Connecting the Curriculum to the Learner: Differentiated Instruction

Waynesville DI Academy
Session One

Sandy Majchrzak
South Central RPDC Improvement Consultant
Introductions...

- Sandy Majchrzak
- Taught Special Education for 28 years mostly at the Secondary Level
- Worked with students having cognitive handicaps, learning disabilities, behavior/emotional disorders, multi-handicapped, and autism
- Favorite job was that as Work Experience Coordinator; working with students on the job in the community
- Retired from teaching in May 2004 and was hired by RPDC in Rolla
Your turn...

- Tell me ...
- Who are you?
- What do you teach?
- How long have you been teaching?
- What do you hope to gain from this academy?
Today’s Topics

- Boys vs Girls
- Why differentiate?
- Areas to differentiate?
- Multiple Intelligences, Personal Learning Styles
- Learner Profile Cards
- A few strategies to start with
- Brainstorm how to implement new strategies in current lesson plans
Let’s get started...

- Stand if

You think you already differentiate your instruction.
Stand if...

You have given a pretest or a diagnostic assessment
Stand if... 

- You have tutored a student.
Stand if...

- You have analyzed similarities and differences in students’ test scores.
Stand if...

- You have given students different books to read.
Stand if...

- You have taught students in a small group.
So see....

- Everyone already differentiates and that while you may have done it intuitively, what we will work on doing is doing it intentionally and with purpose.
What do we bring to the group?

- People have different experiences they bring to any group
- We all have commonalities and differences
Schools are like airline hubs. . .

- Student passengers arrive from many different backgrounds for widely divergent destinations. Their particular takeoffs into adulthood will demand different flight plans.
In handouts...

- Window Pane Activity Sheet
Window Pane Activity

As we cover the next slides, take notes, draw pictures, use symbols...whatever will help you remember how girls and boys are different/same.
Ways students are different...

• Gender
• Personality
• Learning Styles
• Intelligence Types
• Interests

to name a few
A good place to begin...

Major divisions of the human cerebral cortex and some of their primary functions.
The Brain and Chemistry: Part of the Answer?

- “That guy thing” is really that brain thing. The male brain is configured differently from the female brain, and these differences are rarely taken into account in personal relationships, parenting, or the classroom. The hormonal differences that affect the brain--and ultimately behavior--begin in the womb around the sixth week after conception.”

Paul Slocumb, Ed.D.  Hear Our Cry: Boys in Crisis
Many Differences

- Nancy Forger of the University of Massachusetts Amherst reported that “At least 100 differences in male and female brains have been described so far.”

- These differences become more important the more words a teacher uses to teach a lesson.

  Gurian, *The Minds of Boys*
Parts of the Brain

- **Brainstem**: Controls autonomic functions, the “reptilian brain.”
- **Cerebellum**: “Little brain” that controls balance, maintenance of body posture, coordinates muscle function. Eventually keeps us on “autopilot.”
- **Hypothalamus**: Maintains normalcy. Fight or flight response.
- **Amygdala**: Forms emotional memories that can trigger responses without the corresponding conscious recollections that tie it to an event.
More parts...

- **Hippocampus**: Holds memory of the immediate past, and transfers these to the cortex, where it is stored long term.

- **Cerebral cortex**: Wrinkled, 6-layered “grey matter” of the brain with many different functions--
  - Vision, hearing, spatial awareness, sensorimotor processing, and cognition
A boy brain develops:

- Around the sixth week of gestation, sexual identity is determined. It’s at this time that the male fetus develops special cells that produce male hormones, primarily testosterone.
- If an embryo is female physically, nothing very dramatic happens to the brain. The natural template of the brain seems to be female.

Slocumb, Ed.D.
Hormones produce differences in the hardwiring of the brain.

- “Think of the boy brain as a house with many rooms. Each room has a special purpose. The rooms are highly specialized.”

Slocumb, Ed.D.
Boys compartmentalize brain activity: They use less of the brain.

- Their brains operate with 15% less blood flow than females.
- They are structured to learn with less multi-tasking.
- They tend to do better when focusing for long periods on one task in which depth of learning takes place.
- They do less well when moving from task to task quickly.

Gurian The Minds of Boys
Girls have stronger neural connectors in their temporal lobes than boys do, appearing to facilitate more sensorially detailed memory storage and better listening, especially for tones of voice.  

Gurian

- Rat neurons
The Corpus Callosum

- Girls may have up to 25% larger connecting tissue than boys, thus allowing for greater multi-tasking abilities.
- There is more cross-talk between hemispheres of the brain.

