artifacts that belong to or represent someone, such as essays, posters, photographs, videos, artwork, and other course-related assignments; volunteer experiences, employment history, and extracurricular activities.

All of the above are “products.”

## A Process

But ePortfolios are also a “process.”

For the learners, ePortfolios are a process of generating new or deeper learning by reflecting on one’s existing learning and/or experiences.

For instructors, ePortfolios are a pedagogical and assessment process.

# What are ePortfolios? (Some Distinctions.)

How does an ePortfolio differ from a blog?

- Blogs are “in the moment” (like a newspaper) whereas ePortfolios are more retrospective (like an annual report).
- Blogs grow and grow; that is, old blog postings are not removed. In contrast, an ePortfolio is trimmed and pruned of old artifacts and reflections as new ones arise.

# What are ePortfolios? (Some Distinctions.)

How does an ePortfolio differ from a Learning Management System such as Blackboard?

## Ownership

- An LMS is “owned” by the university; an ePortfolio is (or at least can be) owned by the student

## Control

- The design, appearance, and layout of a LMS is controlled by the instructor; with an ePortfolio, those aspects are more easily controlled by the student.

# What are ePortfolios? (Some examples.)

- [Solange Bonilla](#) (explore her entire ePortfolio, but note especially her “Competencies” page)
- [Kimberly McSorley](#) (note her “Teaching Philosophy” page)
- [Joel Swenddal](#) (note his “Influences” which include reflections)
- [Brenna Gall](#) (note her “Academic Highlights and Reflections” page)
- [Esther Troyer](#) (note her “Reflections” page)
- [Christina Lorimer](#) (note her “Professional Bibliography” page)
- [Daphne Powell](#) (note her “Welcome” page)





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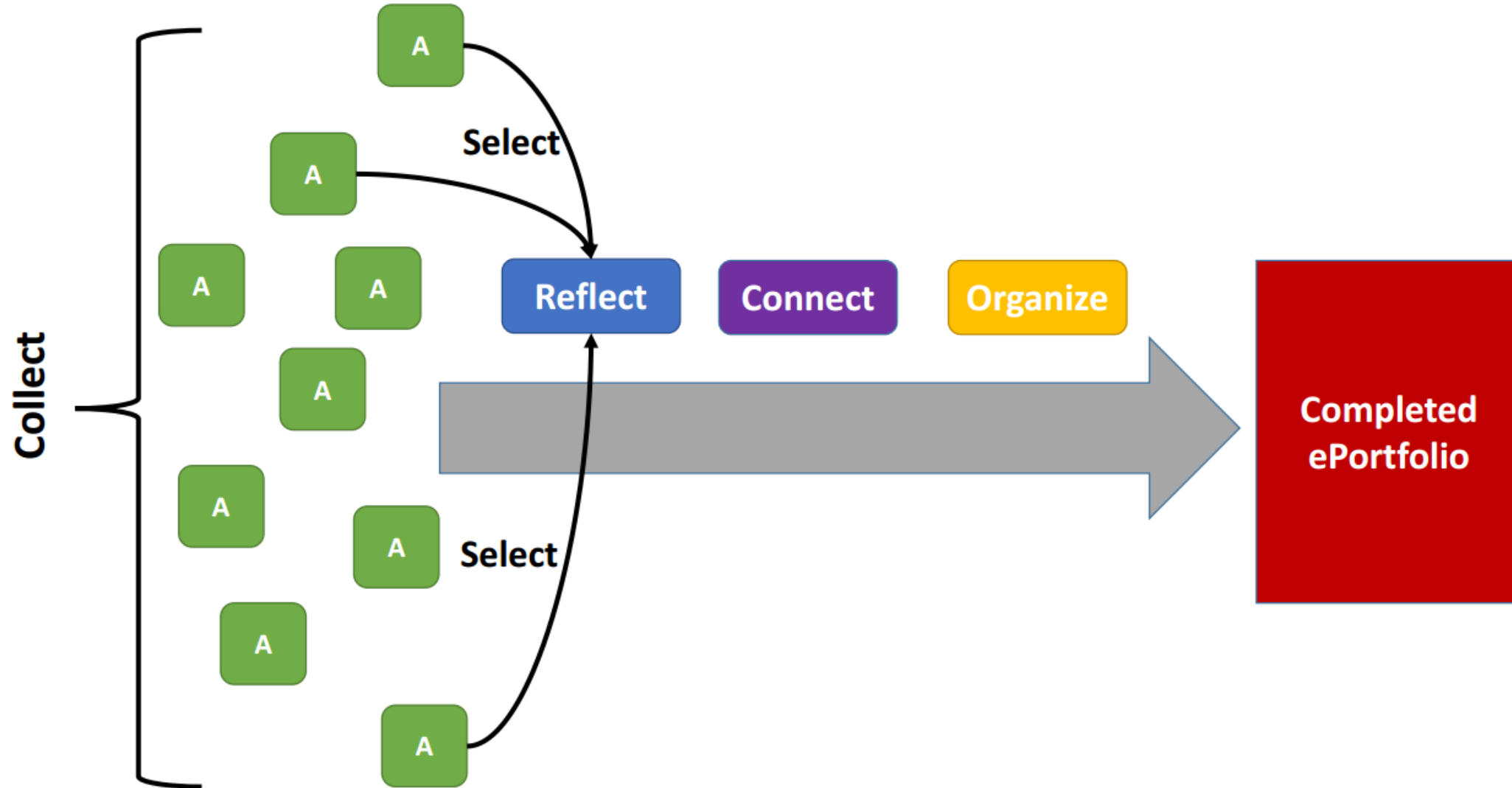
## A Process

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For the learners, ePortfolios are a process of generating new or deeper learning by reflecting on one’s existing learning and/or experiences.

For instructors, ePortfolios are a pedagogical and assessment process.

# The Process and the Product



# Just the Process

## E-PORTFOLIO LEARNING



See how San Francisco State University [articulates this process](#) to their students

# Student and Instructor Perspectives



# Why do ePortfolios work?

They leverage a learning theory called Social Constructivism, which says that learning happens most effectively...

- when students construct a system of knowledge for themselves, rather than simply having information presented to them.
- when it happens in a social context – that is, when a student constructs knowledge through dialogue and interactions with others.

# Why do ePortfolios work?

They encourage (or force) students to reflect on their learning and to make connections between different learning experiences, and between learning experiences and life experiences.

Connections strengthen learning



Reflection deepens learning



# Why do ePortfolios work?

They make “invisible learning” visible. Invisible learning is:

- The intermediate steps that occur whenever someone attempts to learn something or do something.
- Aspects of learning that go beyond the cognitive to include the affective, the personal, and issues of identity.

# Why do ePortfolios work?

They provide students with a sense of ownership and choice

“When students perceive that they have choices in how to learn subject matter they are more engaged and motivated to move beyond simple information acquisition to trying to gain an understanding of the subject.” <http://www.cjlt.ca/index.php/cjlt/article/view/97/91>



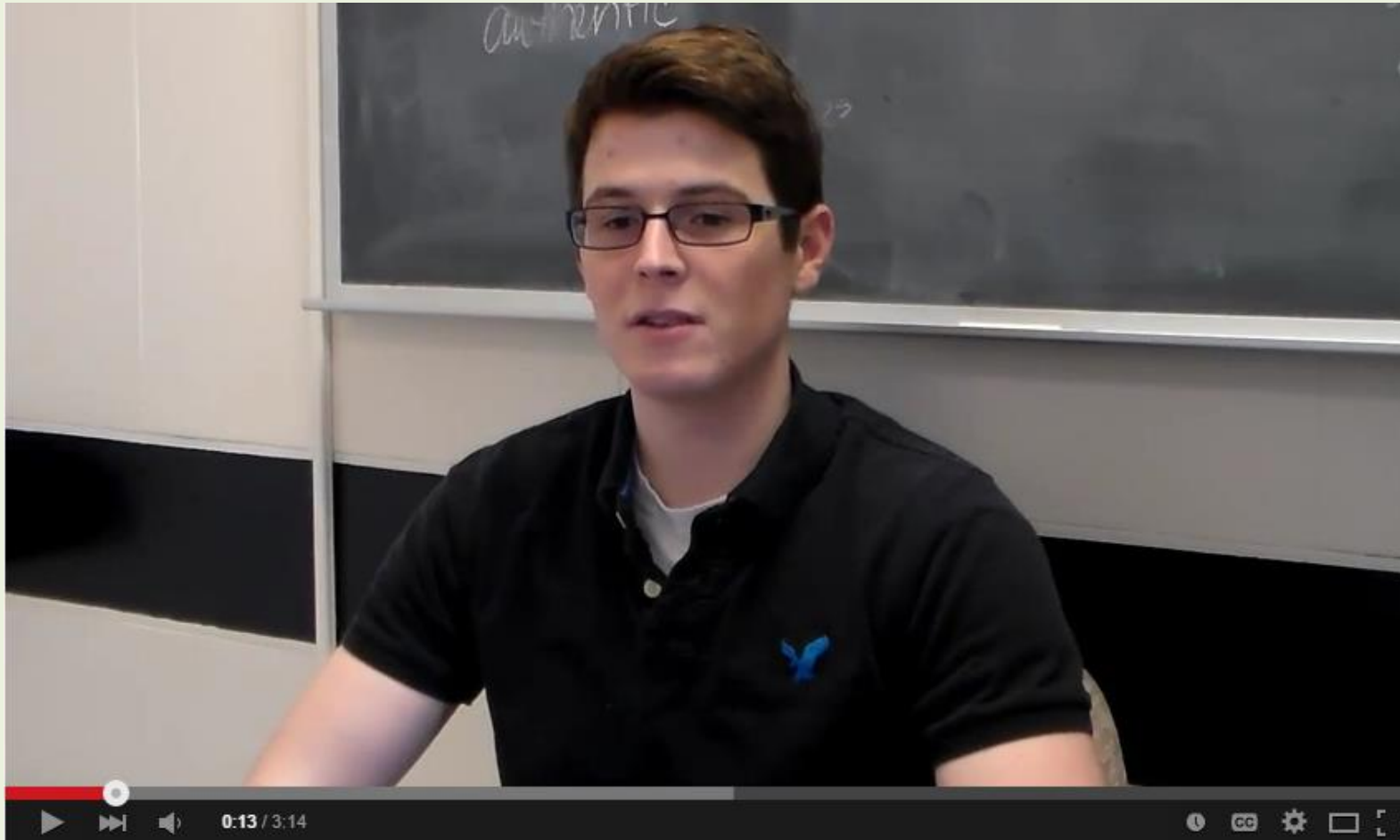
# Why do ePortfolios work?

They allow instructors to assess students more fully and deeply

<i>Traditional</i>	<i>Portfolio</i>
Measures student's ability at one time	Measures student's ability over time
Done by teacher alone; student often unaware of criteria	Done by teacher and student; student aware of criteria
Conducted outside instruction	Embedded in instruction
Assigns student a grade	Involves student in own assessment
Does not capture the range of student's language ability	Captures many facets of language learning performance
Does not include the teacher's knowledge of student as a learner	Allows for expressions of teacher's knowledge of student as learner
Does not give student responsibility	Student learns how to take responsibility

# Why do ePortfolios work?

Let's hear from a University of Waterloo student



Click the image to  
open the video  
(0.00 to 3.14)

# Evidence of Effectiveness

- “Undergraduates using electronic portfolios had higher grade-point averages, credit hours earned, and retention rates than a comparable set of students who did not use the system.” -- Bowling Green State University
- “In ePortfolio courses, the pass rate is 77%; in comparison courses, sections of the same courses where ePortfolio is not being used, the pass rate is 72%. For a high pass -- a C or above -- the pass rate in ePortfolio sections is 74%; in non-ePortfolio sections of the same courses, the pass rate is 67%. -- LaGuardia (C2L ePortfolio Research Project)

## Evidence of Effectiveness

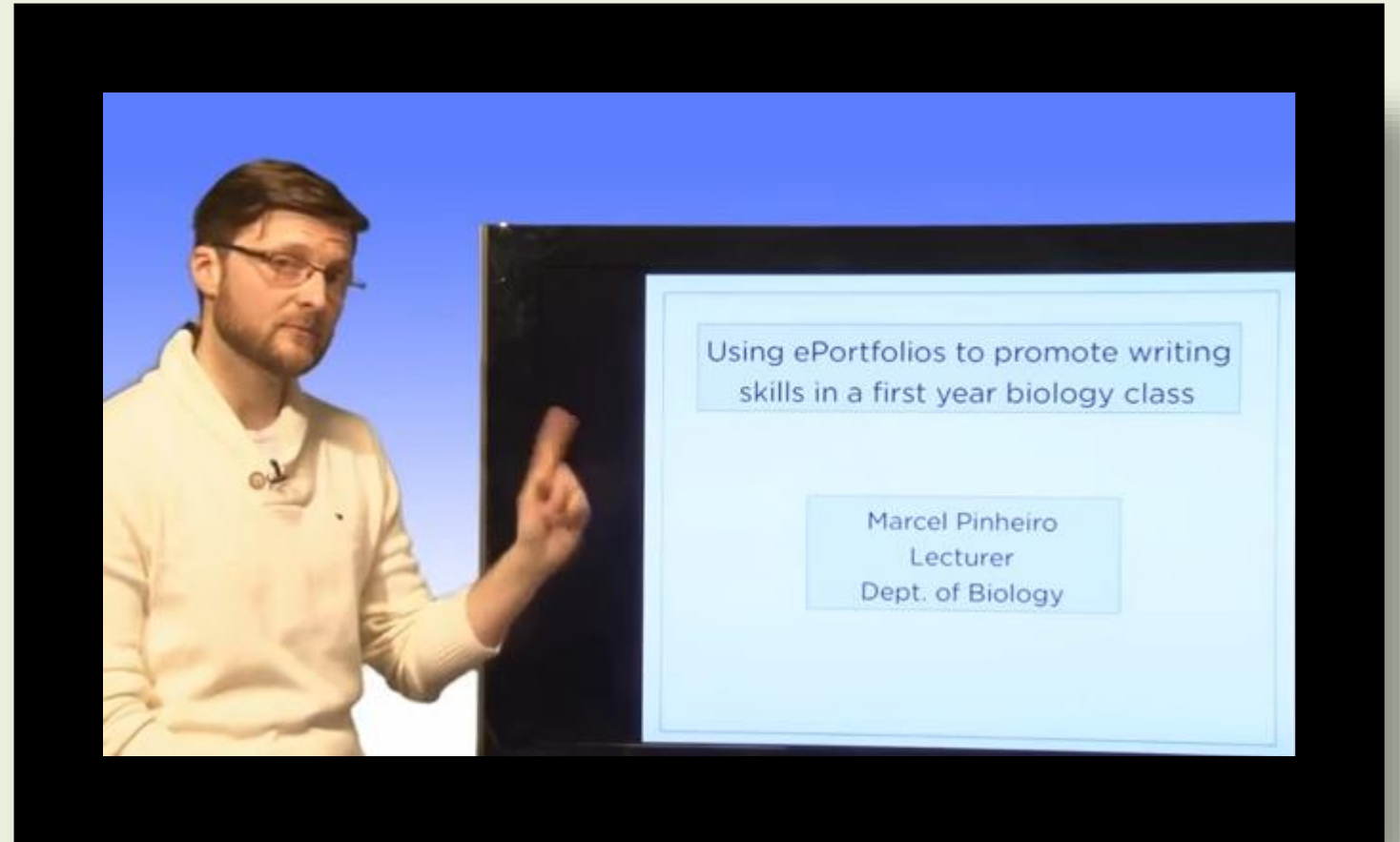
- Additionally, the LaGuardia study revealed 76% of students using ePortfolios in one semester returned the next semester; for non-ePortfolio students, the return rate was 71%.
- “Between the ‘before’ essays (submitted for a grade during the semester) and ‘after’ essays (submitted for the final ePortfolio), we observed a statistically significant improvement: on a 6-point scale used by holistic raters, 46% of the students sampled improved the ratings of their essays by 1 or more points.” – Reflection, Revision, and Assessment in First-year Composition ePortfolios, 2007

# ePortfolios at UW

- ePortfolios have been used at the University of Waterloo since 2000
- Courses using ePortfolios at UW in Winter 2015: **19**
- Number of students using ePortfolios at UW:
  - Winter 2014 - ~ 2100
  - Spring 2014 - ~ 1200
  - Fall 2014 - ~2600

# A UW Instructor Describes an ePortfolio Assignment

- Dr. Marcel Pinheiro
- First-Year Biology
- Class size: 270



Click the image to watch the video  
1:31 to 3:30 and 6:48 to 8:14

# A Demonstration

- Kyle will access UW's learning management system to demonstrate how he uses ePortfolios in one of his courses

# Assessing ePortfolios

- ePortfolios require a significant investment of time and energy from students. Therefore, it is important that they be assessed carefully, and that the assessment contributes in a substantial way to a student's final grade in a course.
- The best way to assess an ePortfolio is by means of a rubric such as this one: <http://bit.ly/eportfolio-rubric>
- Share the rubric with your students before they start working on their ePortfolios.



# Assessing ePortfolios

When assessing ePortfolios, special attention might be given to the reflection component, where students can be required to comment on how their chosen artifacts pertain to the achievement of targeted outcomes or competencies.

Examples of institutional competencies:

- [University of Waterloo's Undergraduate Degree Level Expectations](#)
- [Association of American Colleges and Universities: VALUE Rubrics](#)

# Best Practices

- Spend time explaining the benefits of ePortfolios to your students.
- Explain to your students what you expect them to do in their ePortfolios.
- Provide your students with numerous examples of successful ePortfolios that have been developed by other students.
- Encourage your students to look at and comment on one another's ePortfolios.



# Best Practices

- Create an ePortfolio for yourself, and share it with your students.
- Make the ePortfolio an integral and ongoing part of how you assess your students.
- Scaffold your students as they begin to develop their ePortfolio.
- Your ePortfolio platform should allow students the ability to customize the design and layout of their ePortfolios, so that they can feel that the ePortfolio is “theirs.”
- Your ePortfolio system should allow students to create different “views” or versions of their ePortfolio for different audiences.

# Some Instructors Have ePortfolios, Too

- [Hanna Erpestad](#), Lake Superior College
- [Eric Forsyth](#), Bemidji State University
- [Mark Morton](#), University of Waterloo



# Choosing an ePortfolio Platform

- [www.digication.com](http://www.digication.com)
- [www.taskstream.com](http://www.taskstream.com)
- [www.pebblelearning.com](http://www.pebblelearning.com)
- [www.myefolio.com](http://www.myefolio.com)
- [www.foliotek.com](http://www.foliotek.com)
- [www.epsilen.com](http://www.epsilen.com)
- [www.mahara.org](http://www.mahara.org)
- [www.foliospaces.org](http://www.foliospaces.org)

# Choosing an ePortfolio Platform

A 2009 study entitled “Evaluation of ePortfolio Software” assessed the functionality of most of the platforms named above. The authors concluded that “Mahara and PebblePad represent the most balanced products.” (Mahara is free if it is installed locally by your institution; or you can use the hosted version at [www.foliospaces.com](http://www.foliospaces.com))

MyeFolio is also a good platform [www.myefolio.com](http://www.myefolio.com)

# Resources

- Bass, R. (2012). [Disrupting Ourselves: The Problem of Learning in Higher Education](#). *Educause Review*, 47(2).
- [Catalyst for Learning: ePortfolio Research and Resources](#)
- CTE's [ePortfolio Resources](#)
- [International Journal of ePortfolio](#)
- Reynolds, C., & Patton, J. (2014). *Leveraging the Eportfolio for Integrative Learning: A Faculty Guide to Classroom Practices for Transforming Student Learning*.
- [Student ePortfolio Overview](#) at San Francisco State University

# Small Group Discussion

- Why would or wouldn't ePortfolios be a good idea in your course or program?



