Module 3 Summary and Reflection

Summary

1. Read and view materials provided on theories of educational technology.

Video: Learning Research at the Center for Cognitive Tech
http://www.youtube.com/watch?v=-aHvxxXhm2Y&feature=player_embedded

Best bits:

(3:22) What have we learned?
- Specific approach to instruction, and instructional design; based on cognitive load theory.
- Direct instruction, showing people how to do things, as opposed to telling them what to do and letting them discover how, is what works.

(4:37) Cognitive Task Analysis
- How to extract expertise - 70% of the knowledge that an expert has is automated and unconscious. They can’t tell somebody what to do even if they want to.
- Series of studies on cross-cultural negotiation; what culture means, how to train people to work effectively with people of other cultures.
- Working with the ICT(Institute for Creative Technology) – using avatars to train people to deal with others of another culture; military negotiations.

(8:02) Guided Experiential Learning
- Heart is that is how to do things not just what to do. Lots of practice and feedback.

(8:50) Situational Leadership Theory

(9:30) Sense of Presence.
- When you’re learning from multimedia or televised instruction, how important is it that you get a sense that it’s real?
- When your sense of reality increases, does it engage you more?

I really liked this video. After I watched it I went to the website and explored (I have to find them both – there were two and I only bookmarked one: Center for Cognitive Learning). On the two sites there are great resources (PDFs), videos, and lots with virtual reality in military training and PTSD therapy. Watching this video and reading information on the website really helped me to find the focus of my annotated
Guided Experiential Learning, with its emphasis on cognitive load intrigues me and tied in so nicely with my interest in Bruner and constructivism.


In the Module 3 Agenda, there was mention of registration so I didn’t click on the link – I don’t like to give away any information. Then I clicked, just to see what came up and there was no registration after all so I read it. I’m glad I read this one last, but will discuss first since I like to go in order.

First impression: Hey, this was written by girls – that’s great! We need more women in academia ☺. The authors want us to learn from our tools, they use lots of big words, and the evils of commercialization of higher education seems to be their focus. Then I read more … Lots of personal opinion, more big words; and now it looks like someone has an ax to grind. Then they say:

“However, a closer look at WebCT, which is now in use at over 2,300 universities and colleges, reveals that its WYSIWYG interface is intended to make it easy for instructors to put course content online, which then makes it possible for educational administrators to reduce face-to-face instructional time and replace expensive faculty teaching time with ‘plug-and-play’ content modules, sessional instructors, and a heavy reliance on machine-scorable multiple-choice assessment protocols.”

Now I don’t like it. I was trying to keep an open mind, but they lost me here. I’m not in higher education and don’t know the ins and outs of what happens behind the scenes, but I think (I hope!) this is an overstatement of isolated instances. We already had the Internet and we already had distance learning. Software like WebCT came along quite a ways down the road. (Blackboard and Moodle would be comparable, I’m guessing) and allow for greater collaboration and interaction, not less. Did these girls ever take an online class? More than one? It seems to me that if there are difficulties in a distance learning course, you need to look at the people. People make the courses, people implement, and people evaluate. You don’t have to be online to be in a “bad class” and not every institution is trying to rake in the tuition dollars without the benefit of having an actual teacher for the course. If they are, they were probably doing that before software like this came along; they were just using different methods before.

Regarding e-packs … guess what? Not everyone is an instructional designer and a lot of what is created by untrained practitioners is not so great. Why not give them a leg up? It’s called modeling. Hopefully, as teachers gain experience and comfort with the system they will improve on an already firm foundation. Good teachers do that all the time, not just online teachers.

Then I read more … I got to “Like many who work with new information technologies and educational settings, our program of research has been inspired by Donna
Haraway’s (1991) exhortation, best elucidated in the "Cyborg Manifesto," …" and clicked on the link. Oh, my!! Have you read that?? No wonder their perspective seemed skewed (not that feminist writings should automatically be discounted) – I had previously disagreed with their logic and arguments and, once I read the Cyborg Manifesto, had no interest in reading even one more word of this article. Is this article typical of this particular “open journal?” Was it a test to see if we could spot bias? While it was somewhat interesting to see a WILDLY different perspective, I don’t know that I would place any value on information presented in this article.