Gurian, Minds of Boys
Response to overstimulation—doing too many things at once:

- Frustration causes a swelling of the amygdala, which is an anger and aggression center in the brain and has a significantly higher volume of tissue in males.
- Increasing frustration leads to heightened levels of stress hormone (cortisol) which also links to heightened adrenaline.

Gurian, Minds of Boys
Boys are more likely to attach their learning to physical movement.

- Boys tend to have more dopamine in their bloodstream—which can increase impulsive risk behavior—and they process more blood flow in the cerebellum (the part of the brain that controls “doing” and physical action).
- These factors are believed to contribute to boys’ tendency to learn less well than girls (on average) when sitting or being still or being sedentary.

Gurian, The Minds of Boys
This movement is in fact often crucial to male brain learning, and to the learning style of females with higher dopamine-cerebellum functioning as well.
The frontal lobes: The main language centers of the brain

- Boys’ frontal lobes are less active than girls’, and grow at a later age.
- In general, female brains utilize more neural pathways and brain centers for word production and expression of experience, emotion, and cognition through words.
- Girls make less impulsive executive decisions than boys.
- Impulsivity is less valued today!

Gurian, The Minds of Boys
The hippocampus: Another memory storage area in the brain

- The male hippocampus favors list-making. Boys tend to succeed well in memorization when greater amounts of information come in list organization and are listed in substrata of categorization.

- Boys will tend to need more time to memorize classroom items--especially if written.

Gurian, The Minds of Boys
Boys have more testosterone and vasopressin, which relate to territoriality and hierarchy.

- Boys’ formation of learning bonds often develops through **action-response, hierarchical competition**.
Girls have more estrogen and oxytocin than boys.

- These have a direct impact on the use of words. Oxytocin rises when girls communicate verbally with a friend or family member.
- Boys, with less oxytocin in the brain, don’t learn as much through sitting and talking, nor gravitate toward it as naturally. 

  Gurian, *The Minds of Boys*
1. “Research in laboratory animals, for starters, has demonstrated large, innate, genetically determined sex differences in the brain.”

2. “These sex differences, then, are genetically programmed, not mediated by hormonal differences.”

3. “Differences. Not one better than the other. Not one worse than the other. Just different.”

Dr. Leonard Sax, M.D., Ph.D.
<table>
<thead>
<tr>
<th></th>
<th>P cells</th>
<th>M cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are wired predominantly to...</td>
<td>Cones (sensitive to color)</td>
<td>Rods (...motion detectors...all over)</td>
</tr>
<tr>
<td>Are located mostly in...</td>
<td>The center of the retina (center field of vision)</td>
<td>All throughout the retina (entire field of vision, peripheral and central)</td>
</tr>
<tr>
<td>Answer the question</td>
<td>What is it?</td>
<td>Where is it now? Where is it going? How fast is it moving?</td>
</tr>
<tr>
<td>Predominate in:</td>
<td>Females (more P than M)</td>
<td>Males (more M than P)</td>
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What happens when you give a child a piece of paper and crayons?
Girls draw nouns, boys draw verbs. “Art is for girls.”

- Girls: people, pets, trees, arrange symmetrically, facing the viewer, average of 10 “warm” colors.

- Boys: action, looking at action from a remote vantage point, a rocket hitting its target, a car about to hit another, average of 6 “cold” colors. 

Leonard Sax. M.D., Ph.D.
What about **giving directions**?

- Young men use different areas of the brain when they navigate.

- Young girls use the cerebral cortex while young men use the hippocampus, a nucleus deep inside the brain that is not activated in women’s brains during navigational tasks.  
  
  Dr. Leonard Sax, M.D., Ph.D.
Harvard researchers using MRI imaging examined how emotion is processed in the brains of children from the ages of 7 to 17.

Response to unpleasant or disturbing visual images seems to be localized in phylogenetically primitive areas of the brain—the amygdala. So....?
In adolescence, more of the brain activity associated with negative emotion moves to the cerebral cortex. (higher cognitive functions...reflection, reasoning, language...)

This happens only in girls.

Dr. Leonard Sax, M.D., Ph.D
Implications?

- The part of the brain where emotions happen is not well connected to the part of the brain where verbal processing and speech happen.
Fight or Flight?

- When most young boys are exposed to threat and confrontation, their senses sharpen and they feel an exciting tingle.

- When most young girls face the same, they feel dizzy and “yucky.” They may have an unpleasant, nauseated feeling.

- **Bottom line:** Many young boys get a thrill from violent or quasi-violent confrontation. Most young girls don’t.

