Section 3: Theoretical Perspectives

Nancie Atwell in, ***In the Middle: New Understandings About Writing, Reading, and Learning,*** *2nd Edition (1998), opens chapter 1 with the following reflection on her teaching:*

> *I confess, I started out as a creationist. The first days of every school year I created, and for the next thirty-six weeks, I maintained the creation: my curriculum. From behind my big desk I set it in motion; then I managed and maintained it until June. I wanted to be a great teacher—systematic, purposeful, in control. I wanted great results from my great practices. And I wanted to convince other teachers that this creation was superior stuff. So I studied my curriculum, conducting research designed to show its wonders. I didn't learn in my classroom. I tended my creation.*
>
> *Today, I learn in my classroom. What happens there has changed, and it continues to change. I've become an evolutionist. The curriculum unfolds as my kids and I learn together and as I teach them what I see they need to learn next. My aims stay constant—I want us to go deep inside language together and use it to know, shape, and play with our worlds—but my practice evolves as my students and I go deeper. This going deeper is research. Today my research shows me the wonders of my kids, not my methods. But it has also brought me full circle. Learning with students, collaborating with them as a writer and reader who both wonders and knows about writing and reading, has made me a better teacher to them than I dreamed possible.*

In two short paragraphs, Nancie Atwell describes a shift in her theoretical perspective from a belief that knowledge exists outside the learner to a belief that learners construct their own knowledge. Although Atwell provides her own labels for these theoretical positions, the first paragraph has its roots in **objectivism**; the second has its roots in **constructivism.** By naming and describing those theoretical perspectives, Nancie Atwell is better able to understand the practices that stem from them.

It has been said that 'there is nothing so practical as a good theory'. In this section, three theoretical perspectives are described: constructivism, multiple intelligences and brain development. Each of these has influenced the kinds of

practices recommended and described in Section 4. Having some basic knowledge of these theories will help link theory to practice.

Constructivism

Overview

"Constructivism is about looking at how students learn. The theory is based on the research of Jean Piaget, who believed that children learn by interacting with people and objects in their environment. As students interact, they form understandings of how both the world and the people in it work. As students are confronted with ideas that may not *fit* their understanding, they adapt their ideas to include these new understandings. These ideas are always changing, even into adulthood. Constructivists view this process of changing and adapting as *learning*." (Anderson, 1996)

This theory has major implications for teachers who decide to build a classroom on constructivist principles:

- Instead of being 'providers of information', teachers must become 'providers of opportunities' for students to gather their own information.
- Teachers who are guided by constructivism are facilitators of learning. In a 'constructivist classroom', both teachers and students would be engaged in assess, posing problems, and working individually and with large and small groups.

According to Jacqueline Grennon Brooks and Martin G. Brooks (1999), there are five principles evident in constructivist classrooms:

1. *Teachers seek and value their students' points of view.* Teachers who consistently present the same material to all students simultaneously may not consider students' individual perspectives on the material to be important, and may even view them as interfering with the pace and direction of the lesson. In constructivist classrooms, however, students' perspectives are teachers' cues for ensuing lessons.

2. *Classroom activities challenge students' suppositions*. All students, regardless of age, enter their classrooms with life experiences that have led them to presume certain truths about how their worlds work. Meaningful classroom experiences either support or contravene students' suppositions by either validating or transforming these truths.

3. *Teachers pose problems of emerging relevance.* Relevance, meaning, and interest are not automatically embedded within subject areas or topics. Relevance emerges from the learner. Constructivist teachers, acknowledging the central role of the learner, structure classroom experiences that foster the creation of personal meaning.

4. *Teachers build lessons around primary concepts and "big" ideas*. Too much curriculum is presented in small, disconnected parts and never woven into whole cloth by the learner. Students memorize the material needed to pass tests. But many students, even those with passing scores, are unable to apply the small parts in other contexts or demonstrate understandings of how the parts relate to their wholes. Constructivist teachers often offer academic problems that challenge students to grapple first with the big ideas and to discern for themselves, with mediation from the teacher, the parts that require more investigation.

5. *Teachers assess student learning in the context of daily teaching*. Constructivist teachers don't view assessment of student learning as separate and distinct from the classroom's normal activities, but, rather, embed assessment directly into these recurrent activities.

