Reader Response 12 – Bransford
Chpt 10 "Conclusions, Chpt 11 "Next Steps in Research"

- **Things to Remember**

Chapter 10 – Conclusions:
The three bottom line conclusions I made during reflection before reading chapter 10 are:

1- Real learning involves deeper comprehension – you get there through higher level thinking

2- Guidelines for Instructional design and resources that promote deeper comprehension for all learners at all stages of development:

Learner centered
Knowledge centered
Problem centered
Assessment centered
Community centered

3- Teacher (and the role teacher plays) makes all the difference

There are many, many details that I will continue to ponder as I apply my learnings from this book to my teaching practice. But these three overarching conclusions tie those details together.

I've grown in regard to the six areas that are relevant to a deeper understanding of students' learning processes in the following ways.

Re: the role of prior knowledge in learning.
This has been a subtext of nearly every course I've taken for the reading specialist and language acquisition track at uta. But it never gets old. Each time I come across it, I see a new way in which it is important and I gain understanding of another facet of its importance. This semester, I've grown in my understanding of the theoretical reasons that prior knowledge plays such a significant part of learning. This understanding has moved me beyond the thinking that it is a good idea, to being convicted that it is absolutely essential. I have become a student of prior knowledge, always assessing and looking for what another person's assumptions and understandings might be in a given situation. My deeper understanding is enabling me to recognize and evaluate the prior knowledge that I and other learners bring to all kinds of situations.

Re: plasticity and related issues of early experience upon brain development
I am fascinated with discoveries in this field of study. It has some pretty significant implications for expectations I set for myself and those whom I teach because it implies that everyone can learn something and many people can learn much more than you might expect. I think it is important to remember that children begin learning the day they are born and that the most significant learning occurs in the context of relationships with others. We learn as a result of the interaction between three things: innate capacity, interpersonal supports, environmental stimuli. Thus intelligence it is not a matter of nature vs. nurture but both nature AND nurture with a big emphasis on nurture. Everyone has some capacity to learn and the learnings are physically recorded as changes in brain structure.

Re: learning as an active process
Motivation and engagement are key. This takes us away from the traditional transmission model of teaching, but is hard to overcome.

Re: learning for understanding
When learners are challenged to engage higher order thinking the learning goes deeper and lasts longer. Transfer is more likely. Instruction can be designed for understanding, but it involves less prominent new roles for the teacher and more active roles for the learner. The most productive

role of a teacher is coach. It requires knowing your content area material well in addition to having a firm grasp on student development, awareness of common misconceptions that students have, and effective tools for helping students overcome those misconceptions.

Re: adaptive expertise
This is the hallmark of deeper understanding. Novices may have a surface understanding of the knowledge base, but be ineffective in applying that knowledge in a variety of contexts. Experts are able to adapt their knowledge to solve different problems in different situations. They have conceptual understanding that supports them so that the knowledge is useful in new situations. The best way to build adaptive expertise is to engage students in problem-solving situations that are embedded with subject area content.

Re: learning is a time-consuming endeavor
It takes time to learn with understanding. On a moment by moment level, students need to be given time after a question in order to think before responding. On a semester level, they need to be given time to engage in meaningful problems that extend across the curriculum. The teacher can confidently slow down the pace of instruction when students become engaged in real problems, knowing that the deeper understanding is more effective than wide coverage.

Chapter 11 – Research:
I am "sitting on the edge of my chair" waiting to see some more substantiation for the instructional practices proposed in this book. It is not that I question the practices. My problem is that I'm in a position of trying to encourage others to make changes that they may not be committed to because of older conceptions of how to learn and how to teach. In my pre-reading reflection I listed the following three areas of research for which I'm waiting to see/hear more:

1. Proven efficacy of criteria for evaluating understanding and directing instruction
2. Curriculum and instruction evaluation done on the basis of these criteria
3. Effective communication of the theoretical to language and understanding of the average person i.e. more how-to's in language that doesn't require such a huge shift of perspective and familiarity with vocabulary in order to understand

There are so many areas and topics for research recommended in this chapter that I got overwhelmed. This would be a great resource to come back to for anyone looking for research topics. The three areas that I am particularly interested in were mentioned. In particular, I appreciated the section on developing tools for effective communication of the principles in this volume to policy makers and the general public. Most of what I want to "remember" from this chapter is summarized within the connections with the text I make in the following section.

• Connections

Chapter 10
Pg 241- An outline of historical assumptions students need for in-depth understanding of history is given. I think these might help inform me as I design my PBL unit about stories in history. The concepts here help me evaluate the suitability of my PBL design idea.