There are two points made in this article I found to be of greatest interest. First, there was a discussion of “the difficulties in carrying out design experiments in educational technology” (p.6-7). This is a recurring theme and one that presents problems throughout education, not simply in educational technology. To be valid and reliable there are certain procedures that must be followed and that is often not feasible in a classroom situation.

Second, the authors state the importance of taking “a multi-leveled approach to understanding complex learning situations ... There is a need to consider the context of the institution, the culture of the students, the location of the learning situation within the curriculum as well as the design of the technology and software” (p. 10). I like this a lot. In so many of our readings, it seems the authors will compartmentalize information; this theory, that theory, polar opposites rather than a continuum. This is a welcomed change. While it may not be easy to translate to classroom use it is, however, a very attractive approach and one that seems like it would be very effective. This is very similar to ideas from one of my bibliography sources (TPACK).

The authors’ discussion of situated learning ties right into our chapter 3 reading as well.


**Required Reading**

1999 – the article is ten years old. Topic ties in well with my learning theories paper (Bruner, Guided Discovery) and my annotated bibliography – I saved it until after my annotated bibliography so that I would have a better understanding of constructivism before reading.

This is a somewhat historical approach in that they begin with a focus on the instructivist
The authors’ description of how nicely a systems approach can be applied to instructional design in this area appeals to my sequential mind. Presenting instructionism and constructivism as polar opposites ties nicely to the article by Reese since he did that with each of his 14 dimensions. Question – do constructivists really think there is nothing systematic about how we learn or construct knowledge? At some point, can’t you break things down into component parts? We crawl before we walk and we walk before we run. There is organization and a system.

The author’s description of what educators must do in a constructivist learning environment is kind of scary: “learners will require a variety of different experiences to advance to different kinds and levels of understanding …. Educators need to spend time understanding learner’s current perspectives and, based on this information, incorporate learning activities that have real world relevance for each learner.” Boy, this is a tall order. Is it practical to individualize for every student? Maybe not, but it is a worthwhile goal nevertheless.

“…learners will require a variety of different experiences to advance to different kinds and levels of understanding. Thus we must bring our learners' prior knowledge to the forefront if they are to apply their current understandings to new situations in order to construct new knowledge. To achieve this, educators need to spend time understanding learner's current perspectives and, based on this information, incorporate learning activities that have real world relevance for each learner.” A tall order.

Because I did so much reading about constructivism these last couple of weeks, I was drawn to the instructionism vs. constructivism discussion and immediately thought of arguments against pure constructivism (as was described here) and a more moderate approach that includes scaffolds and guidance – a compromise, as it were, between the two poles and one that has proven to be effective.

The authors ask: “should the focus be on increasing a learner’s capacity to understand an objective reality or on the capacity to understand more deeply the perceptions and sense of this reality?” This is an interesting point and one not discussed in other things I have recently read. My answer is “yes.” I don't think it’s an either/or situation and it is a very fine point. One would hope that we would get to the point where we could think about this and apply it to our teaching but I must admit there are lots of other things higher on my list, on a day-to-day basis.

So many terms … radical constructivism, cognitive constructivism, co-constructivism, situated constructivism, critical constructivism, extreme constructivism, social constructivism … the list seems endless. The authors state that the intent was to bring order out of chaos. I thought I had order until I read this then I had chaos. Do people really use all those terms for differing types of constructivism? In my readings I saw primarily Inquiry Learning, guided, minimally guided, and pure. The current focus, it appears is on the practical application of constructivist theories to classroom instruction.
All these “new” kinds of constructivism made my brain hurt until I got to the bullet points in the discussion, then all was well. Perhaps seeing the detail of various theories helps one better appreciate the Reader’s Digest version. I think that exemplifies one of the problems facing technology integration today. So many teachers are trying their best to do what’s best, taking a class here or a workshop there. They are introduced to the basics then turned loose - who knows which direction they will go and what they will do with their introductory knowledge? Maybe that’s where the whole “miracle worker” thing in the article by the girls (De Castell, Bryson, & Jenson, 2002) will come into play. Is it like herding cats?