Implications for Students and Teachers

The first step for teachers and students is to get to know each other. As teachers become familiar with students' interests, strengths, and needs, this information can be built into the curriculum. While the provincial curriculum outcomes continue to provide a foundation, what is taught will become more of a collaborative effort between teacher and students. There are often many ways to get at a curriculum outcome and, in a constructivist classroom, the teacher ensures that students' interests and voices are key in planning the curriculum.

Duckworth (cited in Brooks and Brooks, 1993 and 1999) describes how she sees constructivist teaching: "I propose situations for people to think about and I watch what they do. They tell me what *they* make of it rather than my telling *them what* to make of it". This simple description of a complex notion of instruction and learning gets at the heart of curriculum planning in a constructivist classroom. Students are invited "to experience the world's richness", empowered "to ask their own questions and seek their own answers", and challenged "to understand the world's complexities" (Brooks and Brooks, 1993 and 1999).

Since constructivist teachers believe that students have formed understandings about the world around them, assessment then becomes an effort to understand how students are thinking, in addition to an understanding of a specific concept at an acceptable level. They examine the processes students use to solve problems. Teachers ask students to analyze, predict, and create. Through observation, listening, and reading students' written comments and explanations, teachers gain insight into how students are thinking. This information is used to further challenge their thinking. This is often done through the sharing process within the classroom. "When students consider other explanations besides their own, they have an opportunity to expand their thinking — that is what learning is about." (Anderson, 1996).

Where to Begin

First, it is important to ensure that students understand that their classroom:

- is a safe place to give opinions and take risks
- is a place where their thinking is accepted and valued
- is a place where other students' ideas are just as important as their own

This can be promoted by encouraging students to make decisions about the day-to-day classroom routines, help set classroom rules, and have a say in learning opportunities.

Multiple Intelligences

Overview

According to Dr. Howard Gardner, intelligence is not fixed—there are many ways to be smart. Each of us is born with a unique pattern of the eight intelligences identified by Gardner. This has great implications for teachers in that our teaching repertoire can be extended to encompass all the intelligences thereby affording all students the opportunity for success.

To date, Gardner (1993) has identified the following eight intelligences:

VERBAL / LINGUISTIC

- learn through reading, writing, discussing
- communicate effectively
- have a good vocabulary
- write clearly
- spell easily
- think in words

LOGICAL / MATHEMATICAL

- think in numbers, patterns, and algorithms
- think clearly and analytically
- learn by appeal to logic
- use abstract symbols
- solve logic problems easily
- are good in math

VISUAL / SPATIAL

- think in pictures and images
- are good with spatial relations
- have a good eye for detail and colour
- "see" solutions to problems
- learn through visuals
- like to draw and create

MUSICAL / RHYTHMIC:

- have a good sense of melody and rhythm
- like to sign, hum, chant, and rap
- enjoy listening to music
- read and write music
- learn through music and lyrics
- enjoy creating music

BODILY / KINESTHETIC

- are highly coordinated
- use gestures and body language
- take things apart and fix them
- learn through hands-on activities
- enjoy acting and role-playing
- enjoy dancing and athletics

NATURALIST

- are aware of their natural surroundings
- discriminate different flora and fauna
- are good at classifying and sorting
- have keen observational skills
- understand natural phenomena
- garden or care for pets

INTERPERSONAL

- make and maintain friends easily
- understand and respect others
- resolve conflicts
- learn by interacting with others
- like to work and be with others
- lead and organize others

INTRAPERSONAL

- need time to process information
- think about their own thinking
- have strong opinions and beliefs
- are introspective
- know themselves well
- like quiet time alone

Implications for Students and Teachers

In terms of multiple intelligences, consider the following:

- Teachers use a more authentic, student-centred approach to the education process in that their instruction matches the ways in which students learn.
- Students are afforded the opportunity to develop more than one type of intelligence which will help prepare them for our fast-changing world and its demands.
- Students learn to appreciate individuality,
- Teachers must be careful not to use this theory as a way of labeling students and restricting their learning experiences.
- Teachers should not replace their current methods with MI lessons. Rather they should incorporate MI strategies into their lessons to help strengthen and develop the eight intelligences.
- MI theory does not dictate that we should teach everything eight ways. Rather, we must realize that any topic can be taught in more than one way and that we should use a variety of strategies and activities.
- If we teach using MI strategies then we must also assess students similarly.