# The iPad for Teaching

Thorsten Dieckmann  
Department of Chemistry



# Overview

- **In class presentation: 2Screens, iAnnotate**
- **File management: Dropbox, Goodreader and iZip**
- **Office Documents: Polaris Office, Cloud-on**
- **Specialty apps: LogMeIn, Molecular Viewer, Symbolic Calculator, Endnote, ...**
- **Note keeping: Notes Plus**

# 2Screens

**Universal presentation app for PDF, PowerPoint, Movies, Images, Whiteboard, Camera**

<https://itunes.apple.com/ca/app/2screens-presentation-expert/id370913954?mt=8>

**Remote Control via 2Screens Remote for iPod touch and iPhone (Bluetooth connection)**

<https://itunes.apple.com/ca/app/2screens-remote/id379084072?mt=8>

**On screen projection via Apple AV adapter, VGA adapter or Airplay**

**Good summary of Info at:**

<http://www.math.uwaterloo.ca/~pkates/CTE/blog/2s-ipad/2s.html>

# iAnnotate

<https://itunes.apple.com/ca/app/iannotate-pdf/id363998953?mt=8>

- **PDF Viewer**
- **Can annotate files**
- **Can project PDF files**
- **Can access Dropbox and Box.net**

# File management

- **iOS does not have an accessible file system**
- **Files are assigned and stored with apps!**
- **To access my files I use Dropbox in conjunction with two apps as my central file hub**

[www.Dropbox.com](http://www.Dropbox.com)

- **Goodreader as universal file access as it can open and preview many different formats**

<https://itunes.apple.com/ca/app/goodreader-for-ipad/id363448914?mt=8>

- **iZip for access of compressed and encrypted files**

<https://itunes.apple.com/ca/app/izip-pro-zip-unzip-unrar-tool/id479665601?mt=8>

# Dropbox

- [www.dropbox.com](http://www.dropbox.com)
- Free with sign up, gives 2GB of space
- Additional free space for referrals up to 18GB
- Payed plans starting at \$9.99/month for 100 GB
- Apps for all mobile devices and PC and Mac
- I recommend to enable 2 Step verification for additional security
- In addition: Store student and any confidential information in encrypted, compressed files (7zip)

# GoodReader

- **PDF Viewer**
- **Can access many services (Dropbox, Box, FTP, email,...)**
- **Can preview many formats**

# iZip

- **File compression encryption**
- **Can open many compressed formats (zip, rar, 7zip, tar,...)**
- **Can open encrypted files**
- **Can save compressed and encrypted files (256bit AES)**
- **Useful as additional security layer for confidential files in the cloud or on your tablet/PC**



# Office Documents

**Create and edit MS office documents directly on the iPad: Polaris Office**

<https://itunes.apple.com/ca/app/polaris-office/id513188658?mt=8>

- **Quick and easy access. Limited functionality.**

**Use a Cloud service for full access: CloudOn**

<https://itunes.apple.com/ca/app/cloudon/id474025452?mt=8>

- **Has almost all MS Office functions available**
- **Must be connected to internet (good connection required)**

# Specialty Apps

- **LogMeIn – Access your desktop PC/Mac from the iPad and share the screen on the projector**  
<https://itunes.apple.com/ca/app/logmein/id479229407?mt=8>
- **Molecular Viewer: RCSB PDB mobile**  
<https://itunes.apple.com/us/app/rcsb-pdb-mobile/id529153183?mt=8>
- **Symbolic Calculator: SymCalc HD**  
<https://itunes.apple.com/ca/app/symbolic-calculator/id333252515?mt=8>
- **References: Endnote**  
<https://itunes.apple.com/us/app/endnote-for-ipad/id593994211?mt=8>

# Note taking

- **Notes Plus**
- **Versatile note taking app**
- **Handwriting, typing, drawing, photos, web clipping, ...**

**<https://itunes.apple.com/ca/app/notes-plus/id374211477?mt=8>**



# Making Screencasts with Camtasia

Dr. Mark Morton, Centre for Teaching Excellence

Alan Kirker, ITMS

# What is a screencast?

- ▶ It's a narrated video of your computer screen.
- ▶ It's not a video recording of a live event – e.g. a class lecture.
- ▶ Screencasts can include anything from still images (such as PowerPoint slides, photos, charts) to full motion (for example, the movement of your mouse cursor, drawing or writing on slide, video clips from lab demonstrations, etc.).
- ▶ Screencasts can be enhanced with
  - Call outs (arrows or circles that emphasize certain parts of the screen image)
  - Title cards (cards with text that introduce a new section of the screencast).
  - Panning (moving around your computer screen) and zooming (magnifying a certain part of your computer screen)

# Screencast are a growing phenomenon



- ▶ The Khan Academy (a repository of education screencasts) now has over 6000 screencasts on math, biology, physics, chemistry and more.
- ▶ Every month, screencasts on the Khan Academy are accessed by more than 10 million students.

# What are the benefits of Screencasts?

- ▶ You can use screencasts to deliver content that you don't want to cover in class
- ▶ Students can access the screencasts whenever and wherever they like
- ▶ Students can watch the screencasts as many times as they like
- ▶ You can deliver content outside of class time so that you can devote class time to interactive learning activities

# Should You Make a Screencast?

1. How many screencasts will you make? Is it worth the time it takes to learn the tool?
2. Will the screencasts save you time later on?
3. Will your students benefit more from the screencast than if you delivered the content in class?
4. Is your content suitable for a screencast?

A discussion of a class policy might be better presented as a document than a screencast. An explanation of the parts of the atom might be perfect for a screencast.



# What Screencasting Tool Should You Use?

- ▶ [Narrated PowerPoint](#)
- ▶ [MyBrainShark](#)
- ▶ [Screencast-o-Matic](#)
- ▶ [Camtasia](#)
- ▶ [Adobe Presenter](#)
- ▶ [Explain Everything](#)

# A diversity of Screencasts

You can easily do better than [this](#).

- ▶ Example of Bad Screencasting

With practice, screencasts of this quality are within your reach:

- ▶ [Khan Academy: The Cell](#)
- ▶ [Mark Morton: The Flipped Classroom](#)
- ▶ [Mark Morton: Smart\(phone\) Pedagogy](#)
- ▶ [Camtasia: Pre-Recording Tips](#)
- ▶ [Mark Morton: 17<sup>th</sup>-Century Typography](#) (made with Explain Everything on an iPad)

For something like this, you'll need either a lot of time or a production team:

- ▶ [How to Screencast like a Boss](#)

# Best Practices

- ▶ Aim to sound authentic rather than perfect
- ▶ Keep your screencasts less than 10 minutes in length
- ▶ Use images (and other visual content) to demonstrate or reinforce what you are saying
- ▶ Use images that are freely available under a Creative Commons license
- ▶ Use a good microphone
- ▶ Provide captions
- ▶ Use the picture-in-the picture feature effectively
- ▶ Work from a script if you need to (like [this one](#))
- ▶ Use screencasts to “flip” your classroom

# Further Resources

- ▶ [CTE Tip Sheet on Screencasts](#)
- ▶ [CTE Tip Sheet on Camtasia Studio](#)
- ▶ [CTE Tip Sheets on Flipping the Classroom](#)
- ▶ [A two-page summary of this workshop](#)

# The Rest of This Workshop:

1. I will demonstrate how to use basic editing tools in Camtasia Studio
2. You will practice using those tools
3. I will demonstrate how to record your screen using Camtasia Studio

## SCRIPT: recording the screen using Camtasia

<b>Step</b>	<b>Action on Screen</b>	<b>Narration</b>
1	<i>Show title screen</i>	Hello and welcome to this video tutorial on how to record the screen using Camtasia.
2	<i>Show MS Word doc</i>	Depending on the recording and your comfort level with narrating, having a script can help clarify the steps or points you'll describe. Thinking about the end us of your recording can help you determine how much effort you should spend creating it.
3	<i>Show pictures of microphone and noisy vent</i>	If you are concerned about the quality of the finished product, it is important to record using a decent microphone and a quiet recording space. One option is to book the ITMS recording booth, which is quiet, has a good microphone, and the Camtasia software loaded on its computer.
4	Show desktop icons being collected and moved into a folder	Before beginning the recording, first clear off your desktop in case it might be needed as a background for your recording. Also, you might also want to choose and activate a desktop pattern that isn't too busy.
5	Show desktop folder	Create a folder on the desktop and label it. When prompted to save recorded files, save them to this same folder. Camtasia saves the recorded files as "camrec" files. In another tutorial, you can find out how to edit and produce your recording in a "camproj" file.
6	Zoom in on the Camtasia icon	Locate the Camtasia software icon and click it to launch the program.
7	Show open camtasia interface	The two Camtasia recording options are 1. Recording the screen and 2. Narrating a Powerpoint presentation. This tutorial will show you how to record the screen.
8	<i>Show "lit" (ie. Ready ) icons on the taskbar. Open the screen to be recorded.</i>	To record the screen , first have the software, webpage, or whatever screen that you are going to record open. Have other screens to be recorded ready to launch.
9	Zoom in on the record the screen button in camtasia	Clicking the record the screen button minimizes the main Camtasia interface and opens the Camtasia recorder control bar.
10	Show dotted line. Adjust it. Maximize the webpage that will be recorded.	A green, dotted line appears around the screen to be recorded. This shows the area that will be recorded. Reduce or Enlarge it to suit the area that you want to record. Setting it to the maximum dimensions by clicking the Full Screen button on the Camtasia recorder control bar, and having the screen you want to record maximized, allows for the most flexibility as well as consistency with other pieces

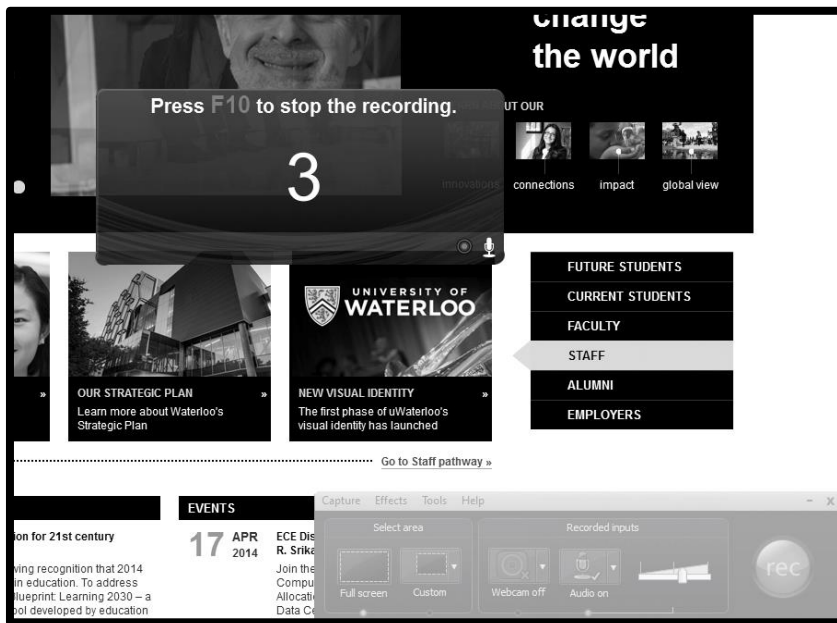
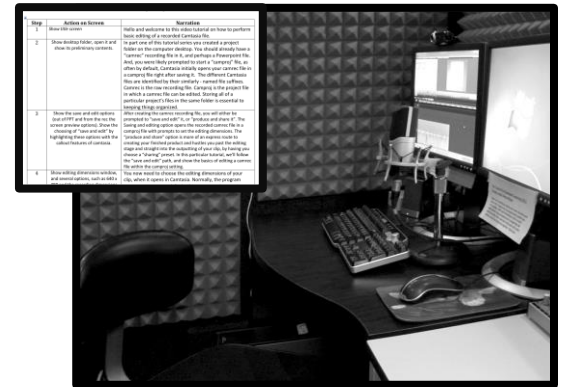
		to be recorded in your production.
11	Show Camtasia record controller, zoom in on audio adjustments. Show slider, show system audio setting.	Adjust the audio record level using the slider and do some test speaking. Check that the audio record levels don't go into the red. If you need to record the system audio, such as in the case of including the audio of an online video, make sure the 'record system audio' is selected
12	<i>Zoom in on webcam control</i>	If you want to have a small inset video of your head and shoulders appear over top of the screen recording in the finished production, You can turn the webcam on at this point, using this button. A small preview window should appear. For this particular demo, we won't enable it.
13	<i>Show red record button</i>	Once you have adjusted your settings, click the red record button. A small screen will appear with a count-down.
14	<i>Show screen with stopping and pausing instruction spelled out</i>	You can now begin your recording and narration. Pressing F9 on the computer keyboard pauses the recording. Pressing F10 causes the recording to stop.
15	<i>Show preview window</i>	When you stop the recording, a preview window will open and allow you to review what you have just recorded. In the preview window, you can then choose to either save and edit your recording, produce it, or delete it. Save the recorded "camrec" file to the appropriate desktop folder.
16	<i>Continue to show preview window</i>	In part 2 of this tutorial series, you'll learn how to do basic editing of your recording within a Camproj file.

# Camtasia for Screencasts

A Handout to Accompany the Presentation. Mark Morton and Alan Kirker

## Preparing

1. Depending on the nature of your project and how much time there is to invest, you may want to consider using a **script**.
2. Having a **quiet place** to record and a **decent microphone** are essential. Consider booking the ITMS sound booth (pictured at right).



## Recording

3. Tidy your computer desktop and prepare a **project folder** into which all of the current project's files will go.
4. Briefly rehearse, or create a mental picture of what you'll need to do as you begin recording. Have any documents or webpages to be narrated on screen, or minimized and **ready** to launch.
5. Click the **"record the screen"** button within Camtasia to launch the Camtasia recorder (pictured above).

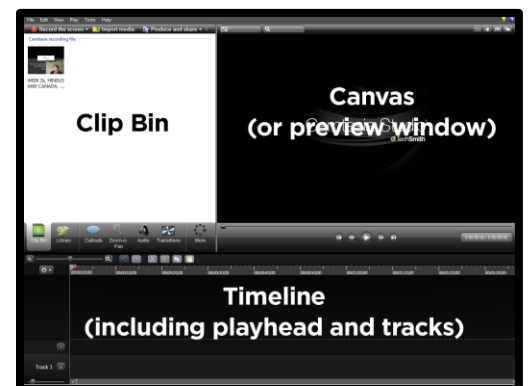
Set microphone volume, begin narrating and, at the same time, performing any cursor or screen movements related to the narration.

6. Stop recording by pressing F10. The recording opens in a **preview window (pictured below)**. Preview-play the recording and then **choose the save and edit option**. Save it to the **project folder**.



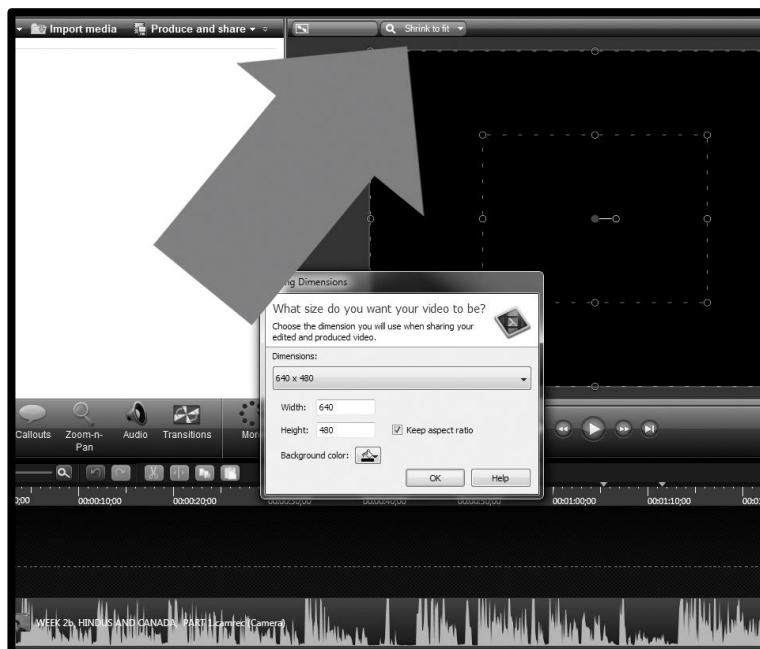
## Basic Editing

7. Become familiar with the main components of the Camtasia workspace (pictured, above, right): **clip bin** (or effect/function controls depending upon which tab is selected), **canvas** (or preview window), and **timeline**. Timeline editing tools (and magnifier tool) are located immediately above it to the left.



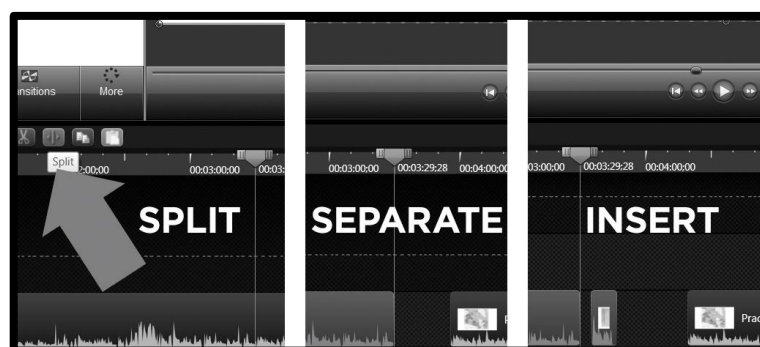


8. When a recorded “camrec” file is automatically opened in Camtasia after recording, or you first **drag a camrec or mp4 file onto the timeline**, you are prompted to set a **dimension** for your project. If no prompts appear, select from the drop-down menu. For this demo, use the default. **(The arrow in the picture at right indicates the location of this setting).**



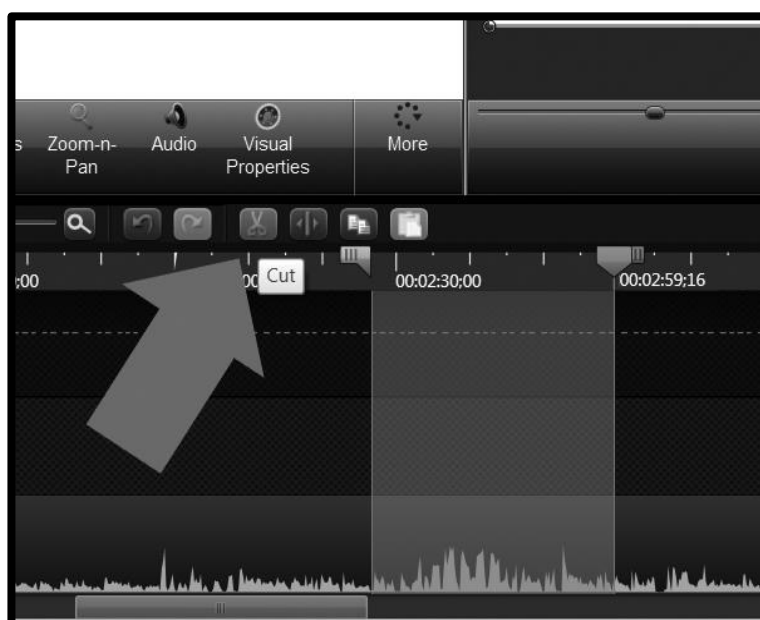
9. The key feature of the timeline is the **play-head**. This can be moved to show a particular point in time of the tracks of the recording. Using the **keyboard spacebar starts and stops the play-head**. The point at which the play-head is at is shown in the preview window (or “canvas”).

10. Splitting a recording can be accomplished by first positioning the play-head at the point you want to split and selecting the clip on the timeline (note that it turns blue when selected) and then clicking the “**split**” button **(The grey arrow is pointing to it in the picture at right)**. Once split, the pieces can be separated and (click-) dragged apart on the timeline. Another piece of recording can now be inserted in the space. Adjacent pieces can be click-dragged to close any gaps.