I like that the authors spend some time on the importance of prior knowledge – that is something that research has shown is key. Novice and intermediate students need more guidance and foundational knowledge before they can efficiently construct new knowledge.

Also of note is the authors’ emphasis on the importance of language in building knowledge – that is Jerome Bruner’s big thing now! He was in at the beginning of constructivism but his theories didn’t stagnate – constructivism is evolving and it is important to see the whole picture. Seeing where we came from helps us to better appreciate where we are and helps us to learn from our past.

As I narrow the focus of my research paper, it would be advantageous to explore some of the references listed in this article.


This article exemplifies one of the greatest challenges I see in educational technology – grounding educational practices in research. Key points in this 10-year-old address are based upon 15-year-old research, which means that we’re using 25-year-old information as a foundation for change in an evolving field.

In part one of this work, the author describes recent developments in communication information technologies. It was interesting to read the almost 20-year-old view of the Internet. The authors state the perils of “info-glut” and unfiltered information and wonder how readers will evaluate their sources and assemble knowledge. While efforts are being made to teach students to evaluate information and carefully select resources, it appears that educators’ fears have not changed overmuch as it relates to Internet use. While the author presents advantages of “new” technologies like online mailing lists and newsgroups to feed our perspectives, RSS feeds provide these same opportunities today. While the steps that are suggested for searching out a variety of perspectives are
out-of-date, the need to consider author bias and advantages of seeking multiple viewpoints remain. The author refers to Heim when he says, “the types of questions we ask shape the possible answers we get,” and “the ways we search limit what we find in our searching” (p. 12). I believe that this is something that must be in the forefront of our minds when planning instruction and working with students.

Another of the more “timeless” topics is the discussion of the rising prominence of a visual component to learning. The author notes that education has been primarily print-based with heavy focus on the “linguistic-verbal-textual resources of reading, writing, and talk.” Discussion of the growing role of visual aspects of educational resources was just the beginning of the many ways technology has broadened the educational horizon.

The second and third parts of the article deal with epistemological foundations of education and how new technologies are challenging traditional models. When the author started taking “side trips” (i.e., connecting Catholic traditions to new “truths” available through technology) he lost me. I think I’m getting pickier about what I read.


*This item had to be purchased so I did not read it.*


This resource was a nice overview of considerations for computer-based education. I agree with the points made about evaluation of CBE including the fact that evaluation lags behind development, and too much emphasis on numbers - $ spent, student-to-computer ratio. Our district tech plan is a case in point. We have pages and pages and pages of data about which computers are where and what type of connections we have but when it comes down to how we can best use the resources to advance student learning, there’s not much there.

Following this discussion of challenges facing evaluation of CBE, the author described 14 dimensions of CBE. A few comments:

- “Constructivist pedagogy is increasingly popular in educational literature today, but few examples exist of its adoption in schools (Nix and Spiro, 1990).” -- that info is 20 years old! I’d like to see updated information.
• “Electronic "mindtools" such as hypertext and multimedia provide opportunities for teachers and students to collaborate in the construction of unique knowledge representations. "HyperCard" from Apple Computer as well as spreadsheets and database programs are examples of "mindtools."” -- Again, old (pet peeve). We would have to try pretty hard to apply this to current practice.

• In discussion of Instructivist vs. Constructivist approach: “It must be noted that the degree to which educators, parents, and community leaders emphasize one pedagogical philosophy over another appears to be strongly influenced by religious and political beliefs.” -- Where’s the citation? Do we know who thinks this? I have not seen reference to this in other articles.

• In discussion of Underlying Psychology: “… virtually all self-respecting instructional design theorists now claim to be cognitivists (Gagné and Glaser, 1987)” – biased language, lost me.