Where to Begin

Keep the following points for implementation in mind.

- Consider what students should know and be able to do for a particular lesson.
- Create or select activities which will help reach the objective/s and appeal to the different intelligences.
- Incorporate the activities into a lesson, remaining cognizant of the elements of an effective lesson plan: introduction/anticipation, input, checking for understanding, guided practice, independent practice, closure.
- Examples of activities for the eight intelligences adapted from Kagan, (1998):

  Visual Linguistic
  - read a book
  - discuss ideas
  - give a speech
  - write a letter, article, report
  - learn a second language
  - practice spelling

  Visual/Spatial
  - create a collage
  - make a mobile
  - watch a video/film
  - imagine/pretend
  - play with shapes/puzzles
  - chart

  Logical/Mathematical
  - analyse data
  - discover patterns/trends
  - sequence events
  - solve problems
  - do calculations
  - play number games

  Musical/Rhythmic
  - write a song
  - play an instrument
  - sing
  - listen to music
  - change the words to a song
  - learn about instruments

Bodily/Kinesthetic
- act
- assemble/disassemble
- use tools
- play sports/physical activity
- visit places
- manipulate objects and materials to create projects

Naturalist
- go to a zoo/farm/aquarium/forest
- visit the ocean/river/lake/park
- list characteristics
- classify
- care for a classroom pet
- grow plants

Interpersonal
- share with others/debate
- interview
- paraphrase
- role play
- plan an event

Intrapersonal
- keep a journal
- plan, prioritize, set goals
- relate content to personal experience
- write an autobiography
- defend a position
- express likes/dislikes

Brain Development

Overview

Eric Jensen, a member of the Society for Neuroscience, reminds educators that teaching does not equal learning. Furthermore, he points out that teachers spend a lot of time re-teaching because in many cases they do not teach in ways that match how their students' brains learn. This mismatch can create much frustration, under performance, and hopelessness.

Fortunately, neuroscience is supplying educators with new information as to how the brain works. Jensen (1998) states there are five critical variables in the brain's learning process: neural history, context, acquisition, elaboration and encoding.

Neural History

The brain is not blank like a tabula rasa but customized by life's experiences. The neural history is founded on a dynamic interplay between nature and nurture called emergentism:

> at each development stage, different genes are affected by the environment and are uniquely expressed."(Elman et al.,1998)

A lack of early enriching activities may influence brain development. For the most part, adolescents have countless unique life experiences that they bring to school each day. The teacher has the difficult challenge of customizing information for each learner.

Learning Context

Teachers influence students' learning every day by designing the physical and emotional environment. Educators can assume that some students will arrive at class distressed and even threatened. Unexpressed emotions can inhibit many functions, including learning (Pert, 1997). Accordingly, teachers must allow for a wider range of emotional expression, even when the expression may be misguided. Pert states that good teachers, who know that emotional climate is critical, invest the first few minutes of every class in activities that allow students to get into a positive learning state.

The brain also reacts to issues relative to physical safety. The brain's physical environments include a temperature near 70 degrees and a humidity level near 70 percent. Too much heat or too little humidity triggers stress. Students should also have water available without having to ask permission to get it. Nutrition is also an important factor in determining whether the brain learns.

Acquisition

The process of learning is complex. First, much of what we learn comes to us indirectly. Second, the physiological state in which we learn mediates how much we comprehend. A hopeful student and a discouraged student learn differently. Jensen (1998) states that, by engaging in trial-and-error learning, students will more likely become lifelong learners. Superior learners learn by systematic trial and error. Eventually, they will get the right answer but, they eliminate the wrong answers. If experiences are incoherent, however, no learning may result.

Elaboration

To ensure the brain maintains synaptic connections, we need elaboration to strengthen the original contact. In short, elaborating is the sorting, sifting, analyzing, testing and deepening of learning in a way that gives students genuine feedback on how well they understand. But because there's not enough time for any teacher to give enough feedback to every student, teachers have to make sure students get feedback from multiple sources.

Encoding

Jensen (1998) points out that learning the information may create a memory trace, but this may not be strong enough to activate at test time. The retrievability of newly created memories depends on many factors: rest, emotional intensity, context, nutrition, quality of association, matching states, and learned pathways.

Rest is a powerful memory aid because during dream time, we process learning from the previous day. Furthermore, we discard meaningless information and strengthen what remains. Teachers must explain to students that getting enough sleep will assist them with their studying.

Intense emotion during or after learning is another way to produce long-term memory encoding. Emotions excite the brain's chemical system which helps to serve as a memory fixative. The context of learning and memory recall is also important. If a student learns in a classroom and then is tested in a media center or auditorium, the student will likely underperform. Likewise, if a student learns in a particular emotional state, he/she will most readily recall the learning in the same state.

Increasing the quality of association is another good way to increase recall. Because all recall is associative, the more ways a student knows the material the better. For example, a student could know about a country through many associations including economics, geography, politics, culture, business, and entertainment.

Teachers must also match the memory mechanism during assessment. Otherwise, a student will know the information but will not be able to demonstrate knowing it. The semantic memory system processes words, facts, pictures, stories and text. The episodic memory pathway is activated by unique circumstances and locations rather than content.

Each memory pathway appeals to different students and has strong implications for assessment and learning. If students learn in a certain pathway, they will need to activate similar associations to retrieve information. Students constantly need reviews, mnemonics, word associations, prompts and practice to assist their recall.

In short, paying more attention to brain-compatible learning is a strong and positive step to take in teaching and it could raise students' IQ's as much as 20 points. With this in mind, educators need more opportunities to learn about brain-compatible teaching. (Kotulak, 1996)

Implications for Students and Teachers

Given the fact students have individual unique experiences, it may be impossible to create a totally level playing field. However, Jensen (1998) acknowledges the value of increasing motor activity, art, music, choices, challenges and feedback. Teachers should also take time to socialize their students through well-orchestrated group work to create better social behaviors. Jensen also claims we must reconnect learners with one another. Even a positive greeting at the door can reconnect learners with their teachers.

Hartacollis (1998) also provides evidence to suggest that peers are a significant influence on students' academic performances. When a student feels threatened, it triggers certain chemical releases in the brain that actually impair the brain's ability to function properly. Spatial-episodic memory is impaired and the ability to prioritize is weakened. Teachers will therefore often see repeated misbehavior.

It is also important for teachers to help learners reconnect with the content. Classrooms should include drama, open group discussions, celebrations, singing, sharing, writing, music, drawing, journal writing, paired activities, and mind mapping.

Where to Begin

Jensen suggests that making excessive demands on students to pay attention to the teacher can create resentful learners. Brain-compatible teachers will therefore attempt to engage learners for short bursts of time, no longer than the age of the learners in minutes.

One strategy to boost acquisition is by enhancing prior knowledge. Teachers can provide content slowly, increasing the quantity over a period of days or weeks. Teachers should post key points on the bulletin board in advance. This builds connections so that when it's time to explore a topic in-depth, every student has the necessary background.

State-of-mind management is another factor behind acquisition. Great learning states include curiosity, anticipation and challenge. Each state is defined by a unique brain chemistry formulation. The best teachers successfully manage these optional learning states. Moreover, they empower their learners to manage them for themselves.

Teachers need to orchestrate circumstances that allow trial and error. This might include research, discussions, team problem solving, and projects that have built-in opportunities for self-correction.

Thayer (1989) suggests that schools need to integrate more movement into the daily schedule. Repeated physical activity like stretching, playing games, swimming, or walking releases chemicals to lift a student's spirit.

To assist with memory encoding teachers could use strategies such as better role modeling, journal writing, humour, student presentations, celebrations, creative writing and impending deadlines.

In general, the sources for acquisition are endless. They may include discussion, lectures, visual tools, environmental stimuli, hands-on experiences, role modeling, reading, manipulation, videos, reflection, projects, peer editing, student-generated rubrics, answer sheets, pair-share activities, video or audio-taping, predictions, journal writing, outside speakers or reference materials. Jensen (1998) states there is no single best way for students to learn, but the age-old rule still applies: students who do the talking and the doing, do the learning.