11. Editing, such as the removal of an undesired piece of the recording is accomplished by positioning the play-head at one end of the piece to be removed and dragging either the red or the green tab at the top of the play-head in the direction of the piece-to-be-removed. **A light-blue selection area will appear, delineating the area. (This is displayed in the image below-right as a light grey rectangular area).**

The selection can be **previewed** (listened to / watched) **by pressing the space bar on the keyboard**. Adjustments to the selection area can be made by moving the respective coloured tabs that form the top of the play-head. When this area to be deleted is set, press the “**cut**” button **(scissors icon, and pointed to by the grey arrow in the adjacent image)**. This removes the piece and “stitches” the adjacent ends together.



12. To “**deselect**” an area of the timeline that has been selected in the manner described above, double-click on the grey, top-center part of the play-head. This will cause the selection area to retract. At some point early in the production, **save your new project** to the project folder.

---

## Adding a Callout or Title-card

13. Add a **callout** by first clicking that tab under the clip bin and choosing a callout from the available selection. The callout's parameters can be changed from the effect/function area (that now appears instead of the clip bin). Note that **callouts and effects get placed on the timeline corresponding to where the play-head is**. The call-out can be resized or rotated by first selecting it on the timeline, and then transforming its instance on the canvas by click-dragging the corner points, or rotating it by selecting its center point.



Similarly, a **title-card** can be added to the production by clicking the same callout tab and then choosing, for example, a rectangular shape, adjusting its parameters, adding text to it, resizing it, and so forth.

---

## Adding Zoom & Pan Effects, Outputting

14. To add **zoom and pan effects**, select that menu tab from beneath the clip bin. The zoom and pan parameters can be changed from the menu area that now appears instead of the clip bin. A **small zoom marker** appears on the timeline corresponding to the part of the clip. This zoom marker can be moved on the timeline to change its location in the recording. It can also be shortened or extended to change the speed at which the effect occurs.



15. Finally, **output** your finished project by clicking the **produce and share** button that is located above the clip bin area. Select from one of the default settings or, if required, create a custom setting.

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## Additional Resources & Links:

- For in-depth Camtasia video tutorials, visit: [www.techsmith.com/tutorial-camtasia-8.html](http://www.techsmith.com/tutorial-camtasia-8.html)
- Alan Kirker extension 37109.
- Mark Morton extension 37765.
- To book the ITMS sound booth: call the ITMS studio extension 36784.
- To inquire about microphone rental: contact ITMS equipment stores at extension 33257.
- To download sample script templates, and this handout, visit the SEW SharePoint.

**Making a Screencast: Best Practices**  
**Dr. Mark Morton, Centre for Teaching Excellence**

**Should you make one?**

1. How many screencasts will you be making? If you're only making a couple, then is it worth the time it will take to learn how to use a program like Camtasia? Could you make the screencast with a simpler program such as SlideShark or Screencast-o-Matic?
2. Assuming that you know how to use Camtasia, making a screencast still takes a fair bit of time (a seven-minute screencast, if you need to edit it, could take a couple hours to make). Will the making the screencast save you time later on? (For example, because it will mean that you don't need to explain something many times to many people.)
3. Who will benefit from your screencast? How many will benefit from it? Are there people who would prefer a screencast (for example, because they have English as a second language and will want to watch the screencast several times)?
4. Is the content you want to share suitable for a screencast? Some content, such as a discussion of a policy, is probably better presented in document form than in a screencast. Other kinds of content – such as a demonstration of how to find and reserve a library book online – is well suited to being a screencast.

**Length**

1. Try to keep your screencasts to less than seven minutes in length. If you have a lot of content to cover, break it into several screencasts (or into a longer screencast that has explicit "chapters" in it).

**Where will you put it?**

1. After you make a screencast you can upload it to a public space such as YouTube or Vimeo. Or you can put it in a private or controlled space such as SharePoint or a Learning Management System. Unless there is some compelling reason to control access to the screencast, it's probably best to upload it to a public space: it will be easier for your intended audience to find it, and you will also benefit other people who might not be part of your intended audience. (For example, I created a two-minute screencast for my 20 co-workers in the Centre for Teaching Excellence that explained how to add a link to SharePoint; I put it on YouTube, and it has now been viewed more than 4000 times by people all over the world (some of whom have added comments to the video expressing thanks for my sharing it).

**Use images (but use them effectively)**

1. A screencast that that is just made of text with you narrating it will not be very engaging. Use images to create visual interest, and to reinforce what you are saying.

2. Make sure that you have permission to use the images that you use. One good source is Flickr. Do an advanced search in Flickr, searching for images that have been labelled as free-for-use under the Creative Commons License.

### **Should I use the picture-in-the-picture feature?**

1. The picture-in-the-picture feature is where a small video of you appears in the lower part of the screen as you are narrating something on the screen. Some people say that this helps to “humanize” the screencast. To my mind, it’s one more thing to worry about, and unless you are George Clooney or Angelina Jolie, it probably doesn’t add much to the screencast. 😊

### **Do you need to create a script?**

1. Some people have the ability to “speak in paragraphs”; such people can probably make a screencast without first creating a script, especially if they know the content well. Most people, though, will find it much easier to make a screencast if they first create a script for themselves. The very act of writing the script will help them organize their thoughts; as well, as they are making the screencast, having the script in front of them will keep them on track. However, if you do work from a script, try to make your narration sound natural and even “off the cuff.”

### **Providing captions**

1. Legally (in Ontario) if the screencast is on a public site, then it must be captioned or a script must be available (e.g. you could link to it online, or if you put it on YouTube you could add it to the description). If your screencast is on a password protected site, then this legal requirement doesn’t apply. However, Waterloo still recommends captioning or making a transcript available. If you have written a script before making the screencast, then making this script available will be fairly easy. If you want to go one step further, and caption your screencast, then there are tools that can assist you. For example, you might start by using YouTube’s captioning tool: it will attempt to transcribe your narration into text. Once it has done so, you can download it and make corrections; after doing so, you can then upload it again to YouTube (or use it elsewhere).

A dynamic version of this outline (one whose levels can be closed and opened) is available here: <https://workflowy.com/s/ZJLSifaJps>

## Mobile Apps

- Mobile devices versus laptops or desktop PCs
  - Disadvantages of mobile devices
    - Their smaller screen size makes it more difficult to do some tasks
    - Their smaller (and virtual) keyboard makes it more difficult to type
    - Their limited processing power makes it difficult or impossible to do some tasks (for example, full-scale video editing)
  - Advantages of mobile devices
    - You can take them "on location" -- that is, they can bridge the gap between the classroom and the real world
      - A botany instructor can take a mobile app into the field, take photos of vegetation, and upload those photos to a repository for students to view (for example, Leaf Snap)
      - Some apps can utilize GPS and other location-based services (for example, Google Earth, Star Walk,
      - They facilitate augmented reality
      - Students can carry the mobile device with them, allowing them to access the LMS for the course or other course-related apps anywhere and anytime
      - Students can conduct on location interviews
    - They leverage the educational potential of social media better than a laptop or PC
    - Their touch screens facilitate some kinds of learning (for example, Touch Surgery)
    - Apps for mobile devices are (usually) much cheaper than their counterparts for laptops or desktop PCs
- Notable Apps for Education
  - Creation and Annotation Apps
    - Adobe Voice
      - YouTube overview: <https://youtu.be/RpWnEshQR3w>
      - Example ("A Short History of Gifted Education"): <https://voice.adobe.com/v/KZkqSGf6Fwo>
      - Example ("Mennonites: A Brief History"): <https://voice.adobe.com/a/j6b8Z>  
This was my first attempt at using Adobe Voice. The finished product is three minutes long, and took about an hour to make: five minutes to write the text, five minutes to record it, and 50 minutes to find relevant, copyright-free images.
    - Questions for discussion
      - In a sense, the Adobe Voice presentation is like a PowerPoint presentation: it displays one slide after another in a linear sequence, and the slides are a combination of text and images. However, the Adobe Voice presentation has some additional "formal" qualities: namely, the addition of background music and the use of the "Ken Burns" effect, which involves slowly "zooming in" on images. Do these extra "formal" qualities make the presentation more effective? That is, will they help students learn better?
      - Article 1: Is Background Music a Boost or a Bummer: <https://www.psychologytoday.com/blog/conquering-cyber-overload/201305/is-background-music-boost-or-bummer>  
His review of numerous studies concludes this: 1. If you're doing a repetitive task requiring focus but not much cognitive processing, you can use upbeat music to boost your energy and attentiveness. 2. Even if your task necessitates cognitive processing or creativity, you can use motivational music beforehand and during breaks. 3. With high-information-processing tasks, monotonous, zen-like background music may sometimes promote better performance on cognitive tasks. 4. For problem-solving or highly cognitive, complex tasks, avoid typical popular

music with lyrics as it will likely interfere with the quality of your work. Try rewarding yourself during breaks instead.

- **Article 2: Powerpoint and Pedagogy: Maintaining Student Interest in University Lectures:**

His survey found that "Twenty-six of the forty-six respondents specifically offered the variety of movement and color as reasons for the maintenance of their interest in PowerPoint slides.

- **Adobe Slate**
  - YouTube overview: <https://youtu.be/nGsUJ3gV8zU>
  - Example: <https://slate.adobe.com/a/Z0nOB> (This should really be viewed on a mobile device, not a PC, to appreciate the full effect)
- **Explain Everything**
  - YouTube overview: <https://youtu.be/OFELZDrPbhM?t=40s>
  - Examples of screencasts made with Explain Everything
    - Voice, text, and drawing: [https://youtu.be/\\_y5YycTIpE4](https://youtu.be/_y5YycTIpE4)
    - Voice, image, and drawing: <https://youtu.be/yvNdwSvBdEQ?t=7m3s>
    - Voice, images: <https://youtu.be/ai4N4nL8FHc?t=3m28s>
  - Using it to provide feedback to students <https://youtu.be/uuF721u4xVo?t=2m13s>

Note: Although Explain Everything can indeed be used to annotate a student's essay with both written and audio comments, I don't think this is something an instructor would want to do with a large number of students. This is because after you finish making your annotations, you need to render your annotated screencast in video format such as MPEG, and it can take a fair bit of time for your iPad to do this. So, while Explain Everything would be a good choice to make a screencast "example" of how you typically grade an essay, for actually annotating student essay a better alternative is iAnnotate or PDF Reader Premium 6 (see below).
- **iAnnotate and PDF Reader Premium 6**
  - YouTube overview: <https://youtu.be/kXhaF98ZhVE>
  - YouTube tutorial: [https://youtu.be/ePK\\_FZWNQk4?t=5m30s](https://youtu.be/ePK_FZWNQk4?t=5m30s)

This video focuses on using iAnnotate to grade essays and other assignments. I have cued it to start at 5m30s.
  - **Here is a PDF that has been annotated using PDF Reader Premium 6.**

In this note field, you will see a link. Don't just click the link, because then your browser might try to open it. Instead, right-click the link, then save the file to your desktop, then open it in Adobe Acrobat (this will allow the audio comments to work). Here is the link:

<https://www.dropbox.com/s/wlx2vh7id30gl8u/Example%20of%20a%20Weak%20Essay.pdf>
- **Virtual Reality apps**
  - **Essential Anatomy**
    - Overview: <https://youtu.be/ssJjcJgdU54>
  - **Molecules**
    - Overview: <https://youtu.be/Mf33YEScPPQ>
  - **Touch Surgery**
    - YouTube overview: [https://youtu.be/\\_aULgS-jZ0Y](https://youtu.be/_aULgS-jZ0Y)
    - News article: <http://bit.ly/1MscYAm>
- **Augmented Reality apps**
  - **Aurasma**
    - YouTube overview: [https://youtu.be/VJ\\_UEfoNzbl](https://youtu.be/VJ_UEfoNzbl)
    - TedTalk: <https://youtu.be/frrZbq2Lpwl>
  - **Starwalk**
    - YouTube overview: <https://youtu.be/fLqqrTN0Gzs>
  - **Leafsnap**
    - Overview: [https://youtu.be/k02C7p7mQ\\_c](https://youtu.be/k02C7p7mQ_c)



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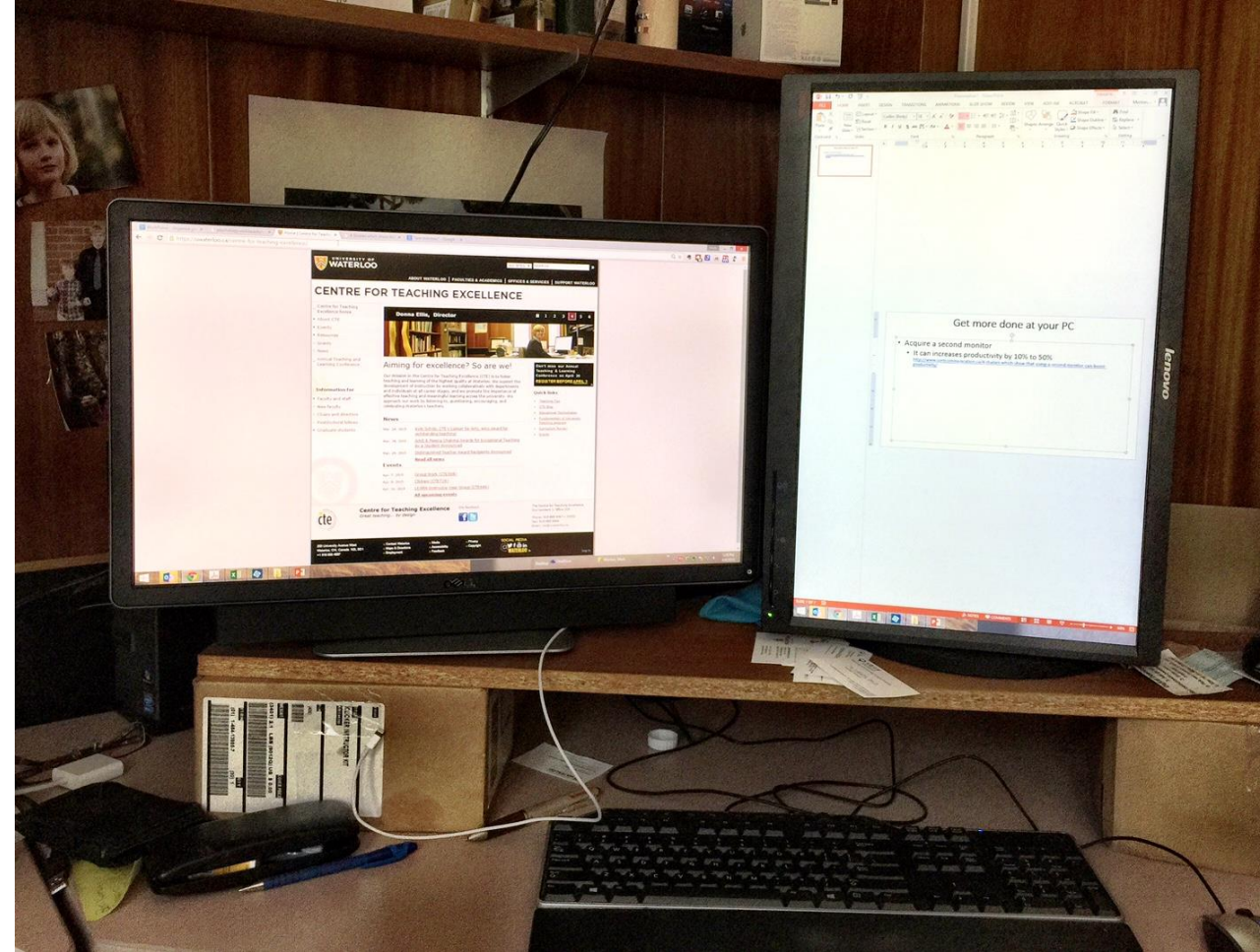
[www.markmorton.ca](http://www.markmorton.ca)



# Get more done at your PC

Acquire a second monitor

It can increase productivity by 10% to 50%



<http://www.corecommunication.ca/4-studies-which-show-that-using-a-second-monitor-can-boost-productivity/>

# Get more done at your PC

Don't multitask

It increases errors and decreases efficiency



<http://msutoday.msu.edu/news/2013/brief-interruptions-spawn-errors/>

# Get more done at your PC

## Take breaks

Taking regular breaks increases productivity and creativity



<http://www.nytimes.com/2012/06/17/jobs/take-breaks-regularly-to-stay-on-schedule-workstation.html>

# Grade essays faster

- Use “[autotext with hyperlinks](#)” (watch the first 3m25s of this screencast)

This a method of creating inserting long comments into a Word document by typing an abbreviation that automatically “expands” into a long comment. For example, I might type “xnts” into a student’s essay, which will then expand into this:

“Your paragraph does not have a clear topic sentence. Without a topic sentence, your paragraph will wander, and your reader will not understand your main idea. You can read more about topic sentences [here](#).”

Notice, too, that the expanded comment includes a hyperlink to an additional online resource.

# Survey a group of people

## Use an online form tool

- Use the [survey tool](#) in Blackboard to create a survey for your students
- [Polldaddy](#)
- [Toofast](#)





# Find a meeting time that works for everyone

- Use [Doodle](#)

JANUARY 2012						
	Mon 9		Wed 11		Tue 17	Thu 19
4 participants	9:00 AM - 12:00 PM	1:00 AM - 4:00 PM	10:00 AM - 11:00 AM	2:30 PM - 3:30 PM	5:00 PM - 8:00 PM	8:00 AM - 9:00 AM
Tammy Smith		✓		✓		✓
John Doe		✓	✓	✓	✓	
Sarah Long	✓	✓	✓	✓		
Kregg Smith				✓	✓	✓
Your name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1	3	2	4	2	2

**1 Comment**  
[Add a comment](#) ▼

 Sorry I'm not more available but we have an offsite meeting on Monday  
12/30/11 3:05 PM | Kregg Smith | 

# Get people to sign up for something

Use an online sign-up sheet

- [Bringit](#) (free)
- [Jooners](#) (not free, and for more complex sign ups)

**Ft River Parent Council**  
SIGN UP SHEETS

**School Potluck**  
2012-12-04 7pm  
This is an example of school potluck sign up sheet. Guests can add items if they want to bring something not listed.