  Dr. Leonard Sax, M.D., Ph.D.
Risk-Taking

- Tossing the Rings
In experiment after experiment, researchers have discovered gender differences in children’s responses to risky situations—

1. boys are more likely to “erroneously” attribute their injuries to bad luck than to any lack of skill or foresight on their part
2. were less likely to tell their parents about the injury
3. were more likely to be around other boys at the time the injury occurred
Living Dangerously

- One reason many boys engage in physically dangerous activities may be that the danger itself gives the activity a pleasant tingle.
- Boys systematically overestimate their own ability, while girls are more likely to underestimate their ability.
- Girls may be willing to take risks, but they are less likely to seek out risky situations just for the sake of living dangerously.
Girls and boys play differently.
They learn differently.
They fight differently.
They see the world differently.

Dr. Leonard Sax, M.D., Ph.D
The male brain needs to recharge.

The male brain is set to renew, recharge, and reorient itself between tasks by moving to what neurologist Ruben Gur has called a “rest state.” The “rest state,” which MRIs have now discovered to be essential to male brain activity, can create big problems in the classroom.  

Gurian, The Minds of Boys
Recharging?
Thoughts on teaching:

- Boys tend to relate to diagrams and abstractions better than information dealing with words.
- When teachers put boys in small groups for a learning experience, boys will spend much of their time trying to determine who is going to be the leader.

Slocumb, Ed.D.
Groups

- Small group work isn’t something most boys would choose.
- Boys do migrate to larger groups, such as athletic teams, special-interest clubs, and sporting events as a spectator.
- Because boys are competitive, boys are hardwired not to seek help. That can show weakness, or mean someone else “wins.”

Slocumb, Ed.D.
Hazard Precautions

1. Remember the “risky shift.”
   (boys in groups do stupid things)

2. Supervised is better than unsupervised.
   (football vs. the streets)

3. Assert your authority.
   (don’t argue or negotiate...no means no)

Dr. Leonard Sax, M.D., Ph.D
History tells us...

- That biological changes in puberty which began at about age 16 in 1850, begin today at about age 12 or sometimes younger.

- But there is no evidence that young people are maturing emotionally any sooner.
Boys are biologically, developmentally, psychologically different.

- Boys are physically more active than girls, moving faster and staying in motion longer.
- Boys are wrapped in high activity, impulsivity, physicality.
- The average boy in a classroom is more active than \( \frac{3}{4} \) of the girls.
Summarizing brain matters...

- Boys tend to be logical (as opposed to emotional) and more driven to solve problems.
- Boys use less words when they talk.
- The first segment of a boy’s brain to develop is the part that governs spatial abilities.
- The last portion to develop is language.
To recap...

1. Women have higher brain flow per gram of tissue than men have.
2. In some critical areas of the brain, women have larger brain cells that receive more inputs than are found in corresponding areas in men’s brains.
3. For many tasks, brain imaging shows that women use the most advanced areas of the brain, the cerebral cortex, whereas men doing the same task use more “primitive” areas of the brain...

Dr. Leonard Sax, M.D., Ph.D
School Statistics

- Boys are 3 times more likely to be enrolled in special education than girls.
- 73% of students identified with learning disabilities are boys.
- 76% of students identified as emotionally disturbed are boys.
- Boys are 4 times more likely to be referred to a school psychologist.

Slocumb, Ed.D.
In every racial and ethnic group, females now outnumber males in acquiring a college degree.

By 2010 the number is expected to reach 142 females for every 100 males.

Michael Thompson worries that “…we can’t have a country of women in white-collar jobs and men in blue-collar jobs. That’s not going to be good for society.”

Slocumb, Ed.D.
Whew!
Let’s check window panes
What does all that mean to you?

Share with a partner...

How will you use this information in your classroom?

Is there anything you might do differently?
This conversation leads us to...
Differentiating Instruction
Think about Students in your Classroom

Use the categories below to cluster your students according to their learning needs. Feel free to add or disregard categories. Some students may fit into more than one category.

- Needs extra practice on Basic Skills
- Needs extra time to complete tasks
- Has strong interests often not reflected in school tasks
- Works better independently
- Works better collaboratively
- Likes practical, relevant, hands-on tasks
- Has a highly creative approach to learning
- Needs to work ahead (advanced work)
- Needs additional teaching
Food for thought...

- Some teachers realize school may be a more comfortable fit for some students than it is for others but the most effective teachers work to understand and honor both the individuality and commonality represented in their classroom.

Tomlinson, 2003
How do you define Differentiated Instruction?
“Differentiated instruction is a teaching philosophy based on the premise that teachers should adapt instruction to student differences. Rather than marching students through the curriculum lockstep, teachers should modify their instruction to meet students’ varying readiness levels, learning preferences, and interests. Therefore, the teacher proactively plans a variety of ways to ‘get at’ and express learning.”