Pg 241 – "Expert teachers know the structure of the knowledge in their disciplines."
This made me think about the role textbooks play for many teachers. When we lack expertise ourselves, we lean on the textbook more heavily to be the in resident textbook. This is probably a situation that is somewhat of a normal inclination but it has been fed by the way textbook design has evolved. My Australian, New Zealand and British teacher friends have all commented with incredulity on the prescriptive nature of our American textbooks and the wealth of teaching resources we have at our finger tips. They are quite jealous actually, because they are trained to do all of this planning on their own. They even create daily worksheets themselves. It is time consuming, to be sure. But I'm realizing that it also means that those teachers know their stuff (both content and pedagogy) better than we Americans.

Pg 245 – “the information to be tested has the greatest influence on guiding students’ learning. If teachers stress the importance of understanding but then test for memory of facts and procedures, it is the latter that students will focus on.”
This connects with Costa and Kallick’s statement from *Activating and Engaging Habits of the Mind*, “what is expected is inspected and will be respected.” It is good to remember to be reflective about what you are really asking for in lesson design and what kinds of assessments you are using. They drive student learning, because in the end, most students are pragmatic.

Pg 246 – “Many of the recommendations for changes in schools can be seen as extensions of the learning activities that occur within families.”
I’ve been telling parents this for years, that the best in pre-school design mimics a rich home learning environment. So don’t waste money or overly program your kids. Just keep ‘em at home and have fun together. But some people have an inherent trust in institutions. Then there are the people who have an inherent distrust in institutions as is the case for many people in the “unschooling” movement that started the current homeschooling movement. This finding from the research supports them, too.

Chapter 11
Pg 249 – “Without clear communication of a research-based theory of learning and teaching, the operational theories held by the various stakeholders are not aligned.”
This is the story of my life. I have been the odd-man out in nearly every situation I’ve been in over the last twenty years. Just one example. When I was in the South Pacific, our group had ordered a whole language program from the US to use. Only no one knew how to use it. And once the parents began to realize that it carried the label of “whole language” they resisted it strongly. I didn’t’ know what it was either, but I recognized the writing element and figured out how to use it. Eventually, I was the only one using that program and I lost out when they passed it on to some Australians while I was out of the country. (It was a real bummer, because I had used it with three out of four of my kids so I had a regular routine going. I was comfortable with the materials and didn’t have to do much thinking for my lesson planning. When they threw out the curriculum I had to scramble to put things together for my fourth child) Now, looking back on that program with what I now know about reading/writing instruction I appreciate its design and I know why it worked. It was built on sound, research-based theory of learning and teaching. But the operational theories of the rest of the parents were different and so they rejected the curriculum without looking back.

This weekend I found myself getting real discouraged as I reflected on this material and all that I’ve learned. I’m loving it and my understanding is growing by leaps and bounds. But I am moving so much further away from most people I know conceptually about what learning is and how it is best accomplished. I’m wondering if I can really be of any help. Will anyone listen?

Pg 255 a list of six criteria for evaluating curriculum against sound findings in learning science is suggested. This is the kind of task I had ultimately defined for myself when I started this Curriculum and Instruction M.Ed degree. I think there is a very real need for curriculum evaluation to be done in light of research because there are so many opinions and prejudices coloring education choices. I’m really glad to have an explicit list of suggested criteria sitting there waiting for me when I finally have time to attend to the task. Pages 256 and 257 give additional criteria to consider.

Pg 266- “it is recommended that research be conducted to identify the amount and type of professional development needed to create in administrators an ability to differentiate between teaching practices that do, and do not, incorporate what is known about how people learn.”
I don’t want to get down on administrators unnecessarily, but I’ve heard enough horror stories to realize that the situation is not so simple. Training in itself is not enough. There needs to be motivation to do something better, something different. Such is not always the case, alas.

Pg 268-269 – “Develop model pedagogical laboratories.”

This was a pretty interesting idea, and I realized that theoretically, the regional education service centers could provide a basis for learning laboratories with just a bit of tweaking.

I also connected this research point with what I saw of my daughter's pre-service education training at Texas Tech. From reading over this material, it sounds like they may have created their teacher training program with this research in mind. My daughter had some sort of education lab to take each semester together with her theory courses. The lab time involved going out to the schools to observe classrooms, shadow experienced teachers, and even do a bit of practice teaching. Very different from the model where you wait until student teaching to actually enter the classroom.