**Share this Sheet**  
Share with anyone

**Sheet Tools**  
Delete Sheet  
Copy Sheet  
Archive Sheet  
Export to Spreadsheet

**Your Current Plan: Prime**  
See All Plans

**Sheet Controls**  
Can people add new items?  
 Yes  No  
Show people's names?  
 Yes  No  
Require email from people?  
 Yes  No  
Require phone from people?  
 Yes  No

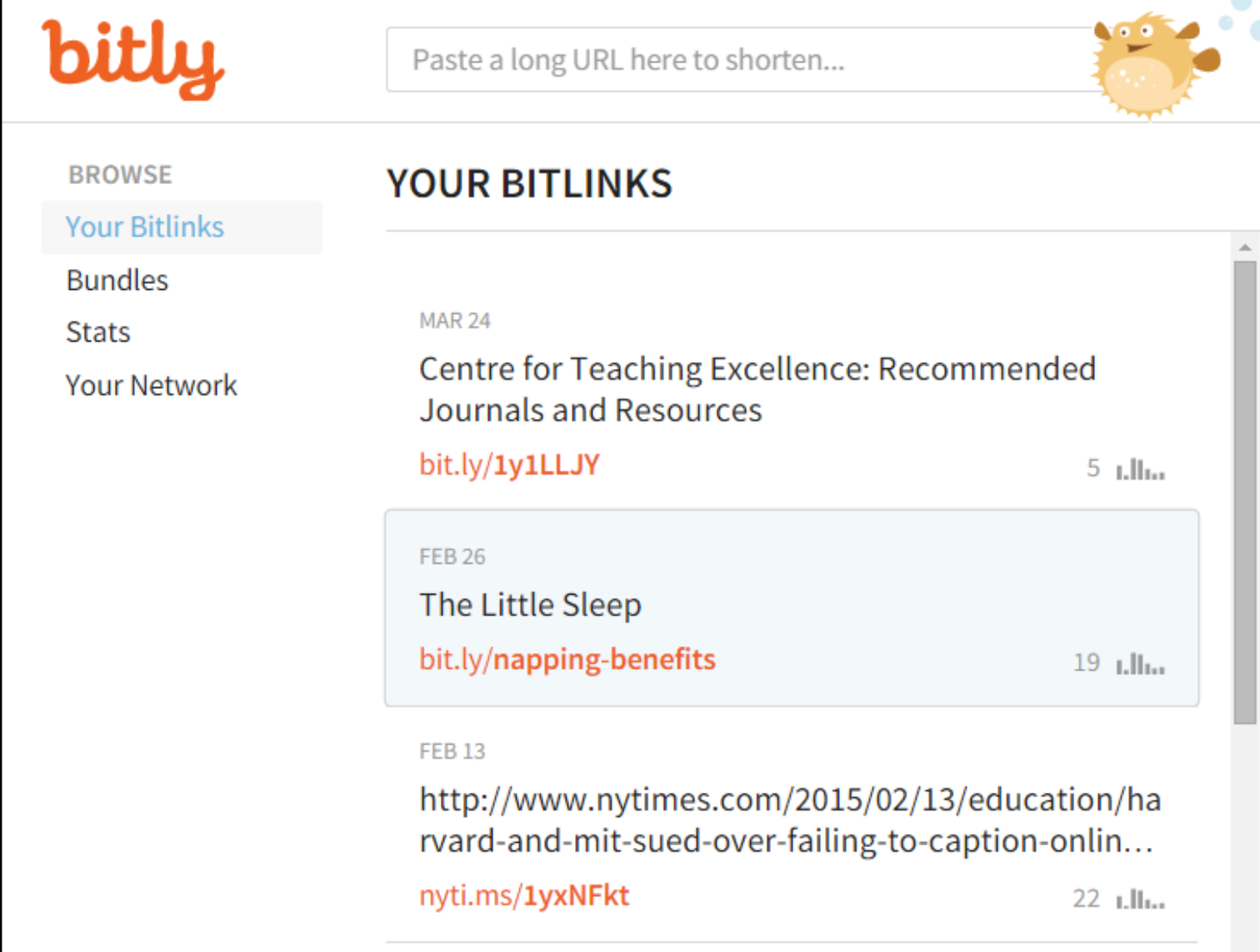
Help Decorate	Liza B	Remove
2012-12-03 I am free on the 3rd to decorate for a few hours.	212-888-8000	
Volunteer for cleanup at 7pm in the Cafeteria	Katie	Remove
Edit Date		
Plastic cups for 30	Sully	Remove
Edit Date		
Paper plates for 30	Carlene	Remove
Edit Date		
Napkins for 30	Andrea	Remove
Edit Date		
4 Pizzas	Mark	Remove
Edit Date		

Callouts:  
- All Sheets View so guests can browse (Pro & Prime)  
- Email reminders are sent 2 days before  
- Drag & drop  
- Date as items (Pro & Prime)  
- Contact email  
- Easily upgrade or downgrade  
- Require Email (Prime)  
- Require Phone (Prime)

# Shorten a long URL

## Use an URL shortening tool

- [Bit.ly](http://bit.ly). Example: <http://bit.ly/napping-benefits>
- [Google URL shortener](#).



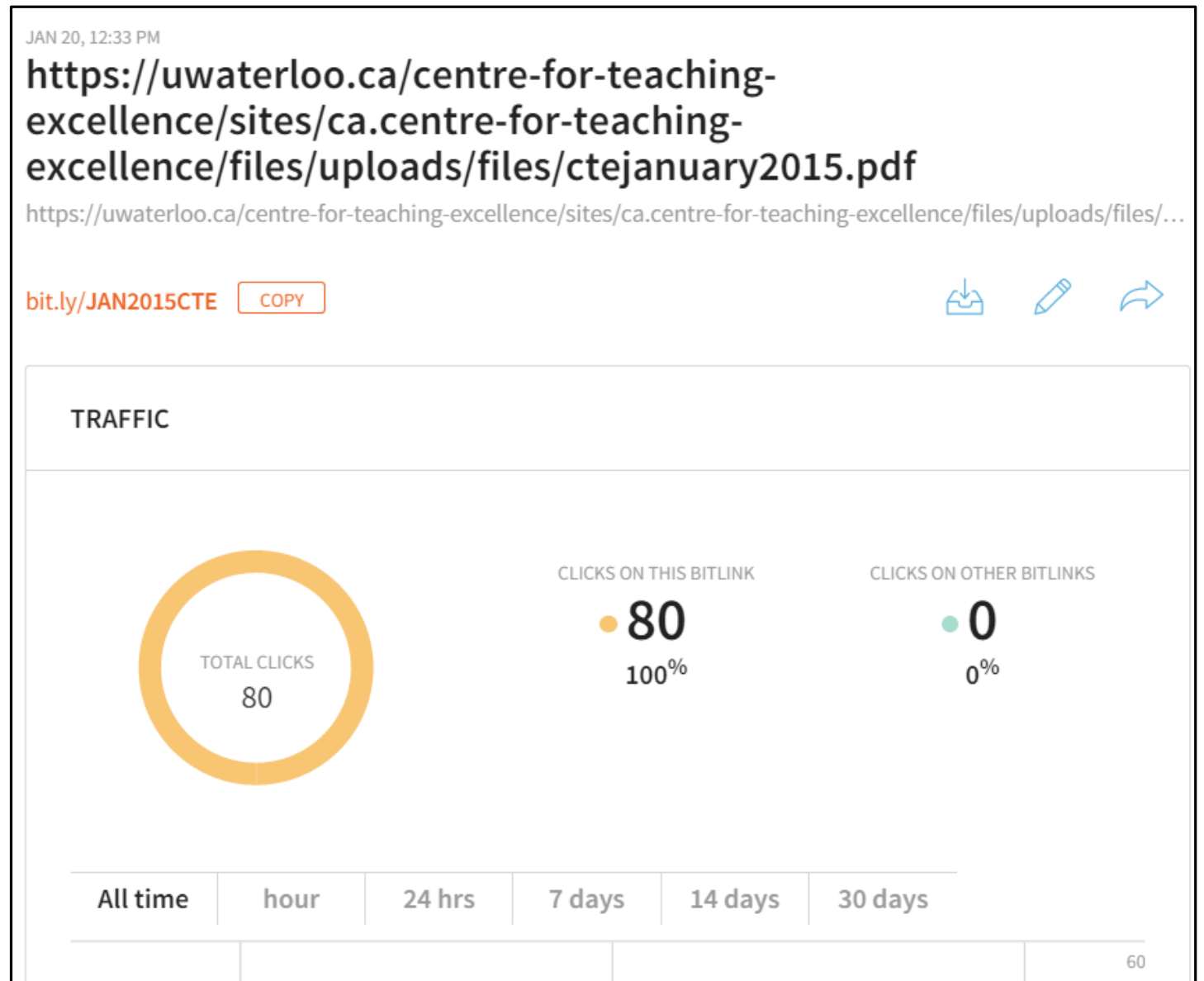
The screenshot shows the Bitly website interface. At the top left is the Bitly logo. To its right is a text input field with the placeholder text "Paste a long URL here to shorten..." and a small cartoon character icon. Below the logo is a "BROWSE" menu with options: "Your Bitlinks" (highlighted), "Bundles", "Stats", and "Your Network". The main content area is titled "YOUR BITLINKS" and displays a list of links. The first link is dated "MAR 24" and is titled "Centre for Teaching Excellence: Recommended Journals and Resources", with the short URL "bit.ly/1y1LLJY" and a count of "5". The second link is dated "FEB 26" and is titled "The Little Sleep", with the short URL "bit.ly/napping-benefits" and a count of "19". The third link is dated "FEB 13" and is titled "http://www.nytimes.com/2015/02/13/education/ha-rvard-and-mit-sued-over-failing-to-caption-onlin...", with the short URL "nyti.ms/1yxNFkt" and a count of "22".



# Track how many people click your links

## Use an URL shortening tool

- [Google Analytics](#)
- [Bit.ly.](#)
- [Google URL shortener.](#)



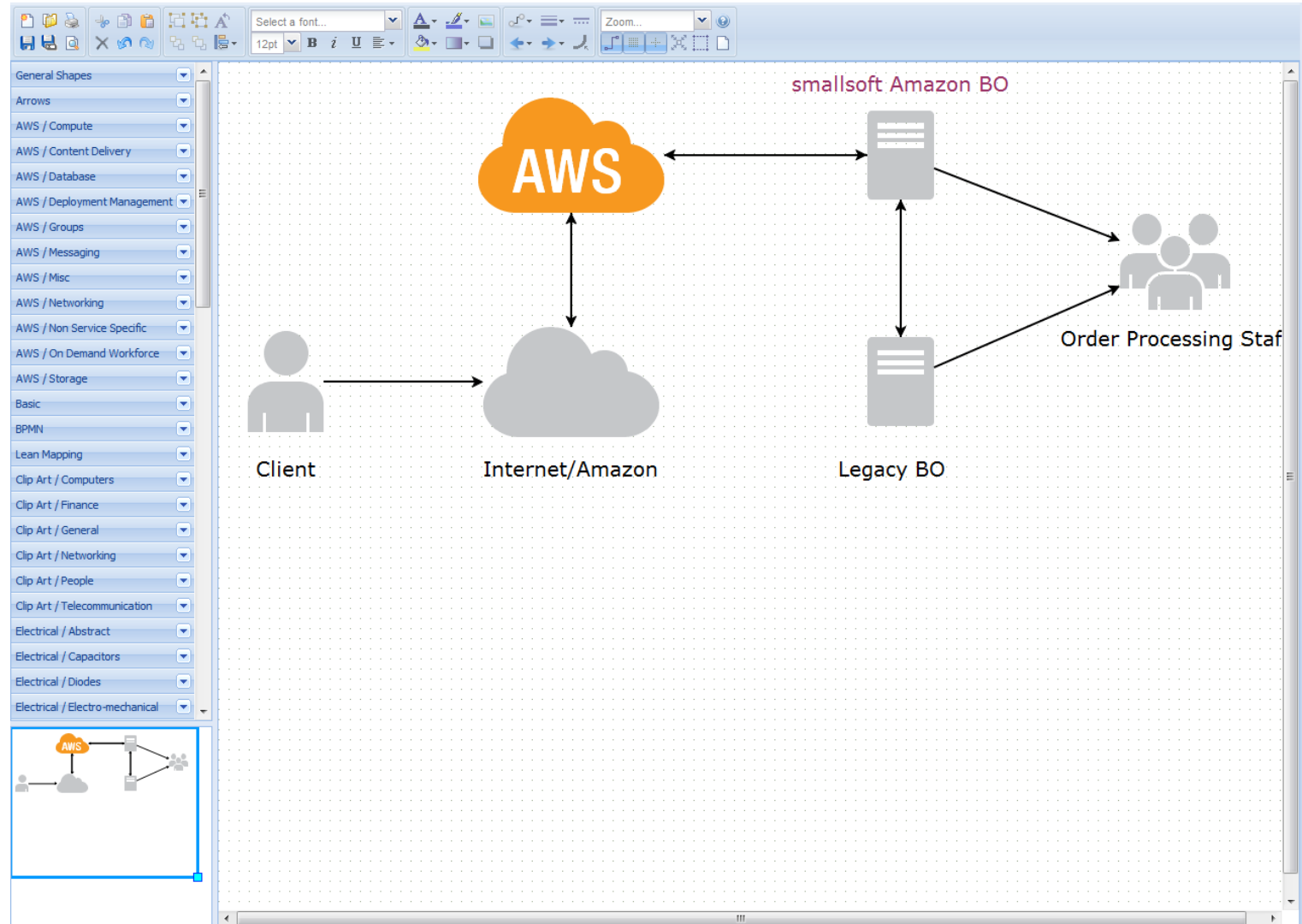
# Find copyright-free images

- Use [Flickr](#) to find images tagged under a [Creative Commons](#) license
- Use Google's [Advanced Image Search](#) to find items tagged under a noncommercial reuse license.



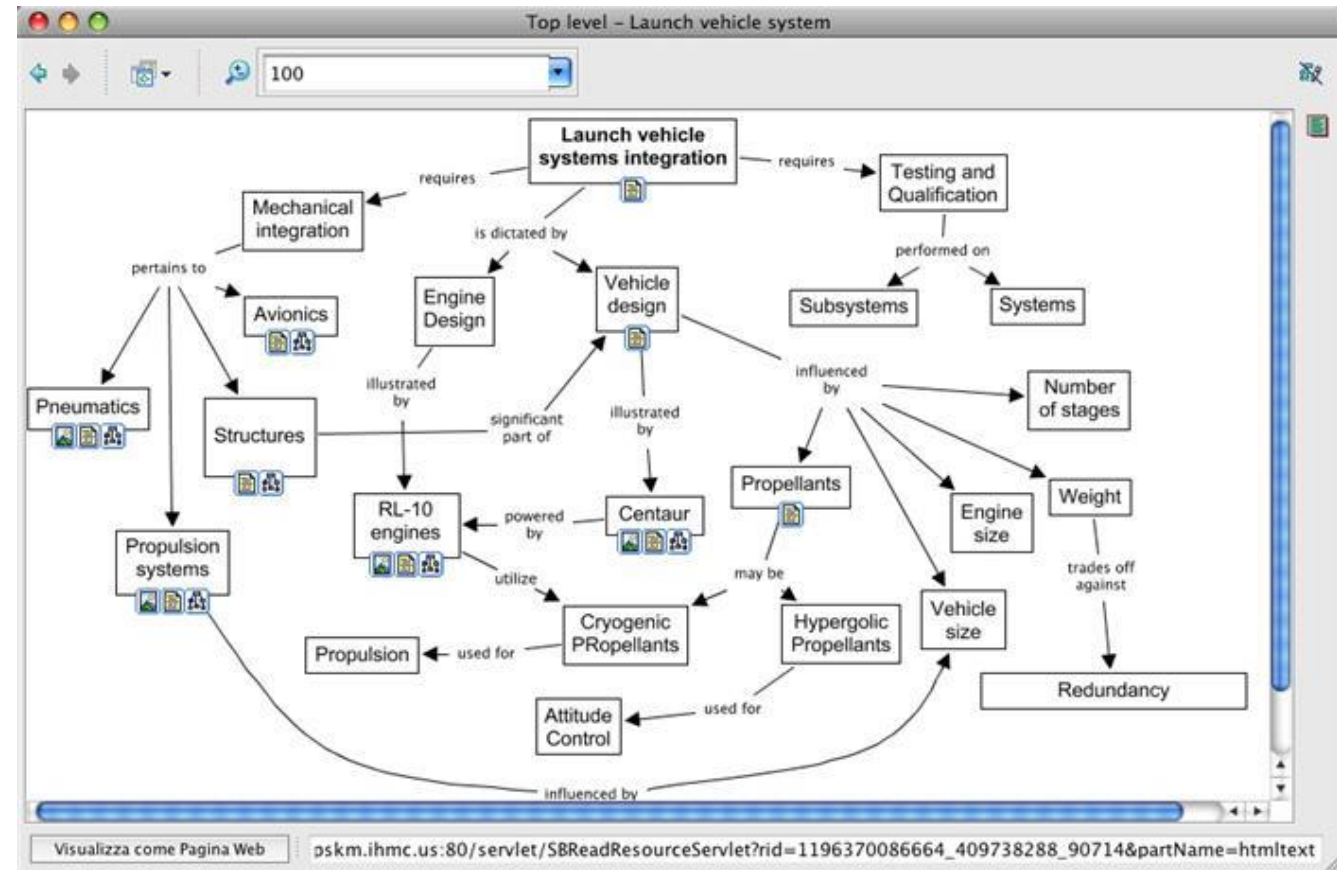
# Help people understand something by creating a diagram

- Use [Draw.io](#). [Example](#).
- Use [Gliffy](#)



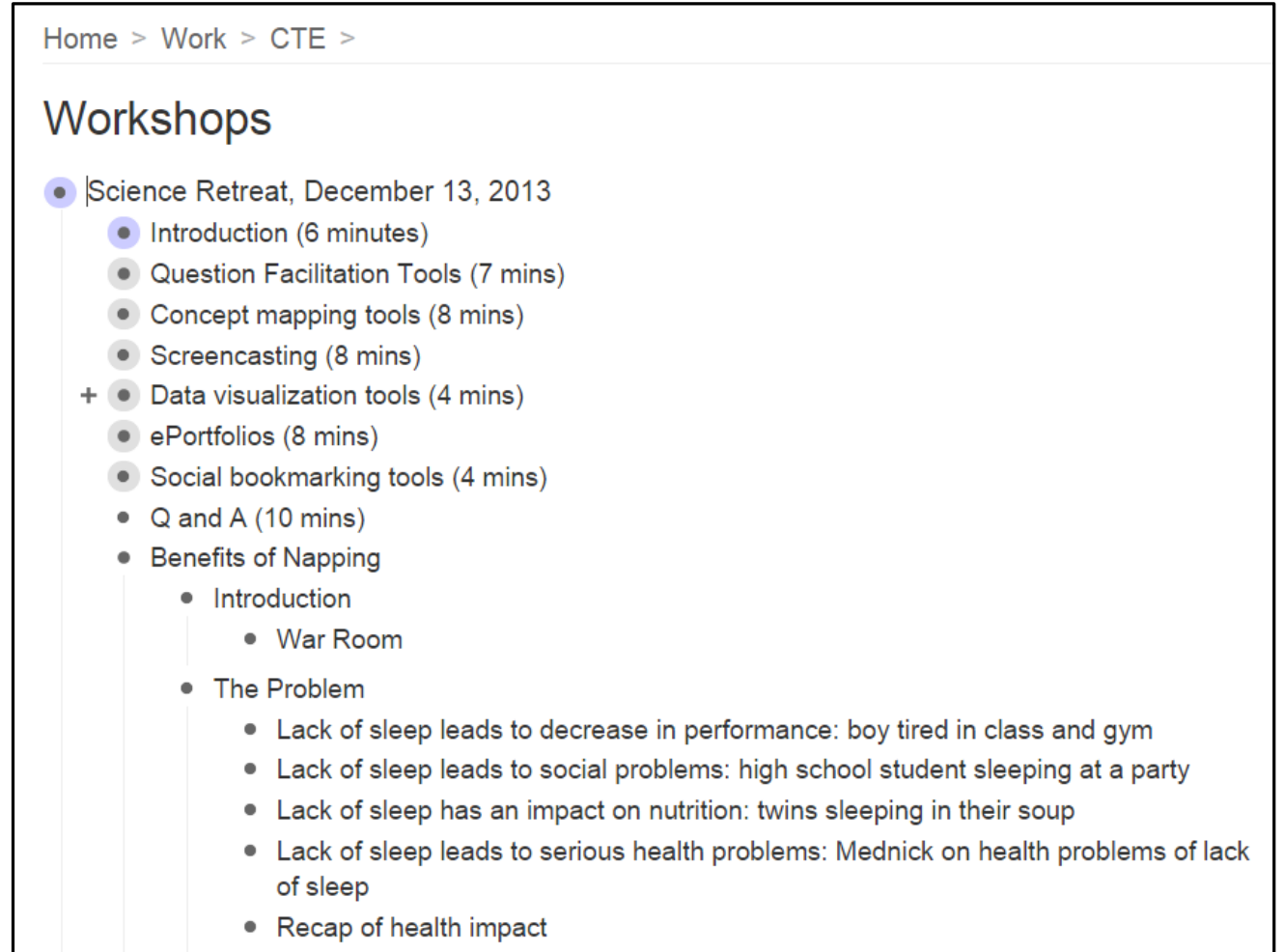
# Help people understand something by creating a diagram

- Use [CmapTools](#). [Example](#).
- Use MindMeister. [Example](#).