Carol Ann Tomlinson
A Differentiated Classroom in Balance

Solid Curriculum
- Concept-based
- Inviting
- Focused
- Product Oriented

Teacher-Student Partnerships
- Shared goals
- Shared responsibility
- Shared Vision

Sense Of Community
- Shared goals
- Shared responsibility
- Shared Vision

On-going assessment to determine need
- Feedback
- ZPD Target

Flexible
- Time
- Resource
- Groups
- Approaches to teaching and learning

Safe
- Affirming
- Respect for individual

Respect For Group
- Challenge

A Growth Orientation
- Feedback and grading
- ZPD Target

Affirming
- Shared Challenge
How Does Research Support DI?

- Differentiated Instruction is the result of a synthesis of a number of educational theories and practices.
- Brain research indicates that learning occurs when the learner experiences moderate challenge and relaxed alertness –readiness.
- Psychological research reveals that when interest is tapped, learners are more likely to find learning rewarding and become more autonomous as a learner.
Key Principles of a Differentiated Classroom

- The teacher is **clear about** what matters in **subject matter**.
- The teacher understands, appreciates, and **builds upon student differences**.
- **Assessment and instruction** are inseparable.
- The teacher adjusts **content, process, and product** in response to student **readiness, interests, and learning profile**.
- All students participate in **respectful work**.
- Students and teachers are **collaborators** in learning.
- Goals of a differentiated classroom are **maximum growth** and **individual success**.
- **Flexibility** is the hallmark of a differentiated classroom.

I’d like to be able to say that our job is just to get the kids to learn new things, think better, and be “smarter”.

But the bigger picture, learning is about what we call “the three R’s”--- relationships, relevance, and rigor.

You cannot have a relationship with or make things relevant for or expect rigor from a kid you don’t know.

The Big Picture by Dennis Littky, ASCD, p. 39
Why Differentiate?

- All kids are different.
- One size does not fit all.
- Differentiation provides all students with access to all curriculum.
Why?

To Create an Optimal Match!

- Student's readiness
- Student's experiences
- Student's interests
- Student's learning styles and intelligences

Less frustration,
Less confusion,
Less boredom
Teachers Can Differentiate

According to Students’

Adapted from *The Differentiated Classroom: Responding to the Needs of All Learners* (Tomlinson, 1999).
Comparing Traditional and Differentiated Classrooms

• Consideration of student differences
• Use of assessment
• Use of student interest and learning style
## What is Differentiated Instruction?

<table>
<thead>
<tr>
<th>Traditional Classroom</th>
<th>Differentiated Classroom</th>
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<tbody>
<tr>
<td>1. Assessment at the end of a unit of study</td>
<td>1. Assessment is ongoing, diagnostics and influences instruction</td>
</tr>
<tr>
<td>2. Dominance of whole class instruction</td>
<td>2. Variety of instructional strategies used within a classroom</td>
</tr>
<tr>
<td>3. Adapted textbooks are the main instructional resource</td>
<td>3. Multiple types of materials are utilized as resources</td>
</tr>
<tr>
<td>4. The teacher is the main problem solver</td>
<td>4. Students are actually engaged in solving problems</td>
</tr>
<tr>
<td>5. Quantitative focus to assignments</td>
<td>5. Qualitative focus to assignments</td>
</tr>
</tbody>
</table>
Key Principles of Differentiation

- Flexibility
- Ongoing assessment
- Variety of learning opportunities and working arrangements
- Respectful activities
- Student/teacher collaboration for learning
What is differentiation?

Differentiation is classroom practice that looks eyeball to eyeball with the reality that kids differ, and the most effective teachers do whatever it takes to hook the whole range of kids on learning.

Tomlinson 2001
How to begin....

• **ASSESSMENT**
Assessment in a Differentiated Classroom

- Assessment drives instruction. (Assessment information helps the teacher map next steps for varied learners and the class as a whole.)
- Assessment occurs consistently as the unit begins, throughout the unit and as the unit ends. (Preassessment, formative and summative assessment are regular parts of the teaching/learning cycle.)
- Teachers assess student readiness, interest and learning profile.
- Assessments are part of “teaching for success.”
- Assessment information helps students chart and contribute to their own growth.
- Assessment MAY be differentiated.
- Assessment information is more useful to the teacher than grades.
- Assessment is more focused on personal growth than on peer competition.
Two Views of Assessment --

Assessment is for:

- Gatekeeping
- Judging
- Right Answers
- Control
- Comparison to others
- Use with single activities

Assessment is for:

- Nurturing
- Guiding
- Self-Reflection
- Information
- Comparison to task
- Use over multiple activities
Pre - Post - Ongoing

ASSESSMENT

for

Interest – Readiness – Learning Profile

by

Self – Peers - Teachers
Possible Areas of Assessment...