• In discussion of Goal Orientation: It is interesting that they mention the medical school example. One of the resources I read when working on my annotated bibliography mentioned this as well. The other source (Kirschner, Sweller, Clark, p. 82-83) said that medical students trained in this manner (clinical from day one) made a greater number of erroneous connections and were not as able to apply earlier information to novel situations. They said it was more expensive and but not more effective.

One challenge I had reading this article is that it seems like the author threw in everything but the kitchen sink! The treatment is very broad and very shallow, but perhaps that was the author’s intention. Another challenge for me was the amount of overlap between these 14 dimensions. While it is interesting to have them pointed out and briefly described, it is difficult to consider one dimension in isolation. I believe there is greater value in how the dimensions interact. Something I read for a previous class (503 I believe) mentioned the technique of foregrounding. All the aspects are there, but you stress different things at different times. I like that better that this “bits and pieces” approach.


When I worked on my annotated bibliography this week, I took the Felder-Silverman Index of Learning Styles online questionnaire. I was not surprised to learn that I am a very concrete, sequential thinker. As such, it is more challenging for me to think about theoretical aspects because I want to jump right in and apply things and make them work. I compiled some of my favorite quotes from this article:

• “People who theorize do their best, but they’re only human. Likewise, theories may be the product of our best crafting, but, like all forms of human activity, we expect theories to be a reflection of ourselves—our yearnings, our biases, our weaknesses, and our inward character.”
• “A critical role that theory can play is helping us see the world in new ways. Theories can open up possibilities for action simply by changing the way we see.”
• “Theory helps us make things. When we see the world differently, we can act to make things different.”
• “Theory keeps us honest. In the midst of everyday life, theory can serve a function that is essentially self-corrective in nature. Theorists often reflect on practice and offer up a critique on that practice, suggesting ways of seeing ourselves that would suggest a need for change. Theorists argue about fundamentals, and about how ideas relate to actions.”
• “Theorists and practitioners are different roles within practitioner communities. The theorist role is to reflect on problems, study and research questions, and share knowledge with the group. The practitioner role is to thoughtfully use knowledge toward the solution of problems. Both roles are essential to good practice and good theory and, when you think about it, the roles are more similar than they are different.”
• “If we stake our future on specific models and theories, then we're in trouble. If we show an unwillingness to examine our foundations and adapt to evolving needs, we're in big trouble.”
• “But it's not the content of our models, rather the resiliency of our questions, that offers hope for the future:"

NOTE: I was not able to access any of the three articles listed under “Available through the library.”

2. Ready Chapter 3 and one additional chapter of the class text.

I read chapter 3 and chapter 9. I have to say that I enjoyed reading chapter 3 more – I liked the thoroughness of the information and especially the tables. I like when someone “connects the dots” for me so that I can focus more on thinking things through rather than figuring out what it is I’m supposed to be thinking about. All that made a great foundation for the discussion of situated cognition and it tied together a number of the theories and topics that we have read about these last few weeks. While I really am a pragmatist, I see great value in situated cognition and the fact that SitCog “does not presently offer a comprehensive account of cognition” doesn’t bother me at all. This is definitely a theory that is compatible with a variety of situations and I like that.

Chapter nine took me longer to get through. Like other chapters in the book, examples seem to be older and have limited samples. Those examples discussed often had areas of difficulty (like case studies in STABLE that were not linked, making navigation difficult) and the technology is so outdated that it would be difficult to find a way to make this an opportunity for learning. The technology is old – it is hard for “modern” techies to relate to and limited connection to current practice. One of our greatest challenges is to
explore “old” technologies and the careful consideration given to effective use, and transfer that knowledge to newer technologies and emerging theories.