# Create an outline whose levels open and close

- Use [Workflow](#). [Example](#).



Home > Work > CTE >

## Workshops

- Science Retreat, December 13, 2013
  - Introduction (6 minutes)
  - Question Facilitation Tools (7 mins)
  - Concept mapping tools (8 mins)
  - Screencasting (8 mins)
  - + ● Data visualization tools (4 mins)
  - ePortfolios (8 mins)
  - Social bookmarking tools (4 mins)
  - Q and A (10 mins)
  - Benefits of Napping
    - Introduction
      - War Room
    - The Problem
      - Lack of sleep leads to decrease in performance: boy tired in class and gym
      - Lack of sleep leads to social problems: high school student sleeping at a party
      - Lack of sleep has an impact on nutrition: twins sleeping in their soup
      - Lack of sleep leads to serious health problems: Mednick on health problems of lack of sleep
      - Recap of health impact

# Create a timeline of events

- Use [TikiToki](#). [Example: History of the tower of London.](#)
- Use [Dipity](#). [Example: History of Lebanon](#)

The screenshot displays the Dipity website interface for a timeline titled "Find Em All Internet Memes Timeline". The page features a navigation bar with "Create a Timeline", "Hot Topics", and "Dipity Premium" options, along with a search bar. The main content area shows a horizontal timeline from 2008 to 2014, with various internet memes represented as event cards. Each card includes a thumbnail image, the meme's name, and its date. The timeline is interactive, with plus and minus signs for zooming in and out. The bottom of the page is powered by Dipity.

Year	Event Name	Date
2007	Michael Buckley	May 2007
2007	Crank That	Jul 2007
2007	Leave Britney Alone!	Sep 2007
2008	Big Dog	17 Mar 2008
2008	Literal Videos	3 Oct 2008
2009	David After Dentist	12 Feb 2009
2009	Courage Wolf	2 Mar 2009 9:44
2009	Mereana Mordegaard Glesgorv	25 Oct 2009 23:03
2010	Epic Beard Man	16 Feb 2010 18:00
2010	Kia Hamster	12 Jul 2010 20:23
2011	Birds with Arms	21 Apr 2011 6:30
2011	Rebecca Black "Friday"	10 Feb 2011
2012	YOLO	5 Mar 2012 19:31
2012	Nicki Minaj	7 Feb 2012 23:20
2012	Fanboys	27 Dec 2012 18:56
2012	Valentine's Day E-cards	6 Feb 2013 17:23
2013	Winnie The Pooh's Home Run Derby	5 Jan 2013 2:22
2014	Trojan Room col	4 Feb 2014
2014	I Hate My Job	18 Jan 2014 23:30

# Make a screencast

Use screencasts to communicate oft-repeated information to clients, or to provide them with “just-in-time” information.

- Use the narration tool in PowerPoint. [Example](#).
- Use [Screencast-o-Matic](#). [Example](#).
- Use [Camtasia](#). [Example](#).
- Use [Explain Everything](#) on a mobile device. [Example](#).



# Search the web effectively

Use Google's [Advanced Search tool](#).

Example: [an image search](#) for “fuite” or “fruits” found on pages that have been added in the last year and whose domain ends in “on.ca” but excluding pages that contain “banana”

Example: a search of [PDFs that include](#) the phrase “large classes” on Australian websites

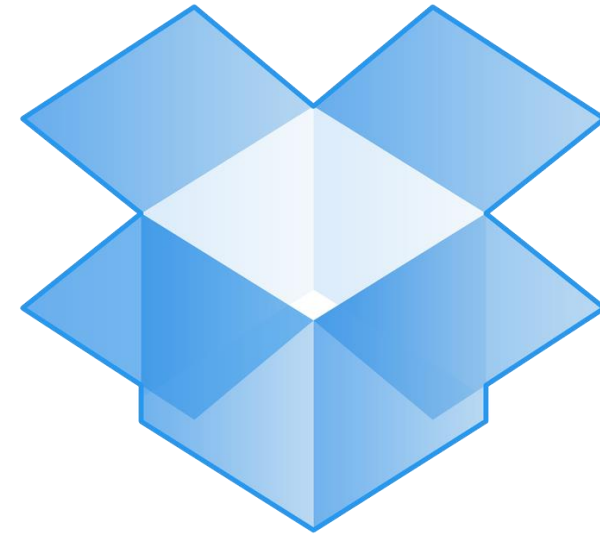
Example: find pages that [link to UW's home page](#).



# Access Files from Anywhere

## Use Dropbox

- [How to](#)
- [Video tutorial](#)
- [Example](#) (aggregate results for KSU Training program of the Instructional Challenges Survey)

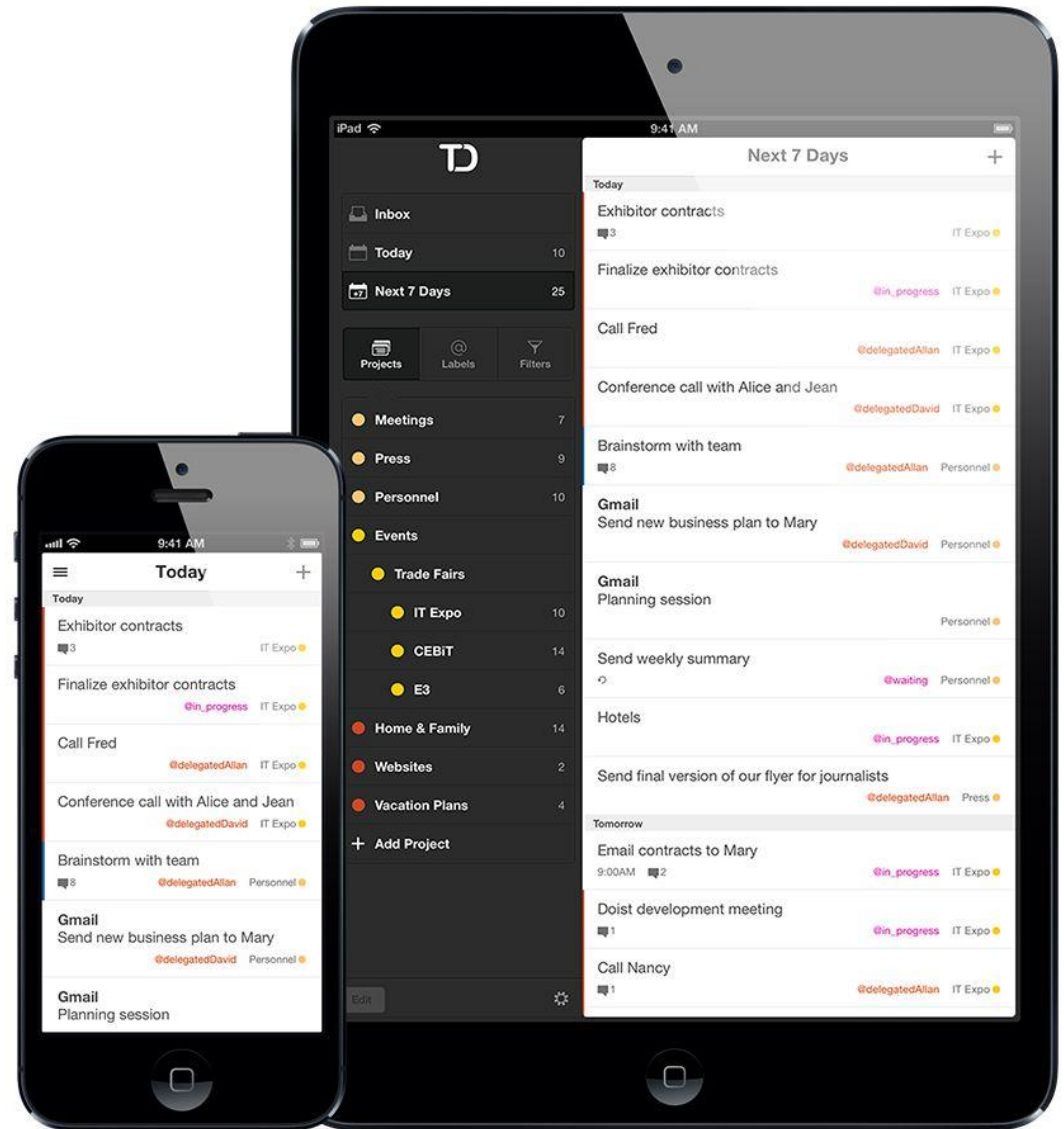


**Dropbox**

# Assign and Keep Track of Tasks

## Use Todoist

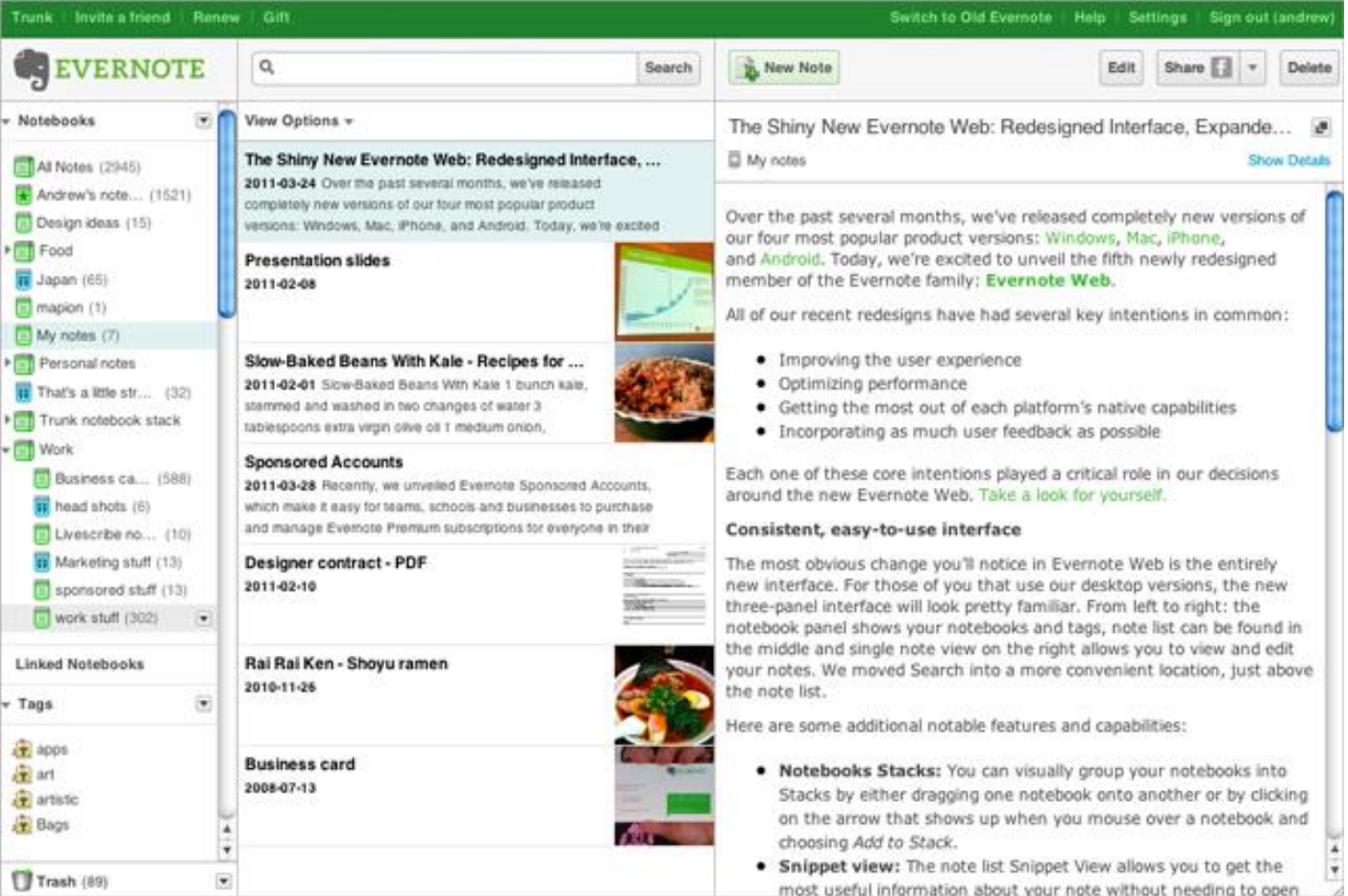
- [Home page](#)
- [Video overview](#)
- [Video tutorials](#)



# Collect, organize, and share web resources

## Use Evernote

- An [article](#) from Lifehacker
- [Example](#) of a "notebook" in Evernote
- [Video tutorial](#)



The screenshot displays the Evernote web interface. On the left, a sidebar shows a list of notebooks including 'All Notes (2945)', 'Andrew's note... (1521)', 'Design ideas (15)', 'Food', 'Japan (65)', 'mapion (1)', 'My notes (7)', 'Personal notes', 'That's a little str... (32)', 'Trunk notebook stack', 'Work', 'Business ca... (588)', 'head shots (6)', 'Livescribe no... (10)', 'Marketing stuff (13)', 'sponsored stuff (13)', and 'work stuff (302)'. Below this are 'Linked Notebooks' and 'Tags' (apps, art, artistic, Bags). At the bottom of the sidebar is 'Trash (89)'. The main content area shows a note titled 'The Shiny New Evernote Web: Redesigned Interface, Expanded...' dated 2011-03-24. The note text discusses the release of new versions for Windows, Mac, iPhone, and Android, and introduces the 'Evernote Web' as a new member of the family. It lists key intentions for the redesign: improving user experience, optimizing performance, getting the most out of native capabilities, and incorporating user feedback. The note also mentions 'Sponsored Accounts' (2011-03-28), a 'Designer contract - PDF' (2011-02-10), 'Rai Rai Ken - Shoyu ramen' (2010-11-26), and a 'Business card' (2008-07-13). The interface includes a search bar, 'New Note', 'Edit', 'Share', and 'Delete' buttons at the top right.

# Collaborate on a document in real time

Use Google Docs as a wiki

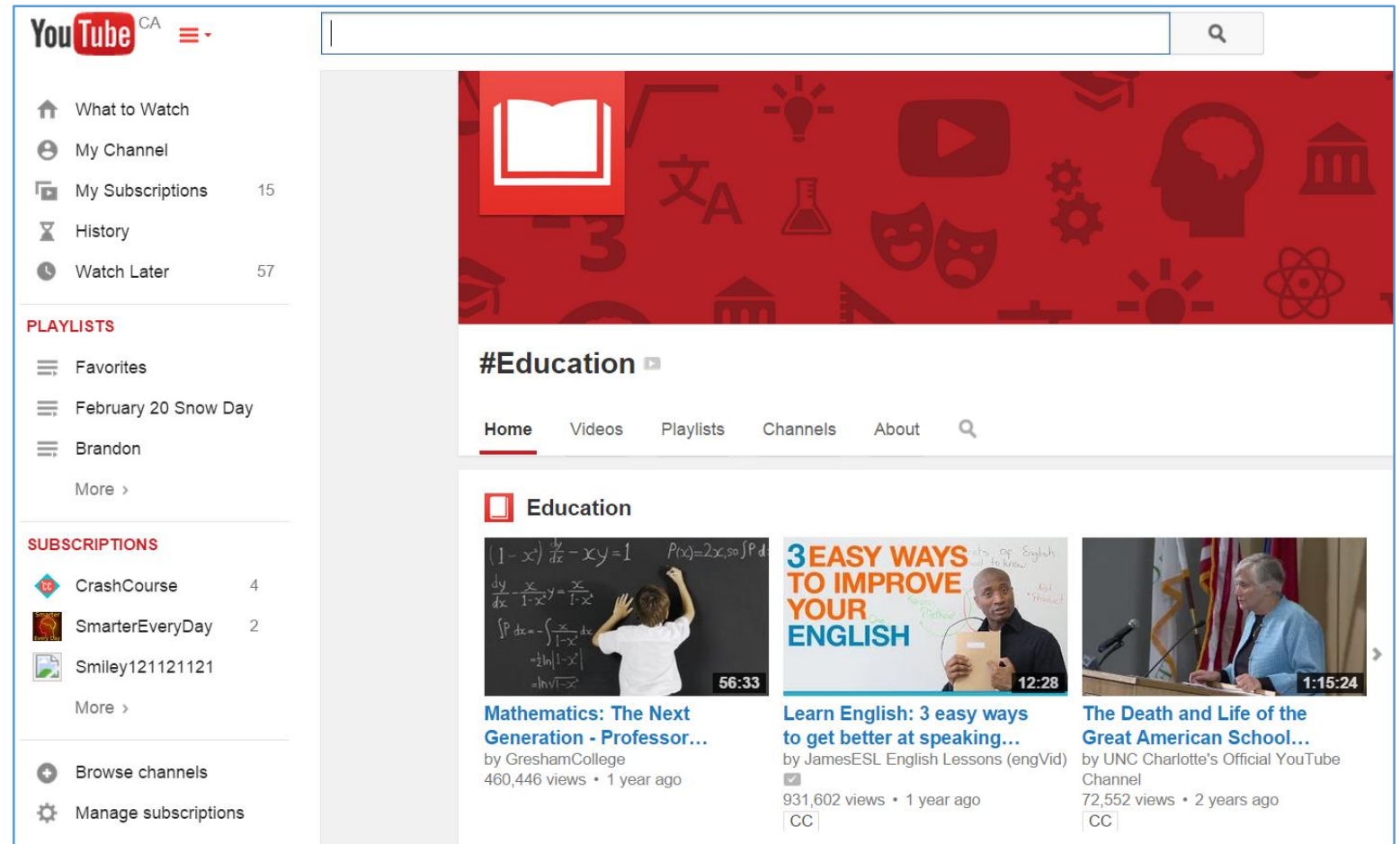
- Example: [bit.ly/KSU-wiki](http://bit.ly/KSU-wiki)
- [Video tutorial](#)



# Learn how to do something

Find an online video or screencast that explains what you want to learn

- YouTube: [How to change a tire.](#)
- Khan Academy: [Find the volume of a sphere](#)
- Vimeo: [How to use a semi-colon](#)



The image shows a screenshot of the YouTube Education channel page. The left sidebar contains navigation options: 'What to Watch', 'My Channel', 'My Subscriptions' (15), 'History', and 'Watch Later' (57). Below this are 'PLAYLISTS' (Favorites, February 20 Snow Day, Brandon, More >) and 'SUBSCRIPTIONS' (CrashCourse 4, SmarterEveryDay 2, Smiley121121121, More >). At the bottom of the sidebar are 'Browse channels' and 'Manage subscriptions'. The main content area features a red banner with educational icons and the channel name '#Education'. Below the banner are navigation tabs for 'Home', 'Videos', 'Playlists', 'Channels', and 'About'. The video feed shows three videos: 'Mathematics: The Next Generation - Professor...' (56:33), 'Learn English: 3 easy ways to get better at speaking...' (12:28), and 'The Death and Life of the Great American School...' (1:15:24).