Pg 272 – "There is much in the traditional methods that is valuable, including a focus on objectivity and reliability of measurement. There is a problem, however, with what is being measured."
I encountered this in my early training for speech pathology. I remember my course in educational measurement and evaluation so clearly. I decided to do a project about assessing language development. At the time, that was a growing field and it was taking a while for research to get into regular practice. As a matter of fact, my professor shared my paper with another professor to help her see some of the fallacies of the model for Learning and Language Disabilities she was using for her course of that name. Droves of students were coming out of her course prepared to assess and teach an array of "language" skills that had nothing to do with language at all.

Pg 275 – "Write a popular version of this volume for parents and the public."
I connected this section with an idea I've been toying with to create a rubber stamp I can use to mark up teaching resource books that families have access to. The stamp would be kind of like my "seal of approval" on activities and resources that have a research-base. I'm thinking of calling these Power Tools for Learning. That way a parent doesn't have to understand all of the theory in a book. They can just flip through to the useful, practical ideas that have a research base. They can be confident that these are the things that are worth spending time doing.

As for writers in the homeschooling community, there are two camps, I think. The secular and the religious with lots of overlap and borrowing from one another. In the secular camp, the writings of John Holt still stand firm in their connection to the research findings in *How we Learn.* Ruth Beechick is more familiar to those with a religious motivation for homeschooling, but that is not the center of her writing. Her work describes an approach to the practical aspects of how to teach and comes the closest to being aligned with findings from science of learning of any I've read. I've gone back to look at her stuff a couple of times during this course and I appreciate her writing more and more. It's less linear than I would write and she makes no effort to connect her recommendations to theory. But I can tell that the theory behind her writing is sound and her style of writing makes the material very accessible to her target audience. The older writings of Charlotte Mason (1870s-90s), interestingly, are also in line with much of these research findings. She is another popular author in the homeschooling and private school community.

Another popular approach, called the Classical Approach continues to elude me because different people seem to mean different things when they use the term. Some use the term to refer to content, others to curriculum organization, and still others to ways of teaching at different stages of development. Many authors mix up philosophy of education, teaching perspective, methodology, and content all together in one whole lump. Much too difficult to sort out now. Dorothy Sayers' essay entitled *"The Lost Tools of Learning"* is a traceable source. Other terms associated with the Classical approach are Classic Liberal Arts Education, Core Knowledge (E.D. Hirsch, *Cultural Literacy*) and Trivium (Susan Wise Bauer & Jessie Wise, *The Well-Trained Mind).* A core concept of the approach for many seems to be an emphasis on classically defined stages of thought development. It is hard to say how these stages align with the research Bransford describes because many writers mix up modern understandings (and descriptors) of

child development with the three stages of thought that are classically described. I look forward to having time at some point to investigate this further.

- **Questions**

Can anyone give me some good links to math resources that promote learning for understanding?

How would you redesign the elements in the model of paths through which research influences practice on page 249 in order to reflect your perception of current reality in your teaching situation? Are all of the domains the same size? Are there any additional ones? Are any missing? How about the lines of connection between the various domains? Which are stronger? Which are weaker? What direction is the information following?

Is there a teaching perspective that is more or less research-based or are they all neutral, as Pratt suggests in "Five Perspectives on Teaching in Adult and Higher Education.?"

How would you evaluate the TAKS test against the research about assessment measures that are effective? Does the TAKS measure conceptual understanding and knowledge transfer or just factual knowledge?

Is there a journal or website that evaluates technology applications and teaching devices in light of the principles of learning?

Even with great training before teaching, it isn't possible to guarantee you'll produce great teachers. This book gives teachers of extra-ordinary quality as examples. It takes years and years of experience to get to this level of expertise. What is realistic for beginning teachers? What kind of mentoring structures can be put into place to support beginning teachers until their experience catches up with their knowledge?

As of the year 2000 when our text was written, only 49 states had established education standards. Which one did not? Why? Does it have standards now?

Pg 271 gives criteria for reviewing state standards. How does Texas' Essential Knowledge and Skills measure up in light of these criteria?

- **Extensions**

AIMS (Activities in Mathematics and Science) is an experience and problem-based learning website with a wealth of lesson ideas and articles. I think this is the kind of resources chapter 11 says we need much more of. I found an article there about Geometry in kindergarten that helped expand my idea of what was interesting. www.aimsedu.org

Intel also has some excellent resources and easy to understand information that integrates findings in learning science with instruction.
Here's a link to their Thinking Framework page that gives help in how to design learning projects
http://www97.intel.com/en/ProjectDesign/ThinkingSkills/ThinkingFrameworks/

And here's a link to a listing of the unit plans they have posted on the web. These look like excellent models of best-practice in designing lessons that promote learning for understanding. I think we need more of this type of well organized and easy to understand resource on the web…for free!
http://www97.intel.com/en/ProjectDesign/UnitPlanIndex/GradeIndex/