Differentiation & the Brain
A Quick Look at Shared Principles

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Differentiation is a sequence of common sense decisions made by teachers with a student-first orientation

Adam Hoppe, 2010

The Common Sense of Differentiation

Ensuring an environment that actively supports students in the work of learning

Absolute clarity about a powerful learning destination

Persistently knowing where students are in relation to the destination all along the way

Adjusting teaching to make sure each student arrives at the destination (and, when possible, moves beyond it)

Effective management of flexible classroom routines
1 Quality DI

Begins with a growth mindset, moves to student-teacher connections, & evolves to community.

Paving the Way

MINDSET ➔ CONNECTIONS ➔ COMMUNITY

to Learning
Success comes from being smart
Genetics, environment determine what we can do
Some kids are smart—some aren’t
Teachers can’t override students’ profiles

Success comes from effort
With hard work, most students can do most things
Teachers can override students’ profiles
A key role of the teacher is to set high goals, provide high support, ensure student focus—to find the thing that makes school work for a student

Teacher Mindset

Who
Shapes Student Self-Perception

Mindset

How
Talk About It...
How does teacher Mindset impact who, where, what, & how we teach?

Coverage vs. Whatever it Takes

What
What are the implications of mindset for differentiation??
I teach what I believe you can learn

Builds or Erodes Group Trust

Where

TALK ABOUT IT...

Paving the Way

Mindset ➔ Connections ➔ Community

to Learning
Teachers discover that they need to develop and maintain personal relationships with the students they teach—because for most students, meaningful interaction with a teacher is a precursor to academic learning.


Lord of the Flies Anticipation Guide

Warm-up Activity: Read the statements below and write an “A” next to any with which you agree, a “D” by any with which you disagree, and “NS” if you’re not sure how you feel. Explain BRIEFLY why you feel as you do.

1. __________ Children are capable of horrific behavior.
   Explain: ________________________________________________________________
   ________________________________________________________________

2. __________
   Explain: ________________________________________________________________
   ________________________________________________________________

Some alternatives: Action State (wishing I were skateboarding); How you’re feeling about the novel; favorite movie; do you like hot dogs; worried about; etc.

A Simple Idea for Connecting with Kids

Name____________ Date______ Pd_________

Best Thing about the Week ____________________________________________

Mark Mykka

Paving the Way

MINDSET ➔ CONNECTIONS ➔ COMMUNITY

to Learning
Quality DI

Is rooted in meaningful curriculum.

QUALITY CURRICULUM: THE SHORT VERSION

Engagement + Understanding (sense & meaning) = Success

To Ensure Engagement
Regardless of how we conceive it, every lesson plan should be, at its heart, a motivational plan. Young learners are motivated and engaged by a variety of conditions. Among those are:

- novelty
- cultural significance
- personal relevance or passion
- emotional connection
- product focus
- choice
- the potential to make a contribution or link with something greater than self

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To ensure understanding:

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Teachers must distinguish between:

- Enduring Understandings
- Important to Know and Do
- Worth Being Familiar With

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Planning a Focused Curriculum Means
— At the Very Least — Clarity About What Students Should …

- **KNOW**
  - Facts
  - Vocabulary
  - Definitions

- **UNDERSTAND**
  - Principles/generalizations
  - Big ideas of the discipline

- **BE ABLE TO DO**
  - Processes
  - Skills

**KNOW**

Facts, names, dates, places, information

- There are 50 states in the US
- Thomas Jefferson
- 1492
- The Continental Divide
- The multiplication tables
- Procedural information (how to…)

**BE ABLE TO DO**

Skills (basic skills, skills of the discipline, skills of independence, social skills, skills of production)

Verbs or phrases (not the whole activity)

- Analyze
- Solve a problem to find perimeter
- Write a well supported argument
- Evaluate work according to specific criteria
- Contribute to the success of a group or team
- Use graphics to represent data appropriately
UNDERSTAND

Essential truths that give meaning to the topic
Stated as a full sentence
Begin with, “I want students to understand THAT…”
(not HOW… or WHY… or WHAT)

- Multiplication is another way to do addition.
- People migrate to meet basic needs.
- All cultures contain the same elements.
- Entropy and enthalpy are competing forces in the natural world.
- Voice reflects the author.