# Keep track of passwords

Use [LastPass](#)

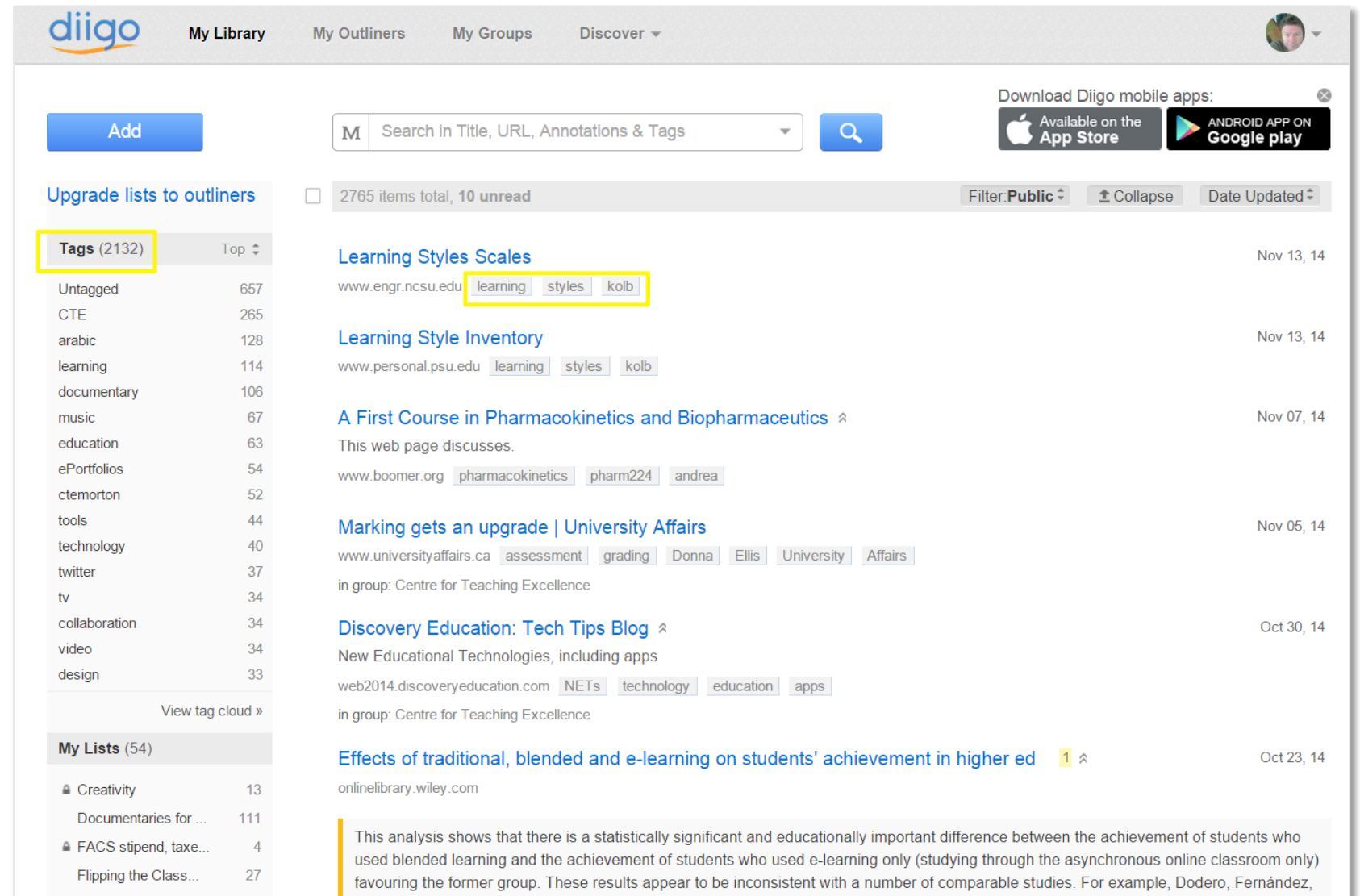
**LastPass** 

The Last Password You'll Ever Need.

# Save, tag, categorize, and share online resources

- Use Diigo (a social bookmarking tool)

- Tag and search your own collection of online resources
- Search the online collections of other users
- Create categories (called “outliners”)
- Create a “group” to collaborate with others.



The screenshot displays the Diigo web interface. At the top, there are navigation tabs: "My Library", "My Outliners", "My Groups", and "Discover". A search bar is present with the text "Search in Title, URL, Annotations & Tags". Below the search bar, a summary indicates "2765 items total, 10 unread". A sidebar on the left lists various tags and their counts, with "Tags (2132)" highlighted. The main content area shows a list of bookmarked items, each with a title, URL, tags, and a date. The tags "learning", "styles", and "kolb" are highlighted in yellow in the first two items.

Tag	Count
Untagged	657
CTE	265
arabic	128
learning	114
documentary	106
music	67
education	63
ePortfolios	54
ctemorton	52
tools	44
technology	40
twitter	37
tv	34
collaboration	34
video	34
design	33


Item Title	URL	Tags	Date
Learning Styles Scales	www.engr.ncsu.edu	learning, styles, kolb	Nov 13, 14
Learning Style Inventory	www.personal.psu.edu	learning, styles, kolb	Nov 13, 14
A First Course in Pharmacokinetics and Biopharmaceutics	www.boomer.org	pharmacokinetics, pharm224, andrea	Nov 07, 14
Marking gets an upgrade   University Affairs	www.universityaffairs.ca	assessment, grading, Donna, Ellis, University, Affairs	Nov 05, 14
Discovery Education: Tech Tips Blog	web2014.discoveryeducation.com	NETs, technology, education, apps	Oct 30, 14
Effects of traditional, blended and e-learning on students' achievement in higher ed	onlinelibrary.wiley.com		Oct 23, 14

# Share web resources quickly and efficiently with your students or colleagues

- Use [Twitter](#)



The screenshot displays the Twitter profile page for the official account @twitter. The profile header includes the Twitter logo, the name "Twitter" with a verified badge, the handle "@twitter", and the bio "Always wondering what's happening." along with the location "San Francisco, CA" and the website "http://blog.twitter.com/". A "Follow" button is visible, along with statistics: 1,355 tweets, 1,104 following, and 11,935,433 followers. Below the header is a navigation menu with options: "Follow Twitter" (with input fields for full name, email, and password, and a "Sign up" button), "Tweets" (selected), "Following", "Followers", and "Favorites". The main content area shows a list of tweets from @twitter and the App Store, including announcements about new mobile apps for BlackBerry and Nokia, and updates to the mobile website.

**Twitter**   
@twitter  
Always wondering what's happening.  
San Francisco, CA <http://blog.twitter.com/>

[Follow](#)  
1,355 TWEETS  
1,104 FOLLOWING  
11,935,433 FOLLOWERS

**Follow Twitter**

Full name  
Email  
Password  
[Sign up](#)

**Tweets** [All](#) / No replies

**Twitter** @twitter 16 Jul  
More details in new Twitter for BlackBerry  
[blog.twitter.com/2012/07/more-d...](http://blog.twitter.com/2012/07/more-d...)  
Expand

**Twitter** @twitter 12 Jul  
Introducing Twitter for Nokia [blog.twitter.com/2012/07/introd...](http://blog.twitter.com/2012/07/introd...)  
Expand

**Twitter** @twitter 11 Jul  
Overhauling [mobile.twitter.com](http://mobile.twitter.com) from the ground up  
[blog.twitter.com/2012/07/overha...](http://blog.twitter.com/2012/07/overha...)  
Expand

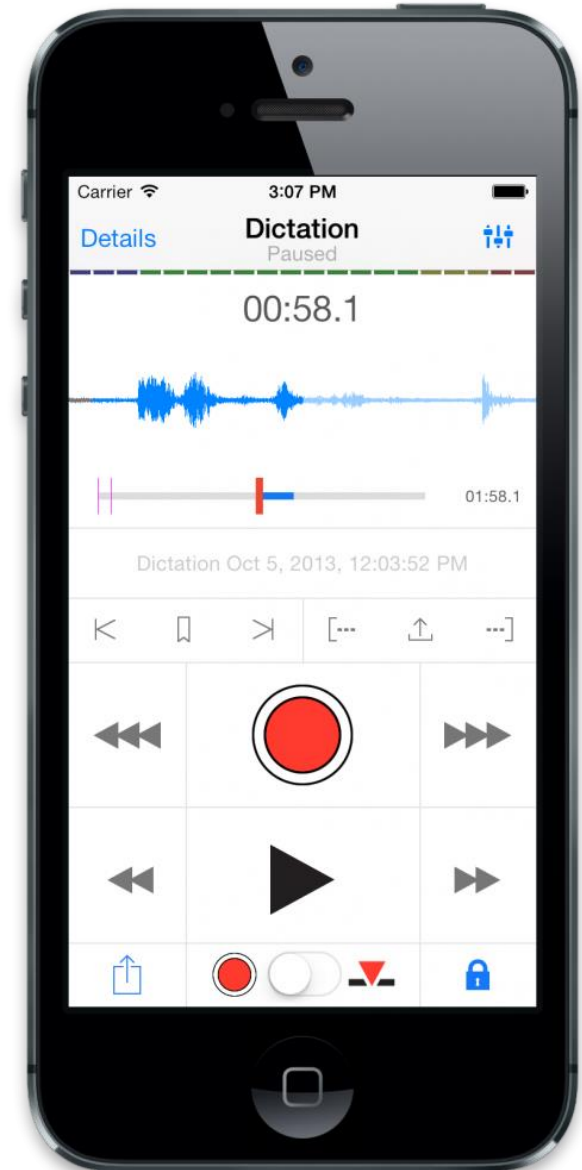
**App Store** @AppStore 10 Jul  
Tweeting just got snappier with @Twitter's latest update.



# Record an interview, or record spoken ideas, in an efficient manner

## Use Dictate

Dictate records audio, but only does so when you are speaking: in other words, if you are brainstorming in your office, you can turn on Dictate, and it will record what you speak -- but it won't record the silences between your thoughts. Thus, a 20-minute session of brainstorming might actually end up being just four minutes of actual audio.

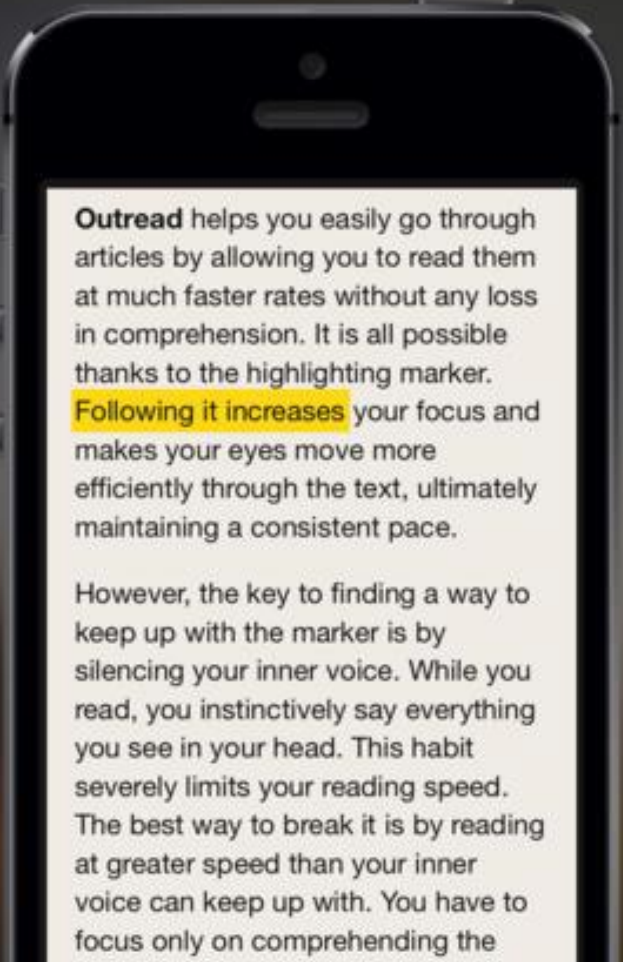


# Read more quickly

## Use Outread

[Outread](#) is a Rapid Serial Visual Presentation (RSVP) tool; that is, it presents text to you one word or short phrase at a time in the same place on your screen. This allows you to read much more rapidly than you otherwise can.

Improve your reading speed  
by following the **highlight**

A black smartphone is shown vertically, displaying a white rectangular area of text. The text is centered on the screen. A yellow highlight is applied to the word "Following" in the second paragraph. The background behind the phone is dark.

**Outread** helps you easily go through articles by allowing you to read them at much faster rates without any loss in comprehension. It is all possible thanks to the highlighting marker.

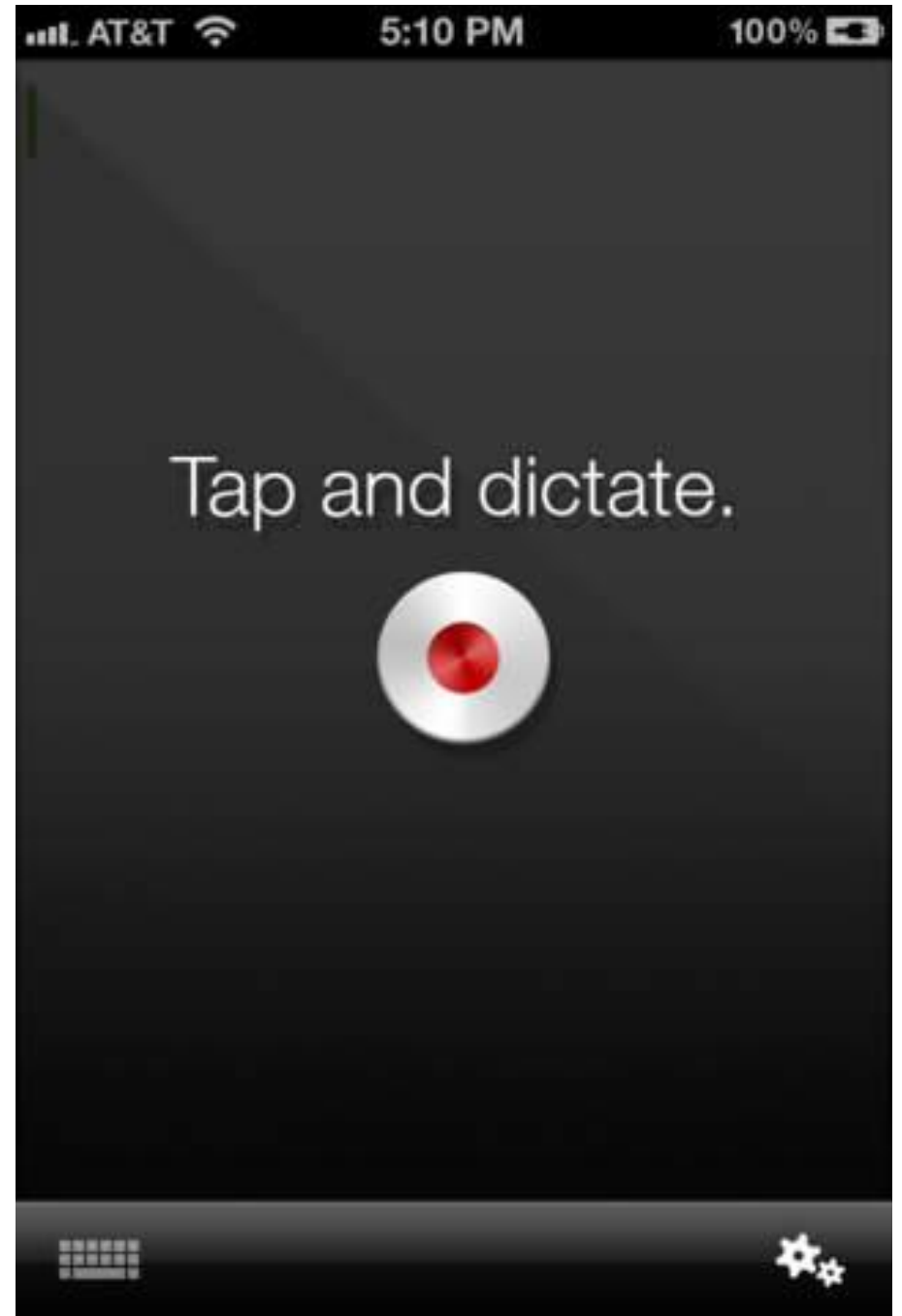
**Following it increases** your focus and makes your eyes move more efficiently through the text, ultimately maintaining a consistent pace.

However, the key to finding a way to keep up with the marker is by silencing your inner voice. While you read, you instinctively say everything you see in your head. This habit severely limits your reading speed. The best way to break it is by reading at greater speed than your inner voice can keep up with. You have to focus only on comprehending the

Write a document more quickly and with less effort

Use Dragon Dictation

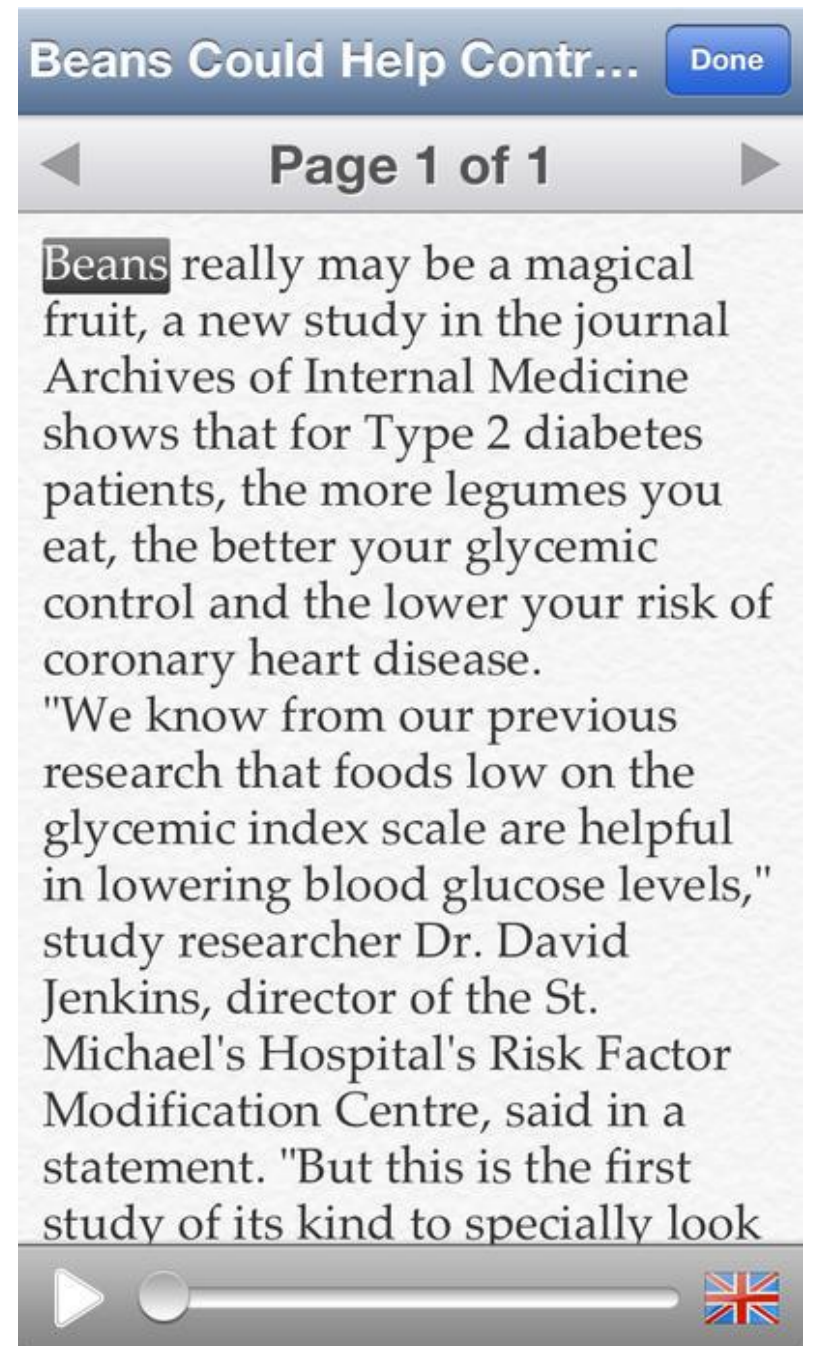
[Dragon Dictation](#) is a speech-to-text app.



# Evolvo

## Use Evolvo

[Evolvo](#) is a text-to-speech app.