- Interest
- Readiness
- Learning Profiles
Interest

- What does INTEREST mean?
  Discovering interest is important;
  Creating interest is even more important.

*Inventing Better Schools*, Schlechty
To Assess Interests...

- Informal...
  - casual conversation
  - writing prompts
  - journal entries
  - modality preferences instrument
Sign the Wall

Build some new friendships. For each “brick” below, see if you can find someone who fits the description. Then ask that person to sign the brick. More than one person may sign a brick. Use the bottom row to write other interesting things you discover about your new friends.
To Assess Readiness...

- Informal
  - pre-test from textbook company
  - grade-level (common assessment)
  - student reflection
  - observation
To Assess Learning Profiles...

- Multiple Intelligence tests
- Learning profiles, found on internet
- Sternberg’s Intelligences
Sternberg’s Triarchic Theory

- Robert Sternberg, a Professor of Psychology at Yale University, has developed a theory that people possess three different types of intelligence in varying amounts. His research indicates that people learn best when their dominant intelligence is addressed (Sternberg, 1997).
Triarchic Theory

- Triarchic teaching is a strategy that you can use to differentiate according to Sternberg’s theory of “successful intelligence”:
  - Creative Intelligence
  - Practical Intelligence
  - Analytical Intelligence
Triarchic Teaching

The idea behind Triarchic teaching is that you provide students with assignments, centered around the same learning goals that are designed for their intelligence strengths. This way, students learn the material more efficiently and successfully.

Sternberg’s research shows that student achievement rises when learning experiences take into account dominant learning preferences.
We all have some of each of these intelligences, but are usually stronger in one or two areas than in others.

We should strive to develop as fully each of these intelligences in students...

...but also recognize where students’ strengths lie and teach through those intelligences as often as possible, particularly when introducing new ideas.
Sternberg’s Intelligences

Learner-schoolhouse smart- sequential Streetsmart-Contextual-Focus on Use Innovator-Outside the Box-What If

An idea for assessing students according to Sternberg’s intelligences would be to give the following scenario:

Imagine you are driving with your parents and they are listening to the radio. An interesting piece comes on about something you do not know. As you listen, you get more and more interested. What do you want to know?

All of the little details that go into it?
How is it being used?
How to use that information in new ways?

Students who choose the first are analytical, second corresponds to practical and those who choose the final question are the creative learners.
Analytical thinkers

- Like to break things into parts, like to know how things work, enjoys facts as well as ideas, likes to argue, attracted to logical thinking and logical ideas, likes to “think” as opposed to “doing,” typically does well at school tasks, enjoys solving problems, can focus for long periods of time on a single task, may balk at “creative “ assignments, likes to find one right “answer” may see things as black and white.

- Needs: assignments that require thought as opposed to rote memorization, extended assignments that allow for focused, long-term study, “problems “ to figure out, time to discuss ideas with others, support with how to present ideas in a non-argumentative way, support with listening to and accepting others’ ideas, opportunities to struggle with open-ended questions that have no right/wrong answer.

Adapted from Nanci Smith, 2008
For Analytical Thinkers

Analytical=Linear-Schoolhouse Smart-Sequential

Show the parts of______ and how they work.
Explain why ____ works the way it does.
Diagram how ____ affects ______.
Identify the key parts of ________.
Present a step-by-step approach to ________.

Adapted from Nanci Smith, 2008
Analytical thinkers: “I Like...”

- Analyzing characters
- Comparing and contrasting points of view
- Criticizing my own and others’ work
- Thinking clearly and analytically
- Evaluating my and others’ points of view
- Appealing to logic
- Judging my and others’ behaviors
- Explaining difficult problems to others
- Solving logical problems
- Making inferences and deriving conclusions
- Sorting and classifying
- Thinking about things

Sternberg & Grigorenko, 2000
Practical Thinkers

- Like to see the world application of things, excellent at implementing plans, a “doer”, highly effective in making things “happen”, organized, less interested in ideas than in action likes to move and do when learning, can be an excellent leader, may struggle with creativity-for creativity’s sake assignments, may resist completing assignments for which they see no real-world purpose, can work very well in group situation, may not be traditionally “booksmart.”

