Integrating Differentiating Instruction and Understanding by Design

Jeanne Bauwens and Cheryl Yamamoto
How monotonous the sounds of the forest would be if the music came only from the top ten birds.
Strategy…

Make it EXPLICIT!
Outcome

To increase your knowledge about Differentiating Instruction and how it integrates with Understanding by Design
What is your current understanding about differentiating instruction?
Assessing the Learner & Learning (Aʻo iʻauhau) Worksheet

FOR (before)

AS (during)

OF (after)

Name ____________________
Period _____
What might be meant by the term differentiated instruction?

A closer look at Differentiating Instruction
Differentiating Instruction…

is NOT…

- Individualizing instruction for each student

IS…

- Providing instruction to meet the range of student needs
Differentiating Instruction...

is NOT...

Assigning all students the same activities all of the time

is...

Using varied strategies that address students' readiness, interests, and learning styles
Differentiating Instruction…

is NOT…

Using the same instructional materials for all students

IS…

Using varied resources for varied learners
Differentiating Instruction...

**is NOT...**
Teaching from the text cover-to-cover

**IS...**
Using the text as a resource while teaching big ideas and critical concepts
Differentiating Instruction…

is NOT…

Assessing all students’ learning in the same way

IS…

Using multiple means of assessment
Differentiating Instruction...

is NOT...

Limiting learning experiences to the classroom environment

is...

Promoting learning across varied settings: home, school, and community
Differentiating Instruction

is a way of thinking about teaching and learning that seeks to recognize, learn about, and address the learning needs of all students.

To that end, teachers use varied varied approaches to instruction and assessment that promote learning opportunities and outcomes across different learning environments.
What do you now know about differentiating instruction?

THINK

Write alone on your assessment sheet
Why might we need to differentiate instruction?

Let’s PAUSE
Only teachers who utilize a variety of instructional approaches will be successful in maximizing the achievement of all students.

Teachers need to “play to” students’ strengths and mitigate students’ learning weaknesses.

This can be done only through the use of instructional variety.

Source: Lasley, T., & Matczynski, T.
Where might differentiated instruction fit in to UbD?
Understanding by Design

Stage 1- Desired Results

- Standard(s):
- Understandings
- Knowledge
- Skills
- Essential questions

Stage 2- Assessment Evidence

- Performance-based Task + Rubric
- Other Evidence (quiz, write up, report, etc.)
- Self assessment/self monitoring

Stage 3- Learning Plan

- Daily lesson plans

- Should NOT be differentiated
- Should be differentiated if assessment data tells you there is a need
- May be differentiated
- May be differentiated
How might we differentiate instruction?
Prior to designing lessons, we must assess students’:

- readiness
- Interests
- and/or
- learning style(s) or preferences
Look over the lesson plan entitled Travel Channel Performance-based Task
This Performance-Based Assessment was differentiated by…

readiness
Interest
and/or
learning style(s) or preferences
Look over the lesson plan entitled Travel Channel Lesson plans
Let’s look at a few lessons. How were these lessons differentiated?

readiness
Interests
and/or
learning style(s) or preferences
Did you know...

if we were to teach ALL of the concepts in a science text, we’d have to do so every minute and a half.

Thus for many students, Science must be...
What do you now know about differentiating instruction?

THINK

Write alone on your assessment sheet
Tiering is like…
a wedding cake.
• Review cards to identify common elements
• Review cards to identify unique characteristics (both outside and inside)
• Discuss how these cards might be like tiering
Priming background Knowledge

Things you know about wedding cakes: They differ in terms of:
- size (height)
- color of frosting
- configuration
- # of tiers
- cake flavors/ingredients
- decorations
- design
- designers
- # of folks eating
- ...
- ...
- ...
Priming background Knowledge

Now what are things you know about your learners.
- size (height)
-...
-...

So what must you do to meet their needs?
So tiering is a research-based strategy for differentiating instruction where you provide varied materials, tasks, activities, etc. so that ALL students can be successful.