KUDs Matter Because:

They establish clear learning goals
Allow us to align goals, assessments, teaching, and learning tasks
They allow us to incorporate standards AND make meaning for students
They give us a basis for differentiation.
Who needs which K’s & D’s
How do we ensure that every student gets meaningful access to the U’s
They tell us what strugglers should invest in
They give us a platform for extending for advanced students

A NON-Negotiable Of DI

Our goal should always be to create the richest, highest quality curriculum we know how to create…

Then, differentiate to enable the largest possible number of students to succeed with it.

Differentiation should always be about lifting up—never about watering down!!
Defensible Differentiation:

- **Always**
  - Teaches Up

- **Never**
  - Waters down

**TASKS:**
- Clear KUDs
- Require careful thought
- Focus on understanding
- Problems to solve/Issues to address
- Use key knowledge & skills to explore, or extend understandings
- Authentic
- Require support, explanation, application, evaluation, transfer
- Criteria at or above "meets expectations"
- Require metacognition, reflection, planning, evaluation

Curriculum Races Are Not Brain-Friendly

I've got stuff to cover!!
How much information is enough?

Too much information can hinder cognitive processing

Emotions take over

Build Neural Networks

- Less is More
- Shorter is Better
- Keep it Relevant

Quality DI

Results in a teacher planning based on student readiness, interest, & learning profile.
What’s the Point?

Readiness
Growth

Interest
Motivation

Learning Profile
Efficiency

Teachers at Work:

Responding to Student Readiness Needs

Math Ticket

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Problem of the Day</th>
<th>Computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangram Ex (p. 1441)</td>
<td>Complete the odd # problems</td>
<td>Complete the</td>
</tr>
<tr>
<td>Tangram Ex (p. 11.99)</td>
<td>from the POD board.</td>
<td>blue task cards</td>
</tr>
<tr>
<td>Geoboard Pentagon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geoboard Hexagon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math Writing</td>
<td>Develop a real problem</td>
<td>Teacher Feature</td>
</tr>
<tr>
<td></td>
<td>someone might have which</td>
<td>When you are called</td>
</tr>
<tr>
<td></td>
<td>graphing might help them</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explain and model how it</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the problem &amp; solution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>would work.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Solved your problem of the day or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>solved your Tangram/Geoboard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>challenge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Use pictures and words to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>teach someone how to do one of your</td>
<td></td>
</tr>
<tr>
<td></td>
<td>five math tasks</td>
<td></td>
</tr>
</tbody>
</table>

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1. As students work on an assignment, systematically go around the room and spot-check their work—looking for patterns in misunderstanding or gaps in knowledge or skill.
2. Make a quick note of issues you see and students who are having those issues.
3. If you see a problem that's recurring as many as four or five times, call for a mini-workshop.
4. Ask students to stop working and give you their attention.
5. Tell them that as you've been observing their work, you see one problem that a number of students are having—and describe the problem/issue.
6. Tell students they'll be able to succeed with their work more readily if you can help them with the problem.
7. Ask them to come to a place in the room that you designate and to sit with you on the floor for a minute to clear up the problem.
8. Feel free to issue invitations to some students if needed.
9. Hold the discussion—generally for about 3 minutes.
10. Remind students going and coming to shift their positions so that others are not interrupted in their work.

3.00 meters? 
2.00 meters? 
2.44 meters! 
2.42 meters
What's worthwhile is rarely easy...

And the cost is too great if any of us give up!

It’s nice to believe that the world is simple and we can easily get high quality answers to our questions. We often oversimplify by creating add-water-and-stir solutions. The truth is that our reality is very complex and we don’t understand it well.

We need to spend more time helping people understand and deal with complexity and less time concocting dumbing-down mechanisms.


- Start slowly.
- Lead your students—make them your partners.
- Plan the details carefully and at a pace that works for you.
- Rehearse and review.
- Be reflective—celebrate successes and learn from rough spots.

Remember what you want to accomplish & why it matters!
Keep Growing Your Brain

To Teach Brains