- Needs: Hands-on activities, assignments that are connected to the real world, opportunities to share ideas with practitioners and experts, experiences with more creative, open-ended activities, support with being patient with activities for which they see no immediate application, opportunities to lead (even when they are not the highest achievers, these students can be highly effective at leading groups and delegating responsibilities.)
For PRACTICAL Thinkers

Practical=Street Smart-Contextual-Focus on Use

- Demonstrate how someone uses ____ in their life.
- Show how we could apply____ to solve this real life problem:___________________.
- Based on your own experience, explain how ______ can be used.
- Here’s a problem at school, ____________.
- Using your knowledge of __________, develop a plan to address the problem.

Nanci Smith, 2008
Practical thinkers: “I Like...”

- Taking things apart and fixing them
- Learning through hands-on activities
- Making and maintaining friends
- Understanding and respecting others
- Putting into practice things learned
- Resolving conflicts
- Advising friends on problems
- Convincing someone to do something
- Learning by interacting with others
- Applying knowledge
- Adapting to new situations

Sternberg & Grigorenko, 2000
Creative Thinkers

- Attracted to Novelty, likes to produce knowledge or ideas instead of consuming them, sees the world from a unique perspective, often prefers working alone, doesn’t like to be rushed toward completion of tasks, often works in “bursts,” with long periods of incubation (which can look like unproductiveness) followed by quick, highly productive working periods, often has a unique sense of humor.

- Needs: support with setting deadlines and timelines, open-ended assignments with structure, assignments that allow for creative thinking and novel products, support working with other students, frequent outlets for creative thought, support with turning “ideas” into “reality.”
For CREATIVE Thinkers...

*Creative*=Innovator-Outside the Box- “What If?”-Improver

Find a new way to show ____.
Use unusual materials to explain________
Use humor to show______
Explain (show) a new and better way to ____
Make connections between ____ and ____ to help us understand __________
Become a ___________and use your “new” perspective to help us think about__________
Creative Thinkers: “I Like...”

- Designing new things
- Coming up with ideas
- Using my imagination
- Playing make-believe games
- Noticing things others ignore
- Thinking in pictures and images
- Supposing that things were different
- Composing new songs and melodies
- Acting and role-playing
Tips for teaching Triarchically

- Some of the time, teach analytically, helping students learn to analyze, evaluate, compare and contrast, critique and judge.
- Some of the time, teach practically, helping students learn to apply, use, utilize, contextualize, implement, and put into practice.
- Some of the time, teach creatively, helping students learn to create, invent, imagine, discover, explore and suppose.
- Much of the time, enable all students to capitalize on their strengths.
- Much of the time, enable all students to correct or compensate for their weaknesses.
- Make sure your assessments match your teaching, calling upon analytical, creative and practical as well as memory skills.
- Value the diverse patterns of abilities in all students.
Handouts in binders...

- Student friendly learning profiles
- Information on Multiple Intelligences and Using it in the Classroom
- Triarchichal Theory (Sternberg’s work) Examples
- Learner Profile Cards
Assessment is On-going

- First you assess to see where to start then you assess as you teach to see what needs to be taught

- Monitor progress through assessment of individual skills

- Progress monitoring helps in decision making of what to teach and how it needs to be done
Learner Profile Card

Gender Stripe

Auditory, Visual, Kinesthetic
Modality

Analytical, Creative, Practical
Sternberg

Student’s Interests

Multiple Intelligence Preference
Gardner

Array Inventory
What is **Cooperative Learning**?
- a small group interactive instructional strategy that allows students to collaboratively work on meaningful tasks - students working to help themselves and others in the group to learn
- academic engagement through social interaction
- activities structured so that students need each other to accomplish tasks

**Cooperative Learning Strategy** helps
- motivate students
- students construct their own knowledge
- students develop social and group work skills necessary in life
- promote positive interaction among students
- students learn through active involvement rather than sitting and listening and watching

Research has shown that students who learn cooperatively get higher grades than students who try to learn the same material individually (Johnson et al. 1991)
When a teacher tries to teach something to the entire class at the same time, “chances are, one-third of the kids already know it; one-third will get it; and the remaining third won’t. So two-thirds of the children are wasting their time.”

- Lilian Katz
When a teacher tries to teach something to the entire class at the same time, “chances are, one-third of the kids already know it; one-third will get it; and the remaining third won’t. So two-thirds of the children are wasting their time.”

- Lilian Katz

Reflect on this quote by completing these phrases:

• As a student, I was in the 1/3 who...
• As a teacher, I was in the 1/3 who...
• As a parent, my child is in the 1/3 who...
Cooperative Learning in the Classroom
Cooperative learning is not simply students working in groups. Johnson, Johnson, and Smith (1991) identify the following elements as foundational to Cooperative Learning:

1. **Positive interdependence** - students must work together to achieve the goal.
2. **Individual accountability** - each student in the group is responsible for doing their share of the work. If one person does not contribute his/her share, the group suffers the consequences.
3. **Face-to-face interaction** - Some parts of the activity must be completed through group interaction, feedback, reasoning, and teaching and encouraging one another.
4. **Use of collaborative skills** - developing and practicing trust-building, leadership, decision-making, communication, and conflict management skills.
5. **Group processes** - group planning, identifying group goals and group assessment.
Think-Pair-Share

Think-pair-share is a simple, low risk cooperative group activity in which students can share and reflect on their ideas or answers with a partner before sharing with the large group. It can be used as a quick assessment tool to determine if students understand the basic concepts before moving on.

1) Teacher poses a question to the students and gives them a minute to think independently about their responses.
2) Students then partner with a near-by student and discuss their responses or ideas to the question or problem posed.
3) In this brief activity students can verbalize their understandings, confirm what they understand with a partner or may determine what they do not understand.

Variation - ask students to record their answers on a recipe card prior to sharing with a partner. The cards can be collected and used to assess student understandings.

RoundRobin Brainstorming

Class is divided into small groups (4 to 6) with one person appointed as the recorder. A question is posed with many answers and students are given time to think about answers. After the "think time," members of the team share responses with one another round robin style. The recorder writes down the answers of the group members. The person next to the recorder starts and each person in the group in order gives an answer until time is called.
Student-Centered **Assessment** of Cooperative Learning Activities

**Reflection Journals** can be used during the closing of a lesson or activity period to allow students to reflect on their experiences, understandings and group work. The journals provide a record of accomplishments and one more resource for evaluation and assessment.

**Group and Peer Assessment** - Prior to the activity or project, a list of descriptors is provided for or brainstormed by the large group. Throughout the activity or at the end of the activity, each member of the group provides an assessment of their effort in the assigned task. A rating scale or mark is accompanied by the student's explanation for the rating. Group members can also provide a rating for another group member and give a reason for the rating.
**Roundtable**

Roundtable can be used for brainstorming ideas, possible answers to a question or generating a group of questions.

1) Teacher poses a question that has the potential for a number of possible answers.
2) In small groups, students take turns adding their ideas. First student writes down an idea, and shares it out loud. The paper is passed to the left, the second student writes idea, shares and so on.
3) Students may "pass" at any time.
4) Group stops when time is called. Groups may discuss the list of ideas or answers or may share their list with the large group for discussion.

WebResources for Cooperative Learning: Sites will open in new windows

Collaborative Learning, National Institute for Science Education
Cooperative Learning, The National Teaching and Learning Forum
The Essential Elements of Cooperative Learning in the Classroom, ERIC Digest
**Jigsaw Grouping** is a cooperative learning technique that has each participant responsible for completing and understanding one part of the whole. Each participant must share his or her knowledge effectively with the group to complete the “puzzle”.

*Each piece of the puzzle is needed in order to create the whole picture.*

<table>
<thead>
<tr>
<th>Description</th>
<th>Process</th>
<th>Examples</th>
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<th>Resources</th>
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<tr>
<td>Each student is responsible for his or her own success through the success of the group.</td>
<td>No one individual can do it all alone.</td>
<td>The group learns to work together and care about one another and a level of trust and interdependence develops.</td>
<td>Each student becomes an &quot;expert&quot; and teaches the rest of the home group.</td>
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There are four basic steps in the process of jigsaw learning.

1. Material to be covered is divided into independent sections. The number of sections determines the number of students in each "Home Group".

2. Students are all placed in Home Groups and within those groups each student is assigned as an "expert" to be responsible for a particular topic.

3. Experts learn their own topic either individually or cooperatively with other experts in an "Expert Group".

4. Experts return to the home group and each person teaches the rest of the home group about the body of material that was covered.

- **Sections of content** - 4 to 6 is a good number.

- **Students assigned to Home Groups** - 4 per group for 4 content sections.

- **Each student in Home group takes one content section** - becomes an Expert.

- **Experts come back and share their knowledge with the Home Group.**

Each member of each group ends up seeing the "Big Picture" once the process is finished, and without each student fulfilling their role, the puzzle remains incomplete.
### Expert Groups and Home Groups

**Expert Group** - every member in the group becomes well-versed in a particular body of knowledge or skills. The experts are then able to share with other individuals, other groups of students or even the entire class.

**Home Group** - every member in the group is a support person for every other member of the group. The group members work together to ensure that each member of the group has mastered the concept or skill being taught. Members of a home group must be able to work well together and must build a trust relationship within the group.
There are three main areas in which **jigsaw group** activities can be assessed:

| Assessment of content knowledge projects, quizzes, assignments or other evaluations measuring knowledge of content and concepts covered in the jigsaw format. | Assessment of learning process rubrics, checklists and anecdotal observations of the process through which the content knowledge was gained and shared. | Assessment of group skills self and peer evaluation, rating scales and rubrics to gauge interpersonal skill development and students skills to work as effective group members |

The best assessment tools consider all three areas in determining the final assessment of students and their work.
For Further Reference Check:
Jigsaw - The "original" jigsaw site with history, ideas and tips.

http://www.jigsaw.org/

Instructional Strategies on-line
http://olc.spsd.sk.ca/DE/PD/instr/strats/jigsaw/
### What are anchor activities?
Specified ongoing activities on which students work independently ongoing assignments that students can work on throughout a unit.

### Why use anchor activities?
- Provide a strategy for teachers to deal with “ragged time” when students complete work at different times.
- They allow the teacher to work with individual students or groups.
- Provides ongoing activities that relate to the content of the unit.
- Allow the teacher to develop independent group work strategies in order to incorporate a mini lab of computers in the classroom.
When are anchor activities used?
* to begin the day
* when students complete an assignment
* when students are stuck and waiting for help

Types of anchor activities
- DEAR Time - Silent Reading
- Journal Writing or Learning Logs
- Vocabulary Work
- Math “Problem of the Day”
- Learning Center
- Spelling Practice
- Portfolio Management
- Agenda notes
In many classrooms, students work on routine activities like journal writing, vocabulary activities and spelling. These types of activities can used as "Anchor Activities" that are options for students after assigned work is complete. *The goal is to have students moving independently from one assignment to another without needing teacher direction.*

Anchor activities can be posted within the classroom in a variety of ways. Simply listing the activities on a chart or chalkboard is one method. Below are additional methods of presentation used by teachers.

"Ragged time" is a reality in a differentiated classroom. It is not your goal to have everyone finish all tasks at the same time....." Carol Ann Tomlinson
**How can I assess anchor activities?**
Help students to take responsibility for their roles in classroom routines. Clear expectations, rationale for expectations and student self evaluation are integral to developing classroom procedures and student ownership within the learning environment.

**How can I assess individual anchor activity work?**
- Ongoing anecdotal records and checklists
- Student conferences for evaluation and goal setting
- Learning journals
- Student portfolios
- Rubrics
- Random checks
- Peer review
<table>
<thead>
<tr>
<th>Resources</th>
<th>Internet Resources Anchor Activities</th>
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<tr>
<td></td>
<td><a href="http://www.plsweb.com/resources/newsletters/enews_archives/53/2006/05/02/">http://www.plsweb.com/resources/newsletters/enews_archives/53/2006/05/02/</a></td>
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<tr>
<td></td>
<td>a list of sample activities in different subject areas</td>
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<td></td>
<td>Differentiation Strategies-</td>
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<td></td>
<td><a href="http://www.eht.k12.nj.us/~jonesj/Differentiated%20Instruction/Anchor%20Activities.htm">http://www.eht.k12.nj.us/~jonesj/Differentiated%20Instruction/Anchor%20Activities.htm</a></td>
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<td>Communicating in the Literacy Classroom -</td>
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<td><a href="http://www.tandl.leon.k12.fl.us/lang/Elementary/Anchorvoc.html">http://www.tandl.leon.k12.fl.us/lang/Elementary/Anchorvoc.html</a></td>
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<td>Sample of how a Gr. 3 teacher uses anchor activities</td>
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<td></td>
<td>Vocabulary Anchor Activities - a sample daily anchor activity</td>
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<td></td>
<td>Text Resources by Carol Ann Tomlinson</td>
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<td></td>
<td>The Differentiated Classroom - Responding to the Needs of All Learners, Association for Curriculum and Development. Virginia, 1999.</td>
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<tr>
<td></td>
<td>How to Differentiate in Mixed Ability Classrooms - Association for Curriculum and Development. Virginia, 2001</td>
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Think, Pair then Share

- Get with someone you have not worked with today and brainstorm how you plan to use strategies covered today in your classroom.
Next time...

- Bring with you 2-3 examples of how you used strategies from today, brain info, round robin, jigsaw, anchor, learning profile, learning profile card.

- Be prepared to tell what you did, how it affected student learning, will you do it again with or without variations/changes
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Questions???????