NO RETROFITTING…
Elements and Characteristics of and Strategies for Differentiating Instruction

**Assessing the Learning**

- **Product/Performance**
  - Open-ended tasks
  - Authentic/real world solutions
  - Extension, innovation, creation of new ideas and products
  - Multiple forms and formats using varied techniques and materials

- **Learning Environment**
  - Safe, challenging, and collaborative community
  - Access to resource-rich classrooms
  - Flexible movement and use of space
  - Multiple settings and environments
  - Flexible scheduling

- **Process**
  - Flexible Grouping
  - Questioning for Critical Thinking
  - Problem-Based Learning
  - Contracting
  - Learning Centers

- **Content**
  - Planning for differentiation
  - Tiering
  - Compacting
  - Accelerating
  - Enhancing content for depth, complexity, and novelty

- **Assessing the Learners’**
  - Readiness
  - Interests
  - Learning styles/preferences
Lesson Activity: Density and Buoyancy

Content area: Physical Science (grades 9 - 12)

Standard 13 - NATURE OF MATTER: Students examine the nature of matter
Performance indicator #3 - compares the density of water to the density of other compounds

Outcome: In all three of the groups students will:

- explore the relationship between density and buoyancy
- conduct an investigation to determine density, write a lab report, and communicate finding with a target audience

<table>
<thead>
<tr>
<th>The Soda Group</th>
<th>The Brine and Egg Group</th>
<th>The Boat Group</th>
</tr>
</thead>
</table>
| **Lab procedure:**
  Students are given 4 cans of different kinds of soda. They are asked to determine which will float by measuring and recording the density of each can on a structured, teacher-prepared data form.
  Students work as a group to complete a lab analysis form, identifying the materials and procedure used and their conclusions.
  **Individual accountability:** Each student completes a final analysis by explaining:
  1) why the cans floated or sank; and
  2) the relationship between density and buoyancy.

**NOTE:** Prior to this lab activity, ALL students took part in an introductory discussion about swimming and floating experiences and read an expository selection (at their readiness level) about density and buoyancy. In addition, they completed an “exit card response” to assess their understanding of the key ideas from the reading selections.

<table>
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<tr>
<th>Lab procedure:</th>
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<tbody>
<tr>
<td>Students follow a prescribed procedure for measuring salt, heating water, dissolving the salt in the water, cooling the resulting brine, determining the mass of water, determining the mass of an egg, recording all data in a data table, pouring water on the cool brine, placing the egg in the cool mixture, stirring the solution, and observing.</td>
</tr>
<tr>
<td>Students work in pairs on a planning board, to answer questions about their procedure and observations.</td>
</tr>
</tbody>
</table>
| **Individual accountability:** Each student is asked to:
  1) answer questions about why a person can float in water;
  2) whether it is easier to float in fresh or seawater;
  3) why a helium-filled balloon floats in air; and
  4) the relationship between density and buoyancy. |
| **NOTE:** Prior to this lab activity, ALL students took part in an introductory discussion about swimming and floating experiences and read an expository selection (at their readiness level) about density and buoyancy. In addition, they completed an “exit card response” to assess their understanding of the key ideas from the reading selections. |

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<td>Students e-mail college students for advice on how to build concrete boats for entry into the homecoming boat race.</td>
</tr>
<tr>
<td>Next, they determine the density of a ball of clay and draw a design for clay boats (noting both dimensions and density).</td>
</tr>
<tr>
<td>Each boat is to carry cylinders of aluminum, brass, steel, and aluminum nails. Students project the maximum amount of cargo the boat can hold.</td>
</tr>
<tr>
<td>Students build and test their boat and its projected cargo load.</td>
</tr>
<tr>
<td>They independently write a descriptive lab report.</td>
</tr>
</tbody>
</table>
| **Individual accountability:** Each student is asked to explain:
  1) why the clay ball sank and the boat was able to float;
  2) the relationship between density and buoyancy; and
  3) how freighters, made of steel, can carry iron ore and other metal cargo. |

Adapted from: http://www.mcps.k12.md.us/departments/eii/diffexemplaryex.html
Remember...

The old saw is correct: Every journey does begin with a single step. The journey to successfully differentiate or personalize classroom instruction will succeed only if WE carefully take the first step—ensuring a foundation of research-based practices during instruction.

Source: Tomlinson, “Mapping a Route Toward Differentiated Instruction”, 1999
Outcome

To increase your knowledge about Differentiating Instruction and how it integrates with Understanding by Design
What do you now know about differentiating instruction?

THINK

Write alone on your assessment sheet
Mahalo

Source: Tomlinson, “Mapping a Route Toward Differentiated Instruction”, 1999