What I took from this chapter is how much one can learn from creating/working with the cases put into a case library. It really reminds me of wikis! While a wiki isn’t necessarily a case library, it is collaborative and contributors learn from each other. It would be interesting to do some sort of comparison between case-based reasoning and collaborative learning that can accompany the development of wikis – I think there would be lots of neat connections! While, obviously, a wiki isn’t a case study and there is no chance there would be any sort of artificial intelligence connection to working with the information, I think some of the benefits of case based reasoning can be applied to web 2.0 technologies. Keeping track of what you did, learning from others, sharing your experiences – those are all attributes listed for CBR. One could probably re-write this whole chapter, replacing “CBR” with “wiki” and it would work.

3. **Complete the Lesson Plan Activity.**

   The lesson plan was completed and is linked on my [504 webpage](#).

4. **Add a definition to the class glossary, add information about one or more theories of educational technology to the historical timeline, OR add resources to the class wiki.**

   I added the following articles and resources to the wiki:

   **Articles**


   **Resources:**
5. Create an annotated bibliography and add your contribution to the class wiki using GoogleDocs and submit to the “Submit Annotated Bibliography” area in the Module 3 activities for grading.

The annotated bibliography was submitted on Moodle, added to the wiki and is linked on my 504 webpage.

6. Lead a discussion and/or participate in ongoing discussions.

Within this module, there have been three student-led discussions. The first of the three was co-led by Linda Deneher and me and I also submitted a reply:

It appears that many share the view that one of our most used technologies, the projector, may very well be one of the most misused technologies. While overuse of Powerpoint seems to be a trap many fall into, the article presented quite a few alternatives.

The topic of my paper was Bruner and guided discovery. Since guided discovery involves teachers presenting pre-determined problems and guiding students to pre-determined conclusions, projector use could fit right in. For example, in the lesson I referenced in my paper, Discover the World Around Us, http://www.lessonplanspage.com/ScienceDiscoverTheWorldWithSenses13.htm the final discussion includes classification of student observations by the senses used. Typing that information for on-screen viewing means that text can be manipulated and saved, which is not possible if you write it on the chalkboard. Similarly, the graphic organizers like Gliffy and Bubbl referenced in the Tech & Learning article, allow for whole class collaboration and have the option to save work.

A resource from the article that would apply to multiple learning theories is the countdown clock. Regardless of the educational task, a countdown clock can provide structure and put students in control of their own time management. The article links a PC clock, http://www.timeleft.info, and I also found a desktop countdown clock for Macs: http://www.brothersoft.com/blick-clock-for-mac-135041.html.

In the next discussion, I commented on how technology was used to address NCLB in my school district:

In Illinois, we like acronyms. NCLB is linked to ISAT, PSAE, AYP and SIP. State testing – ISAT (Illinois Standards Achievement Test: www.isbe.state.il.us/assessment/ISAT.htm) - begins in grade 3. Students in 11th grade take the PSAE (Prairie State Achievement Examination). Testing data determines if AYP (Adequate Yearly Progress) has been made. Each school has a SIP (School Improvement Planning) team that drafts goals, creates an action plan, gathers data, and reports to the state as well as to the school board and superintendent. While my district does not
use technology for assessment purposes, per se (like MAP testing), we are making greater use of technology for progress monitoring and remediation.

Students in my school are tested several times a year on reading fluency. Teachers enter data into spreadsheets and provide interventions based on student progress. Also, some students are now participating in the Read 180 program (http://teacher.scholastic.com/products/read180/overview/instrmodel.htm) comprised of small-group direct instruction and individualized practice using the Read 180 software. A similar project is being used with primary students but I don’t believe it has a technology component.

Last year, the district began using MathFacts in a Flash (http://www.renlearn.com/mf/overview/) to improve students’ math skills. Students can log in at home or at school, are expected to practice/play for 10-15 minutes per day, and teachers can access individual student records and track progress. Further, the district technology plan’s primary goals focus on the use of technology by special education students to increase math and reading scores. Technologies listed for student use with are Wikis, Podcasting, Digital Storytelling, and United Streaming. While I’ve seen digital storytelling used on a somewhat limited basis, it seems there is a disconnect between the tech plan goals and classroom application. On a positive note, math and reading software is being used by all students, not just the limited population targeted in the tech plan.