# Learn more about productivity

- [The Science of Productivity](#) (YouTube video)
- [Getting Things Done](#) blog
- [Art of Stress-Free Productivity](#) (TED Talk)



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Centre for Teaching Excellence  
University of Waterloo

[mmorton@uwaterloo.ca](mailto:mmorton@uwaterloo.ca)

[www.markmorton.ca](http://www.markmorton.ca)

# Using Assignment Design to Discourage Academic Dishonesty

## How to Discourage Plagiarism and Other Types of Academic Dishonesty via Assignment Design

### Change assignments frequently

- Change your assignments slightly from term to term to discourage students from reusing previous students' work.
- For courses that have multiple sections, change your assignments slightly from section to section to discourage the exchange of papers among friends in different sections.

### Use in-class writing assignments

Short in-class writing assignments provide instructors with opportunities to:

- become familiar with and assess students' abilities and styles early on so that sudden changes in their writing are more noticeable
- give students a chance to write extemporaneously, when they cannot become tempted by or mired in others' words

### Make your assignments specific:

Students are far less likely to be able to plagiarize a unique assignment, because sources available to them (for example, on the Internet) will not meet the specific requirements of the assignment.

Ask your students to write about a less well known document:

**Rather than:** "Discuss the importance of personal development in Naguib Mahfouz's short story "Half a Day.""

**Try:** "Discuss the importance of personal development in Mansoura Ez Eldin's short story "Deja Vu"."

Pose a more focused question:

**Rather than:** "What artistic movements influenced the Impressionists?"

**Try:** "In what ways does this particular Impressionist painting reveal the influences of earlier movements?"

Ask a question that requires application, rather than explanation of knowledge:

**Rather than:** "Explain the basic functions of the vascular, skeletal, muscular and nervous systems."

**Try:** "A cat jumps off the end of a table onto the floor. Describe how its vascular, muscular, skeletal and nervous systems contribute to this action."

Consider a tight comparison:

**Rather than:** "Analyze the attitude of Frederick Douglass toward white abolitionists."

**Try:** "How does Frederick Douglass's perception of his audience change between his *Narrative* and his work *Life and Times*, and how do these two texts differ as a result?"

Use a "touchstone" assignment:

Ask students to connect their ideas to another aspect of the class -- use a point from lecture, a quotation selected from one of your readings (try to choose a less-obvious quotation), an image, or a graph.

**Rather than:** Discuss how women accused of witchcraft were treated in Salem in the late seventeenth century.

**Try:** Using Mary Easty's petition, which she wrote in 1692 and which we discussed in class, explain the perspective of women who were accused of witchcraft during the Salem trials.

### Tips for Assigning Research Paper Assignments

Some suggestions other faculty have found useful in discouraging plagiarism are to:

- replace a "traditional" assignment (such as an essay) with an alternative assignment (such as having the students create a concept map, or a screencast, etc)
- have students collaborate on a research paper so that they monitor one another
- assign short writing assignment(s) early in the class; this activity will give you an opportunity to see students' writing capabilities (which makes it easier to notice anomalies that might appear in their later assignments)
- do not allow students to choose their own topic for a research assignment: provide them with a specific question (or a cluster of questions from which they choose) that limits their range
- consider using shorter, focused assignments along with longer papers, or in place of one longer paper, if several are assigned in the course
- require that students use specific sources (e.g. specific articles, specific journals, etc.)
- require your students to submit a bibliography in advance
- require a bibliography with short summaries of each source and a brief explanation of how the source is relevant to the student's topic
- require long papers to build from shorter, earlier papers
- require that students must submit their rough drafts along with their final draft
- require students to submit their written assignments via SafeAssign, TurnItIn, or another plagiarism detection tool.

### Use an honor agreement

Ask your students to sign a statement of agreement concerning academic misconduct. Such a statement might say something such as, "I acknowledge that I understand what plagiarism is, and that I am aware of the serious academic consequences that can be imposed on me if I commit plagiarism. I am also aware of the consequences that can be imposed on me for committing other acts of academic dishonesty, including failing the assignment, failing the course, or expulsion from the university."

Adapted from materials developed by the [Centre for Innovative Teaching and Learning](#) at Indiana University Bloomington.



# Instructional Technologies on the Horizon

## Envisioning the Future of Educational Technology

### ▪ **Gamification**

Billed as an evolution in grading mechanisms, gamification brings instant feedback to acquired knowledge through achievements and points systems.

- [Self-Paced Learning](#)
- [Achievements and Badges](#)

### ▪ **Opening of Information**

Dissemination of information outside the physical silos of schools and classrooms, offering feedback and assessment to students anywhere.

- [Open Courseware](#)

### ▪ **Digitized Classrooms**

Rather than considering IT a standalone tool or skill, digitization tends to disperse throughout every facet of the classroom.

- [Attention Tracking](#)
- [Classroom Performance Dashboards](#)

### ▪ **Disintermediation**

Undoing the traditional teacher-student model, these technologies offer a scenario where AI handles personalization while teachers focus on teaching. Classrooms tend to be replaced by studios and virtual teaching modes.

- Assessment Algorithms
- [Telepresence](#)

### ▪ **Tangible Computing**

Embedding computation to the physical via intelligent objects, the internet of things, and connectivity with a profound impact on learning mechanisms.

- [3D Printers](#)
- Reactive Furniture

### ▪ **Virtual/Physical Studios**

Bridging the online-offline gap, these future technologies offer a potential future where embodiment is secondary to information access.

- [Holography](#)
- [Immersive Virtual Reality](#)

# Technology solutions

An instructional challenge is a difficulty, obstacle, or bottleneck that hinders students as they attempt to achieve a specific learning outcome or cluster of learning outcomes. Please fill out [a survey with a complete list of common instructional challenges](#). Additionally, [a template for identifying solutions to instructional challenges \(PDF\)](#) is available.

A number of common instructional challenges are listed below. If you view a given section, one or more educational technologies will be listed along with an explanation of how it can help to solve that particular instructional challenge.

Expand all Collapse all

## My students come to class unprepared

### Clickers

- What is it?
  - [Clickers](#) are handheld devices that allow each student to respond to a multiple-choice question; the responses of the entire class are aggregated by the clicker system, so that the instructor (and students, if the instructor chooses) can see the results.
- How can it address this instructional challenge?
  - Begin each class with a brief quiz which is done via the clickers. For example, if you assigned a reading for that class, ask five questions that assess whether the students have read it. You might make two of the questions pertain to specific facts in the reading, and three others pertain to its overall ideas or themes.
  - For the whole course, these "clicker quizzes" should amount to no more than about 10% of the final grade. In other words, each quiz should be worth only a quarter or half a percent. Why?
  - Once the class starts to better prepare for class, and they start to do better on the clicker quizzes, you might start to show the class the aggregate results for the quiz. Why?

### Question facilitation tools

- What is it?
  - Question facilitation tools are online programs that allow students to ask questions online during a class, and to vote on the relevance or quality of each other's questions.
  - Question facilitation tools include [Google Moderator](#).
- How can it address this instructional challenge?
  - During a class, students are required to log into Google Moderator and ask two questions that are based on the pre-assigned reading. Fellow students vote on the relevance or quality of each question, and the students who asked the five best questions for that class receive a point which contributes to their final grade.

### E-portfolios or student blogs

- What is it?
  - [Blogs](#) and [e-portfolios](#) differ from one another in many ways, but in the context of this question, they can serve the same purpose. Blogs and e-portfolios can both provide an opportunity for students to reflect upon their learning (and also for fellow students to read those reflections and make supportive or insightful comments on them).
- How can it address this instructional challenge?

- Throughout a course, students are required to reflect upon and write about the readings that are assigned before each class. In particular, they are required to reflect upon and write about connections among the various readings. The e-portfolio or Blog program indicates when they have written each reflection, so that an instructor can ensure that it was written before the assigned time and date. The instructor reviews each student's e-portfolio or Blog three-weeks into the course, six weeks into the course, and at the end of the course. Why?

## Concept maps

- What is it?
  - **Concept maps** visually depict the relationships among ideas, events, or things. Concept map programs facilitate the creation of sophisticated maps, and have features such as these: the ability to collaborate on a map with someone else at a distance; the ability to embed web links into the nodes of a concept map; the ability to "publish" these maps online. Some concept map programs create "static" maps (ones where the arms and nodes of the map are fixed in place); other concept map programs create "dynamic" maps, whose arms and nodes can be repositioned or hidden or zoomed in on by a user.
- How can it address this instructional challenge?
  - Throughout a course, students are required to continually build a concept map that is based upon the readings that are assigned before each class. In particular, they are required to show connections among the various readings. The instructor reviews each student's concept map at the end of every week. Why?

## Online quizzes

- What is it?
  - An online quiz is simply a quiz that is given in an online course environment, such as Desire2Learn or BlackBoard. Depending on the nature of the questions, an online quiz can be automatically graded by the learning management system. As well, quizzes can be created in advance as a batch, and then automatically released one by one at the appropriate date and time.
- How can it address this instructional challenge?
  - Students are required to complete an online quiz before coming to class. Typically, the quiz might be made available one day before the class, and is "locked" five minutes before the class actually begins. An online quiz might ask five questions that assess whether the students have read an assigned reading. You might make two of the questions pertain to specific facts in the reading, and three others pertain to its overall ideas or themes.
  - For the whole course, these online quizzes should amount to no more than about 10% of the final grade. In other words, each quiz should be worth only a quarter or half a percent.

## My students don't ask questions in class

### Clickers

- What is it?
  - **Clickers** are handheld devices that allow each student to respond to a multiple-choice question; the responses of the entire class are aggregated by the clicker system, so that the instructor (and students, if the instructor chooses) can see the results.
- How can it address this instructional challenge?
  - Studies have shown that clickers can help to "scaffold" students who are reluctant to ask questions; that is, the device can help make them more comfortable and confident in asking questions.

## Backchannel tools

- What is it?
  - [Backchannel tools](#) are online programs that allow students to ask questions, vote on each other's questions, and even respond to each other's questions during a class.
- How can it address this instructional challenge?
  - Some students are not comfortable putting up their hand and verbally asking questions in class. They are too shy, lack confidence, or simply prefer writing to speaking. These students may be more willing to ask questions by means of a question facilitation tool. As they are submitted, these online questions can be monitored by the instructor or, better, by a teaching assistant or a designated student; however, the "voting" feature also allows an instructor to assess, at the end of a lecture or presentation, which questions are of greatest interest to the class as a whole. He or she can then take time to respond to those questions.
  - Students who lack confidence will also become more comfortable asking questions when they see that someone else has voted for their question.

## Online discussion groups

- What is it?
  - [Online discussion groups](#) are a convenient way for instructors to communicate with students (for example, in order to share a link to a web resource). More important, though, is that online discussion groups allow students to share ideas with one another, to critique and build upon one another's ideas and perspectives. The process of articulating one's ideas, defending one's ideas, and responding to someone else's ideas, is central to deep learning. online discussion groups are an integral feature of all course management systems, such as Blackboard.
- How can it address this instructional challenge?
  - Some students like to think on their feet, but others prefer to reflect on an idea or issue before sharing their perspective on it. Such students might never be comfortable asking a question or sharing an idea in class, either verbally or even by means of a backchannel or a question facilitation tool. Accordingly, an instructor might permit such students to pose questions and share ideas in an online discussion group (perhaps the day after the class), rather than insisting that they do so during class.
  - A further option is to allow students who have difficulty devising their own questions bring to the attention of the class a question that another student posed in the online discussion group. In other words, such a student would closely monitor the ideas and questions being raised in the online discussion group, and select one that seems especially important. He or she could then be given the opportunity to ask it in class on behalf of the person who posed it in the online discussion group.

## My students don't participate in class discussions

Students are sometimes reluctant to participate in class discussion because they are uncomfortable speaking up in front of a large group of peers. Several instructional technologies can help overcome this challenge.

## Small groups with clickers

- What is it?
  - [Clickers](#) are handheld devices that allow each student to respond to a multiple-choice question; the responses of the entire class are aggregated by the clicker system, so that the instructor (and

students, if the instructor chooses) can see the results.

- How can it address this instructional challenge?
  - One solution to the foregoing challenge is to put a large class of students into smaller groups and then ask them to have a discussion; at the end of the discussion, one student in each group is selected to report back to the class as a whole. This strategy can be even more effective if clickers are integrated into the process: typically, the instructor displays a multiple-choice question on the classroom screen and asks students to respond to it individually with their clickers. The instructor shows the class a bar chart of their responses, and then asks them to discuss the same question in small groups, trying to convince each other of the answer that they previously chose. These small group discussions are usually more animated because the students previously selected an answer, and the act of committing to that answer motivates them to want to defend and explain it. After discussing the question as a group, the instructor asks the students to again select a response to the question. The students, having discussed the question, are now more interested than ever in the correct answer, which can be explained either by the instructor or by one of the students.

## Online Discussion Groups

- What is it?
  - [Online discussion groups](#) are a convenient way for instructors to communicate with students (for example, in order to share a link to a web resource). More important, though, is that online discussion groups allow students to share ideas with one another, to critique and build upon one another's ideas and perspectives. The process of articulating one's ideas, defending one's ideas, and responding to someone else's ideas, is central to deep learning. online discussion groups are an integral feature of all course management systems, such as Blackboard.
- How can it address this instructional challenge?
  - Some students are reluctant to speak up in class, but are comfortable sharing their ideas online. Accordingly, creating an online discussion forum in your LMS can provide an alternative opportunity for students to participate in discussions with their peers. To be effective, however, the instructor or a teaching assistant needs to encourage and guide the online discussions. Additionally, it's important for the instructor to take some of the ideas that were raised in the online discussion forum and introduce them into the discussions that take place in the classroom, and vice versa. By doing so, the online discussions and the classroom discussions are seen as extensions of one another.

## Self and peer evaluation

- What is it?
  - Self and peer evaluation requires a student to assess himself or herself in the context of his or her peers.
- How can it address this instructional challenge?
  - Each student is required to keep an online record of his or her contributions to class discussion, including the questions that he or she asked in each class. Additionally, each student is also required to record two contributions or questions that were made by classmates in each class, focusing in particular on contributions that he or she found especially interesting, helpful, or insightful. Students are required to update their online record within twenty-four hours of each class. Why?
  - At the end of a course, each student reviews the questions or contributions that he or she made, as well as the ones from classmates that he or she recorded. Each student selects his or her top five questions, as well as the top five questions by classmates, and writes a brief paper explaining why those questions were chosen.
  - This activity could be done without any special technology -- that is, it could be done with pen and

paper. However, having students do it online -- for example, as part of their student Blog or e-portfolio -- means that the instructor can check on each student's online record from time to time, to make sure it is up-to-date.

I don't have a sense of whether my students are keeping up or understanding the material.

Before moving from unit to another, an instructor naturally wants to ensure that the students have understood the first unit. Asking the students, "Do you have any questions?" or "Can we move on to the next unit?" is not likely to result in helpful information: students may be so confused that they don't know what questions to ask, or they may be too embarrassed to say that they don't understand. The only way to really ascertain their understanding is to assess them, but giving them a paper and ink quiz does not provide you with the immediate feedback that you require. Additionally, a paper and ink quiz means that after you grade the quizzes, you have to record the grades, which takes more time. This challenge can be addressed via the following educational technologies:

## Clickers

- What is it?
  - [Clickers](#) are handheld devices that allow each student to respond to a multiple-choice question; the responses of the entire class are aggregated by the clicker system, so that the instructor (and students, if the instructor chooses) can see the results.
- How can it address this instructional challenge?
  - After finishing a lecture or unit, an instructor can use clickers to quickly ask four or five questions that assess the student's understanding, and the results are instantly aggregated and displayed at a bar chart: at a glance, the instructor can gauge whether the class as a whole is ready to move on to the next unit. Additionally, the clicker system uploads the grades to the gradebook in the learning management system.

## Multiple-choice tests in an LMS

- What is it?
  - A Learning Management System (LMS) such as Blackboard or Desire2Learn includes a test tool that allows instructors to create online tests. These tests can include a variety of question types, such as multiple-choice, matching, sequencing, short answer, and more.
- How can it address this instructional challenge?
  - A multiple-choice quiz in a learning management system can be used to automatically assess the collective understanding of the class, but it's more difficult to do this during class than with clickers because not all students will bring a laptop or other mobile device to class. However, a quiz in an LMS, which the students complete outside of class, could be a feasible option if the instructor does not need immediate feedback on whether the students

My students have difficulty clearly formulating or articulating their questions

## Backchannel tools

- What is it?
  - [Backchannel tools](#) are online programs that allow students to ask questions, vote on each other's questions, and even respond to each other's questions during a class.

- How can it address this instructional challenge?
  - Often a student might have a sense of the question that he or she would like to ask, but isn't quite sure how to put it, or lacks a bit of information or context to make that question meaningful. In such situations, the student might share a "draft" of the question via the backchannel, and ask other students to help clarify the question -- that is, the other students are not answering the question, but are simply helping to put it into clear words or to a meaningful context. Once that has been done, the original student will probably be more confident in asking the question directly to the instructor.

## E-portfolios or student blogs

- What is it?
  - [Blogs](#) and [e-portfolios](#) differ from one another in many ways, but in the context of this question, they can serve the same purpose. Blogs and e-portfolios can both provide an opportunity for students to reflect upon their learning (and also for fellow students to read those reflections and make supportive or insightful comments on them).
- How can it address this instructional challenge?
  - Some students may feel overwhelmed when new ideas and information are presented to them. They need time to reflect and synthesize those ideas. Having students reflect on their course content in an e-portfolio or student Blog can provide them with the opportunity to sort through their thoughts, so that they can identify the key questions that they have.

## I don't have time to take questions during class

### Question facilitation tools

- What is it?
  - Question facilitation tools are online programs that allow students to ask questions online during a class. One of the ways that they differ from backchannel tools is that they provide students with the ability to vote on the relevance or quality of each other's questions.
  - Question facilitation tools include [Google Moderator](#).
- How can it address this instructional challenge?
  - In some cases an instructor has some limited time to devote to class questions, but is reluctant to do so because a student with a hand in the air might have a very good question or might have an irrelevant question, or one whose answer can be found in the course syllabus or in the online discussion group for the course. In other words, a hand in the air does not indicate the quality of the question. A question facilitation tool, however, can allow students to ask questions as they occur to them during a lecture or class presentation; other students can also vote on the questions that are asked by this means. At the end of the lecture, the instructor can then scan the questions that have been asked, in order to note the excellent ones as well as any others that the class as a whole have deemed to be important.

### Online discussion groups

- What is it?
  - [Online discussion groups](#) are simply a place to have discussions online. They are an integral feature of all course management systems, such as Blackboard. In large classes, several online discussion groups can be set up, so that the number of people in any one group is manageable.
- How can it address this instructional challenge?
  - If an instructor has absolutely no time to take questions in class, then he or she can have students

pose their question in an online discussion group, where they can be answered later by the instructor, by a teaching assistant, or by other students. However, if an instructor consistently has no time for in-class questions, he or she may want to consider decreasing the course content, or delivering some of the course content by other means (such as by [screencasts](#)).

## Wikis

- What is it?
  - A wiki allows many people to write and edit a document collaboratively. Some wikis are asynchronous, meaning that when one user is working on a given document, other users are temporarily locked out of it. Other wikis strive to be synchronous, meaning that several users can be working on the document at the same time. Wikis can be an effective way of bringing together the knowledge and skills of many people, separated by distance.
- How can it address this instructional challenge?
  - If an instructor does not have time to answer questions in class -- or at least doesn't have time to answer all of them -- then he or she might set up a class wiki where students can pose questions and then collaborate on answering those questions for themselves. A wiki, used this way, resembles the online discussion group (described above), but with this difference: rather than having various students respond to a question in separate messages (which might result in a good answer that is broken up into pieces), the students work together to craft and edit a unified answer, one that draws upon their collective knowledge. An instructor would, of course, want to review the final version of the answer in the wiki.

## Screencasts

- What is it?
  - [Screencasting](#) is the process of capturing whatever appears on your computer monitor -- such as text, an image, a PowerPoint slide, a video clip -- with the intention of turning it into a shareable video. A screencasting program also records accompanying audio (such as explanatory narration), and can also capture and incorporate video from a device such as a webcam.
- How can it address this instructional challenge?
  - Screencasting can help create time during class when an instructor can take student questions. An instructor would identify components of course content that can be effectively delivered via a screencast; these components would tend to be information that is merely factual, or information that the instructor delivers in the same manner each time the course is offered. Students would then be directed to watch these screencasts before a given class (and the instructor can ensure that they do watch the screencasts by means on a pre-class quiz, as described in the preceding item entitled "My students come to class unprepared"). The time that was formerly spent on those components of course content can now be devoted to addressing student questions.

## I have too many students to make group work feasible during class

### Wikis

- What is it?
  - A wiki allows many people to write and edit a document collaboratively. Some wikis are asynchronous, meaning that when one user is working on a given document, other users are temporarily locked out of it. Other wikis strive to be synchronous, meaning that several users can be working on the document at the same time. Wikis can be an effective way of bringing together the knowledge and skills of many people, separated by distance.



- How can it address this instructional challenge?
  - With a large number of students, group work is often challenging because of the resulting noise and the inability of students to comfortably gather into groups (for example, because of immovable tables or desks). However, students could stay in their seats and work as a group by means of a synchronous wiki: that is, one that allows them to be working in the same document at the same time, such as EtherPad. An instructor could, for example, make a presentation for 20 minutes, and then have students work in small groups (via EtherPad) for 20 minutes, and then have a member of each group report back to the class as a whole on their work. The group work would essentially be silent (apart from tapping on keyboards) and students would be sitting comfortably in their seats.

## I have too many students to make in-class discussions feasible

### Small groups with clickers

- What is it?
  - **Clickers** are handheld devices that allow each student to respond to a multiple-choice question; the responses of the entire class are aggregated by the clicker system, so that the instructor (and students, if the instructor chooses) can see the results.
- How can it address this instructional challenge?
  - One solution to the foregoing challenge is to put a large class of students into smaller groups and then ask them to have a discussion; at the end of the discussion, one student in each group is selected to report back to the class as a whole. This strategy can be even more effective if clickers are integrated into the process: typically, the instructor displays a multiple-choice question on the classroom screen and asks students to respond to it individually with their clickers. The instructor shows the class a bar chart of their responses, and then asks them to discuss the same question in small groups, trying to convince each other of the answer that they previously chose. These small group discussions are usually more animated because the students previously selected an answer, and the act of committing to that answer motivates them to want to defend and explain it. After discussing the question as a group, the instructor asks the students to again select a response to the question. The students, having discussed the question, are now more interested than ever in the correct answer, which can be explained either by the instructor or by one of the students.

### Backchannel tools

- What is it?
  - **Backchannel tools** are online programs that allow students to ask questions, vote on each other's questions, and even respond to each other's questions during a class.
- How can it address this instructional challenge?
  - One of the limitations of the traditional classroom is that only one person can be talking at a time. A backchannel tool such as Twitter, however, allow many students to be sharing their ideas at the same time. For example, an instructor might begin a class by presenting or lecturing for 30 minutes. He or she would then tell students that they had ten minutes to discuss the content of the presentation by means of Twitter (or some other backchannel tool). The instructor could follow the discussion on Twitter, and could choose to participate or to simply observe. After the ten minutes of Twitter discussion are over, the instructor or a student could verbally summarize what was discussed before moving on to the next unit.

### Online discussion groups

- What is it?
  - Online discussion groups are simply a place to have discussions online. They are an integral feature

of all course management systems, such as Blackboard. In large classes, several online discussion groups can be set up, so that the number of people in any one group is manageable.

- How can it address this instructional challenge?
  - Designate five students who will be the sole “class contributors” for that week. The other students listen silently to the designated class contributors, take notes on what they say, and later critique and build upon those verbal contributions in an online discussion group. The following week, the instructor creates a new group of designated class contributors, so that every student has the opportunity to have this role at least once per term.

## I have too many students to make online discussions feasible

### Multiple online forums with facilitators

- What is it?
  - An online discussion forum is a tool within an LMS that allows students to share perspectives with one another.
- How can it address this instructional challenge?
  - Online discussion forums can be effective even in very large courses as long as the instructor has sufficient support and resources. The instructor’s first step is to create a number of discussion forums in the LMS and then assign 15 to 20 students to each one (the LMS can automatically perform a random distribution). Each discussion forum then requires a facilitator who can moderate, guide, and encourage the discussions. Students who have previously taken the course, and who were highly successful in it, make especially facilitators. Such students might be hired as teaching assistants or, alternatively, they might receive a course credit for acting as facilitators of the online discussion forums (the department would probably need to create a new independent-studies course called “Online Pedagogy” or something similar). Once the foregoing is established, the facilitators in each discussion must be highly active and consistently visible in the discussion forums: the students in the course need to know that someone in a position of authority is assessing their contributions to the discussions. The instructor should also provide students with a rubric that explains how their contributions will be assessed: for example, their posts to the discussion forum should be thought provoking, well written, responsive to other posts, and so on.

## My students don't incorporate the feedback I give them into subsequent assignments

### E-portfolios or student blogs

- What is it?
  - Blogs and e-portfolios differ from one another in many ways, but in the context of this question, they can serve the same purpose. Blogs and e-portfolios can both provide an opportunity for students to reflect upon their learning (and also for fellow students to read those reflections and make supportive or insightful comments on them).
- How can it address this instructional challenge?
  - An instructor would use an e-portfolio or student Blog to have every student to reflect on how he or she used the instructor's feedback on a previous assignment when developing a subsequent assignment. In other words, the e-portfolio or blog forces the student to engage in (and demonstrate) the process of integrating the instructor's advice (or, if the student does not integrate that feedback, then he or she explains the thought process underlying that decision).

## My students use my office hours for trivial or administrative questions

### An online frequently asked questions (FAQ) document

- What is it?
  - An FAQ is a list of frequently asked questions
- How can it address this instructional challenge?
  - An FAQ is a useful way of precluding routine student questions. An FAQ is especially effective if it is online, so that it can be easily updated and posted on the course website. Every course that you teach should have its own online FAQ (rather than a generic one for all your courses). As well, some instructors have two FAQs for each course: one for routine questions pertaining to the administration of the course (for example, your policy on late assignments) and another FAQ for routine questions pertaining to course content (for example, in a Shakespeare course I used to teach, I was often asked whether Shakespeare wrote in "Old English" (he didn't -- he actually wrote in Early Modern English). An online FAQ can be even more effective if you also have an online "communication policy." Such a policy can convey your office hours, but can also indicate whether you respond to questions by email (and if so, how quickly, or whether you respond on weekends), whether you prefer questions by email or phone, whether you prefer to be addressed as "Dr." or "Professor," or whether students can use your first name, and so on.

### Backchannel tools

- What is it?
  - [Backchannel tools](#) are online programs that allow students to ask questions, vote on each other's questions, and even respond to each other's questions during a class.
- How can it address this instructional challenge?
  - In any class there are sure to be a few (or even many) students who are glad to answer the routine questions of other students. Providing students with a backchannel -- via, say, Twitter -- can leverage that student knowledge and goodwill. I recently attended a class where the instructor had students using Twitter as the backchannel, and witnessed three or four occasions where students used it to ask questions such as "What's the date of the mid term exam." In every case, the question was answered by another student, usually within seconds. Low-level content-related questions were also answered by students using Twitter, such as "What was the name of the author he mentioned?" All of these were questions that might otherwise have been asked of the instructor during office hours.

### Online discussion groups

- What is it?
  - Online discussion groups are simply a place to have discussions online. They are an integral feature of all course management systems, such as Blackboard. In large classes, several online discussion groups can be set up, so that the number of people in any one group is manageable.
- How can it address this instructional challenge?
  - In any class there are sure to be a few (or even many) students who are glad to answer the routine questions of other students. Providing students with the means to help each other -- via, say, an online discussion group-- can leverage that student knowledge and goodwill.

## My students seem bored during my lectures

### Clickers

- What is it?
  - **Clickers** are small, handheld units that are intended to increase student participation and engagement in class by allowing students to easily (and anonymously) respond to an instructor's multiple-choice questions; these responses are instantly tabulated so that the instructor, and potentially the students, can see the results.
- How can it address this instructional challenge?
  - Clickers work best when they are used to ask students multiple-choice questions every, say, fifteen or twenty minutes. However, to really engage students, those clicker questions should not be ones that merely test whether students have understood the material or not. Rather, they should be questions that are at the "edges" of what you have just covered in class, in order to get them to speculate and to push themselves beyond what they already know.
  - An especially effective technique with clickers is this: present a multiple-choice question and have students use their clickers to respond to it individually; show them the aggregate results of their responses using the clicker system; then have them discuss the question in pairs or in groups of three; then give them the opportunity to answer the same multiple-choice question again with their clicker; and then show them the new aggregate results.
  - Studies have shown that clickers, when used wisely, can increase student engagement, increase class attendance, and enhance learning outcomes. Not surprisingly, students report that they enjoy using clickers in class.

## Screencasts

- What is it?
  - **Screencasting** is the process of capturing whatever appears on your computer monitor -- such as text, an image, a PowerPoint slide, a video clip -- with the intention of turning it into a shareable video. A screencasting program also records accompanying audio (such as explanatory narration), and can also capture and incorporate video from a device such as a webcam.
- How can it address this instructional challenge?
  - Most students (and most people) do not enjoy being lectured to. They would rather listen to an interview, a debate, or a story, or watch a demonstration, or have a conversation, or work through a challenging puzzle. Even the most keen and self-motivated students will have difficulty staying attentive for all of an hour-long lecture. Accordingly, it's not surprising that students are bored by lectures, even when the content is interesting and the instructor is passionate about his or her discipline.
  - The solution to this instructional challenge is therefore not to lecture "harder" or even "better," but to lecture less, and replace some of the lecture time with opportunities for active learning. However, instructors are sometimes hesitant to lecture less, because they fear that students will not otherwise receive the course content. Some of that course content can, of course, be delivered by means of the textbook and assigned readings (and instructors can ensure that students actually do these readings on time by using some of the strategies described previously, under the title "My students come to class unprepared"). Other parts of the course content can be delivered via a screencast, which students watch outside of class time (and, again, an instructor can ensure that students watch the screencasts by using some of the strategies described under "My students come to class unprepared").
  - Creating an effective screencast can take a lot of work. However, you only need to make it once, and then you can use the screencast every time you teach the course, for the next few years.

## My students have difficulty coordinating their schedules

### Online scheduling programs

- What is it?
  - Online scheduling programs, such as [Doodle](#), are just what they sound like: they are online programs that allow groups of people to find a time when they can all meet.
- How can it address this instructional challenge?
  - It allows everyone to collaborate in choosing a date and time, and prevents the need to email back and forth dozens of time.

## Assessing and grading a student's contribution to in-class discussion is difficult

### Self and peer evaluation

- What is it?
  - Self and peer evaluation requires a student to assess himself or herself in the context of his or her peers.
- How can it address this instructional challenge?
  - Each student is required to keep an online record of his or her contributions to class discussion, including the questions that he or she asked in each class. Additionally, each student is also required to record two contributions or questions that were made by classmates in each class, focusing in particular on contributions that he or she found especially interesting, helpful, or insightful. Students are required to update their online record within twenty-four hours of each class. Why?
  - At the end of a course, each student reviews the questions or contributions that he or she made, as well as the ones from classmates that he or she recorded. Each student selects his or her top five questions, as well as the top five questions by classmates, and writes a brief paper explaining why those questions were chosen. The student also assigns a grade to his or her own class participation, based on their self-reflection and in comparison with that of their peers.
  - Students who are consistently cited in the blogs or e-portfolios by their peers as having contributed good questions or ideas are awarded high marks for their positive impact on their peers; students who are rarely or never cited by their peers are awarded low marks in this regard.
  - This activity could be done without any special technology -- that is, it could be done with pen and paper. However, having students do it online -- for example, as part of their student Blog or e-portfolio -- means that the instructor can check on each student's online record from time to time, to make sure it is up-to-date.

## My students submit plagiarized work

### TurnItIn

- What is it?
  - [TurnItIn](#) is a paid service that determines whether a student's essay has been plagiarized. It does so by comparing that essay with documents freely available online (as well as documents behind firewalls or in special repositories), and with other essays that have previously been submitted to the TurnItIn service. Services similar to TurnItIn include SafeAssign.
- How can it address this instructional challenge?
  - TurnItIn can identify plagiarized passages in a student's essay, but it also has the effect of deterring students from plagiarizing in the first place (once they know that a professor is using it).

## My students just want to know "the right answer"

Some students believe that learning is just the acquisition of correct answers to clearly defined problems. Such students tend to approach learning as mere memory work: they tell themselves, "To solve this problem, I use this formula, and therefore I need to memorize this formula," and so on. This approach to learning is useful at some level, and for certain types of knowledge, but in other contexts it's naïve and limited. One goal of an undergraduate education is, in fact, to lead students to a more nuanced view of problems, one that recognizes that in many contexts the goal is not to find the right answer but rather the best answer of many plausible answers. To move students toward this more sophisticated view of problem solving, an instructor needs to design learning activities and assessments that encourage it. After all, how students learn is determined by how they are assessed: a multiple-choice test that features questions with one right answer probably won't foster creativity, critical thinking, or a recognition that not everything is black and white. But other types of learning activities and assessments, such as the following, can foster these skills.

### Case Studies

- What is it?
  - [Case studies](#) are stories that depict authentic and complex situations that involve a problem or dilemma that needs to be resolved.
- How can it address this instructional challenge?
  - Having students analyze a case study can help them move beyond a quest for the "right answer" because case studies are based on authentic – and therefore ill-defined or "messy" – scenarios. Two groups of students, analyzing the same case study, might propose solutions that are different yet equally plausible. This helps them understand that not everything has a right answer, and that even the best answer might not always be entirely evident.

### Concept maps

- What is it?
  - [Concept maps](#) visually depict the relationships among ideas, events, or things. Concept map programs facilitate the creation of sophisticated maps, and have features such as these: the ability to collaborate on a map with someone else at a distance; the ability to embed web links into the nodes of a concept map; the ability to "publish" these maps online. Some concept map programs create "static" maps (ones where the arms and nodes of the map are fixed in place); other concept map programs create "dynamic" maps, whose arms and nodes can be repositioned or hidden or zoomed in on by a user.
- How can it address this instructional challenge?
  - Getting students to create concept maps that depict the relationships among the components of a system or process can also help students understand that diverse approaches can be equally valid. An instructor might, for example, ask students to create a concept map individually, which they then exchange with another student, and perhaps even a third or fourth student. As they review the various concept maps, they will probably see visual representations that differ from their own, but which are equally effective. Concept maps can be created with pen and paper, or with concept mapping apps that provide additional functionality.

## Some of my students lack prerequisite or background knowledge for the course

Students sometimes show up in a course without having taken prerequisite courses or without having learned much in prerequisite courses. This can be especially challenging if other students in the course do

have that prerequisite knowledge, because it means you have two different cohorts of students: those who are ready for your course and those who are not. If you spend class time trying to get the unprepared students up to speed, you risk boring or frustrating the other students. But if you teach only to the students who have the prerequisite knowledge, then you risk having the other students fall further and further behind.

## Screencasts

- What is it?
  - **Screencasting** is the process of capturing whatever appears on your computer monitor -- such as text, an image, a PowerPoint slide, a video clip -- with the intention of turning it into a shareable video. A screencasting program also records accompanying audio (such as explanatory narration), and can also capture and incorporate video from a device such as a webcam. A screencast might, for example, show an equation being solved line by line, as the instructor explains each step in the process (such as screencast can be easily made using a stylus on an iPad, and an inexpensive screencasting app).
- How can it address this instructional challenge?
  - Screencasts can be an effective way of providing remedial material to students who are lacking in background knowledge. An instructor might create a series of screencasts that cover the prerequisite content that students require in order to succeed in the course. The instructor then tells the students that if they lack the needed background knowledge for the course, then they must watch and work through the screencasts. The screencasts can even be linked to online assessments – such as multiple-choice quizzes – that require no additional work from the instructor to grade. These assessments can help the students determine whether they have sufficiently learned the prerequisite material.

My students don't make connections among the various components of my course, or among their various courses.

## ▪ Context

- Students sometimes fail to see how the individual units of a course, or the individual courses that make up a program, are connected to each other. After finishing one chunk of learning, they seem to pack it away in a dark corner of their mind, and maybe even forget it, never stopping to consider how what they have learned builds upon things they have previously learned, prepares them for things they are going to learn, or relates to other aspects of their lives, such as work experiences, volunteer experiences, and more. As a result, their learning remains shallow, which means that they are less likely to retain it, and their learning remains "academic" rather than authentic and applicable.

## ▪ ePortfolios

- What is it?
  - An ePortfolio is an online space where students can artifacts that they have produced in their courses, such as written assignments, images, videos, and so on. They then use the ePortfolio to reflect on their learning experiences.
- How can it address this instructional challenge?
  - One way of addressing this problem is to integrate an ePortfolio into a course or, better yet, into an entire program. An ePortfolio requires students to pause and reflect on their learning, often by making explicit connections between different learning experiences. This process deepens

their learning, and has the added benefit of helping them to chronicle their learning: they can look back on earlier work in their ePortfolio and readily see how much they have learned and how far they have progressed. A further benefit of an ePortfolio is that it can function as an “enhanced CV” when they are applying for scholarships or jobs. Ideally, a student starts maintaining an ePortfolio in their first year, uses it in relation to all their courses, and continues to use it till they have completed their degree – or even beyond.

## I have so many students that it's not feasible to provide personalized feedback to all of them

In a large class, it’s often not possible to provide personalized feedback for every student. In such a situation, peer assessment can be a solution. Indeed, when a peer assessment process is well-designed, there is a double benefit: each student receives feedback on his or her work from one or even several classmates, and the act of providing feedback becomes, in itself, a learning opportunity. However, simply asking students to grade each other’s assignments will not work. The students need to be given examples of what constitutes an excellent assignment, a good assignment, a weak assignment, and a failing assignment. Additionally, they need to be provided with a rubric that will help them consider the different aspects of the assignment one by one. Even then, there are challenges, at least when the peer assessment involves paper-and-ink assignments: the process of randomly distributing the assignments can be challenging, and the assignments will have the authors’ names on them, meaning that bias might unfairly influence an assessment.

### Online peer assessment tools

- What is it?
  - An online peer assessment tool makes the process getting students to assess each other's work easier and more effective.
- How can it address this instructional challenge?
  - Students submit their assignments into the online program, and the program then distributes the assignments randomly and anonymously. Moreover, each assignment can be sent to multiple peers at the same time. The students also perform their peer assessments within the program, so that the program can collate the various assessments and grades. This means that an instructor can easily identify unusual situations where an assignment has received, say, an “A” from two peers and a “D” from three others. Peer instruction programs include peerScholar (developed at the University of Toronto) and PEAR (developed at the University of Guelph).

### Multiple-choice tests and "branching" in an LMS

- What is it?
  - A Learning Management System (LMS) such as Blackboard or Desire2Learn includes a test tool that allows instructors to create multiple-choice tests, and to automatically sequence students through a learning activity based on their performance.
- How can it address this instructional challenge?
  - The quiz tool found in LEARN and other learning management systems can also be used to provide feedback that – while not personalized – is specific to each student’s performance. This is achieved by providing different automated feedback for each choice in a multiple-choice question: for example, a student who chooses “B” will receive feedback that is relevant to the mistake that he or she likely made in choosing that answer. A student who chooses “C” will receive feedback that is relevant to the misconceptions that underlie that answer, and so on. Moreover, a technique called “branching” can also be employed so that different students are automatically directed to different resources, depending on their performance on a quiz. For example, a student who does poorly on a



quiz – or on a section of a quiz – is automatically directed to remedial content, whereas a student who does well is automatically directed to more challenging resources.