It seems the greatest impact of technology on NCLB and testing, in my district, has been for progress monitoring and record keeping. Data Retreats are a common occurrence and the use of technology for remediation and record keeping enables teachers to more easily individualize instruction. Spending less time on recordkeeping tasks means more time to work with students and plan for instruction.

7. Submit summary of Module 3 assignments and reflect on the readings and your current teaching practice.

For each module, the Summary/Reflection document is linked on my 504 webpage.

Reflection

Since I reflected on specifics within required and optional readings above, this reflection will focus primarily on things that came up as I worked on my annotated bibliography.

Readings that relate to cognitive load theory and learning styles fit so well into some of the ideas emphasized in my district. Our administration does have a tendency to flit between the latest topics the advantage is that district teachers are exposed to many of the latest research-based strategies for improving instruction and learning. We did a brain-compatible thing a few years ago and there are several aspects of that which I have continued to focus on in my instruction, clumping lesson material into 10-minute chunks. While that doesn’t always work, it is something that I try to continually strive for.

In considering the information about learning styles I thought primarily about two things: 1) that would be such a wonderful thing to add to my arsenal, and 2) how in the world can I accomplish that with all 485 of my students? Yikes! As I began research, I discovered that the more I read, the more “do-able” it seemed to be. With older
students, I can use our snazzy new mobile NetBook cart (once it is operational and we have been trained) and have students do the online questionnaire. It would be a great way to tap into our school goal of setting goals and using feedback. What I found in my readings, that I liked best, was the fact that the author of this learning styles theory says that a common misuse was thinking that you had to change instruction to match each child’s learning style. Not so! Adjusting instruction so that children sometimes learn in their preferred dimensions is a much more obtainable goal than attempting to modify for each child. Whereas my district seems to stress that we modify to match student’s modes of learning, that is not always best and it also makes life easier for those of use who teach hundreds of children each week.

When I read the article by Harris, Mishra, & Koehler (2009) it could not have come at a better time. Last week, district teachers had their second of two (or more?) full days of technology training. Considering the last district-wide training we had was 10+ years ago, I was very thrilled. How can a true-blue techie not be happy to spend a whole day with technology? But there were difficulties. We spent two full days on Promethean board training when we don't all actually have boards. The saving grace was that for this second day, they allowed music, art and PE teachers to be trained at the same location, rather than in their own school. That is exactly what the authors say is so important – staff development that reflects the unique nature of each subject and context. While this was still a challenge for some of the teachers to spend a full day (with a happy heart) learning to use a technology that they don’t have access to, the fact that we were able to brainstorm and collaborate made a huge difference in how we were able to use the resources and the quality of the products we were able to create. I am hopeful that this is a trend that can continue.

The more I read, the more firmly I believe there is no one best way to do things. As I read various articles in which an author firmly states that one way is right and others are wrong, I have more and more trouble finding gems of knowledge that I can take away with me. The value of reading so many points of views, I think, is that you are able to become more critical. I am now finding things that don’t mesh from one article to another. I’ve been able to do that in my subject area (music) but not as much with other topics. The importance of prior knowledge, mentioned in so many guided discovery resources, is huge and I’m seeing it in action. Although I would not consider myself a novice or intermediate learner in most regards, there is much I can learn about learning and it keeps changing.

My favorite article from the annotated bibliography assignment was Sweller, Kirschner, & Clark (2007) in which the authors respond to three commentaries on their 2006 article. Being able to follow the authors’ line of reasoning as they poked holes in other’s arguments really helped me to see new ways of looking at things. It is very easy for me to read something, think about it, decide that I like that, and find things that I can apply to my teaching. Then I read something else and decide I like that too. But all things are not really created equal – I need to develop a more critical eye. The more I read, the more connections I am making and I am now beginning to find contradictions between what one author says and what another says.
My favorite quote from my Module 3 readings: “Like some zombie that keeps returning from its grave, pure discovery continues to have its advocates” (Mayer, p. 17).

References:
