Differentiated Instruction: Active Formative Assessment Strategies that Engage All Students

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Active "Classroom" Behaviors

Cell Phones, Tablets, Laptops

Parking Lot

Self Care
Group Norms

Make equity central.

Focus on fulfilling our charge.

Seek clarification in language and ideas to increase understanding.

Understand that those who work, learn.

Look for solutions, not blame.

Focus on systems, not people.

Recognize that everyone has expertise.

Be honest.

Share talk time.
Guided Pathways Dimensions

1. Mapping pathways to student end goals
2. Helping students choose and enter a program pathway
3. Keeping students on path
4. Ensuring students are learning
Ensuring Students are Learning Essential Practices

- Program learning outcomes aligned with employment & education
- Active learning activities embedded into coursework
- Program learning outcomes assessed across curriculum
- Assessment results used to improve teaching & learning
- Students document learning beyond transcript
- College offers targeted professional development
Ensuring Students are Learning
Equity Considerations

• Participation of underrepresented students in active learning
• Pedagogical changes to support underrepresented students
• Equity-minded teaching and advising
• Disaggregated student outcome data
Session Outcomes

Participants will:

• Understand the purpose of differentiated instruction.
• Discuss and experience several strategies for differentiated instruction.
• Discuss how to use formative assessment techniques to support differentiated instruction.
• Do all of the above with a vision toward scale.

https://tinyurl.com/TPIDI-2019
Who is in Attendance?

Please stand up if you are ...
Framing the Day

Spend a few minutes writing down your response to the following prompts:

- What classroom issues are you hoping to resolve by using differentiated instruction?

- When do you plan to use differentiated instruction (main course, support course, other)?
Implications of Differentiated Instruction?

“Differentiation could be the difference between academic success and failure for many students. A professional mindset of differentiation includes a learner-centered, constructivist model that will meet the needs of all learners at every level.”

Culturally Responsive Differentiated Instruction: Foregrounding Equity

People who are considered different by those in the majority have a long history of exclusion & denied access.

Differentiated Instruction=
Equitable opportunities & access to information & participation
What is Differentiated Instruction?

Which of the following statements about Differentiated Instruction is not true?

1) Differentiated instruction provides students with greater access to content.
2) Differentiated instruction provides all students with opportunities to engage in productive struggle.
3) Differentiated instruction does not mean that some students are held to a lower standard.
4) Differentiated instruction only supports students who are underprepared.
5) Differentiated instruction provides a variety of opportunities for students to demonstrate understanding.
What is Differentiated Instruction?

- A process through which teachers can increase access to content by considering unique characteristics of students as they plan instructional experiences.
- Provides all students with opportunities to engage in productive struggle.
- Considers both the characteristics of students who struggle and those working at above-course-level expectations.
- Provides a variety of opportunities for students to access and engage with the content, and to demonstrate understanding and mastery.

*Productive Struggle for All: Differentiated Instruction*, by Lynch, Hunt, and Lewis
Related Considerations

• Prep time required
• In-class time required
• Course content coverage
• Classroom set-up
• Establishing a classroom culture that supports collaboration
The DL Classroom

Differentiated Learning is most effective when combined with the following classroom behaviors:

- Formative Assessment Techniques
- A Culture of Student Discourse and Collaboration
- Active and Collaborative Learning Strategies
What is Formative Assessment?

“Formative assessment is used to inform students and teachers of students’ needs in order to improve mastery of the material, rather than penalize or rank students.”

”Formative assessment has the ‘flexibility to incorporate attention to context, [so] it can more easily address issues of cultural validity.’”

Pamela Burdman,
*The Mathematics of Opportunity: Rethinking the Role of Math in Educational Equity*,
Assessments

“If faculty are unlikely to use assessments of learning other than grades, then they are unlikely to be able to assess, discuss, and improve the achievement of learning outcomes by students – not only within courses but across courses in a program.”

Children need to develop a broad range of writing skills (Cole, 2002; 2006) — more than can be measured on such tests. In addition, knowledgeable teachers use day-by-day formative assessments that consider a broader range of writing products. Conclusions drawn from such analyses have greater utility; they lead to targeted instruction.

Writers need **differentiated instruction** that’s responsive to where they are. “Let them write, and only then teach at the point of revealed need” (Walshe, 1982, 11). That’s differentiation. Teaching in the moment and for the moment yields efficient forward growth.

The Power of Collaboration

Students working on complex problems in groups, with thoughtful and appropriate scaffolding, can often reach a deeper and more lasting understanding than can students working independently.

Groups can often arrive at better solutions by working collaboratively than can individuals working alone.

Collaboration is not a simple sharing of knowledge from more skilled to less skilled students. Explaining is an opportunity to learn. All who participate actively benefit.
Collaborative and Active Learning

- Guided Inquiry
- Cooperative Learning
- Formal group-work
- Informal group-work
- Problem based learning
- Project based learning
- Inquiry based learning
- Case studies
- Simulations
- Peer teaching
- Peer editing
- Small group discussion
- Jigsaw
- Think-Pair-Share
Characteristics of Effective Activities

• Allow for multiple problem-solving strategies
• Allow for different ways of demonstrating understanding
• Low-Floor, High-Ceiling
Multiple Problem-Solving Strategies

Problems that require Multiple Problem-Solving Strategies can:

- Be open-ended or open-middle and require complex problem solving.
- Have multiple paths to solutions.
- Have multiple entry points and multiple opportunities to demonstrate competence.
- Have multiple interpretations.
Multiple Problem-Solving Strategies

When students are exposed to, discuss, and present multiple solutions to a problem, they:

1) See that everyone’s thought process is respected and valued.
2) Extend their reasoning and learn new techniques.
3) Consider different ways of thinking about or solving a problem.
4) Compare solution strategies for accuracy, utility, and efficiency.
5) Make explicit connections between different representations.
6) Practice and develop their ability to use correct notation and terminology to talk about and solve mathematics problems.
Monitoring student learning

Fink’s Taxonomy of Significant Learning

- Learning How to Learn
- Foundation Knowledge
- Application
- Caring
- Human Dimension
- Integration

Significant Learning
Another Formative Assessment Resource
A constructively aligned course builds ‘links between course intended learning outcomes, teaching and learning activities, and assessment tasks so that [students] understand why they needed to take the course and how the course was related to other courses and even the program goals’ (Wang, et al., 2013 p. 487).”

Low-Floor, High-Ceiling Activities

• Concept Checks
• Equivalence Justifications
• Novice to Expert Card Sort
• One Minute Summaries
Important Considerations for Each Activity

- What is it?
- What makes it low-floor, high-ceiling?
- How is it implemented?
- How do you create them?
- How can it be modified?
- How can it help you make instructional decisions?
Concept Checks

What are they?

- A combination of the formative assessment strategy of Voting Questions and the think-pair-share protocol
- A quick way to identify student familiarity with a concept, understanding, and misconceptions
- Can be used at the beginning, middle, or end of instruction of a concept
Concept Checks

What makes them low-floor, high-ceiling?

- Low floor: All students can participate in making a choice and justifying their response.
- High-ceiling: All students can improve their justifications.
Concept Checks

How are they implemented?

1. Establish the rules for participation.
Concept Checks

How are they implemented?

1. Establish the rules for participation.
2. Ask students to vote.

Which of the following is the deepest lake in the USA?
   a) Lake Superior
   b) Crater Lake
   c) Lake Pend Oreille
   d) Lake Tahoe
   e) none of the above
Concept Checks

How are they implemented?

1. Establish the rules for participation.
2. Ask students to vote.
3. Ask students to discuss their answers with their classmates and make the case for their answer.
Concept Checks

How are they implemented?

1. Establish the rules for participation.
2. Ask students to vote.
3. Ask students to discuss their answers with their classmates and make the case for their answer.
4. Ask students to vote again.
Concept Checks

How are they implemented?

1. Establish the rules for participation.
2. Ask students to vote.
3. Ask students to discuss their answers with their classmates and make the case for their answer.
4. Ask students to vote again.
5. Ask for volunteers to explain why their answer is correct.
Should states adopt presumed consent organ donation systems automatically registering everybody as an organ donor unless a person opts out?

Concept Checks

How do you create them?

- Use multiple choice questions from the book as a starting point.
- Try to ensure that the wrong answers correspond to common misconceptions.
- This website has many classroom voting question libraries for math classes: [http://mathquest.carroll.edu/](http://mathquest.carroll.edu/)
- Intriguing active learning concept checks for multiple disciplines. [https://blog.polleverywhere.com/active-learning-strategies/](https://blog.polleverywhere.com/active-learning-strategies/)
Concept Checks

How can they be modified?

Who is the only person to have served as both US Vice President and President without being elected to either office?

a) George Washington
b) Lyndon B. Johnson
c) Gerald Ford
d) Harry Truman
e) None of the above
Concept Checks

How can they be modified?

Ice-cubes are added to a glass of water. What happens to the level of the water as the ice cubes melt?

A. The level of the water drops.
B. The level of the water stays the same.
C. The level of the water rises.
D. You need more information to be sure.
How can they be modified?

M091 – Concept Test *Polynomials*

Which of the following shows a pair of like terms?

\begin{enumerate}
\item \(3x^2\) and \(3x\)
\item \(3x^2\) and \(4x^2\)
\item \(3x^2\) and \(2x^3\)
\item \(3x^2\) and \(3\)
\item None of the above.
\end{enumerate}
Concept Checks

How can they be modified?

M093 – Concept Test Radicals

Alice, Bob, and Cindy are asked to evaluate $\sqrt{16}$. Alice says the answer is 4, Bob says it is -4, and Cindy says both are correct. Who is right?

1) Alice
2) Bob
3) Cindy
Concept Checks

How can they be modified?

M091 – Concept Test *Factoring*

What two integers $c_1$ and $c_2$ have a product of 12 and a sum of -7?

(a) $c_1 = -2$ and $c_2 = -6$
(b) $c_1 = 3$ and $c_2 = -4$
(c) Integers not listed here
(d) There are no such integers.
Concept Checks

How can they be modified?

M093 – Concept Test Functions

All quadratic functions have at least one $x$-intercept.

a) True, and I am very confident
b) True, but I am not very confident
c) False, but I am not very confident
d) False, and I am very confident
Concept Checks

How can they be modified?

You were once exactly 3 feet tall.

A. True, and I am very confident
B. True, but I am not very confident
C. False, but I am not very confident
D. False, and I am very confident
Concept Checks

How can they help you make instructional decisions?

- If all students pick the right answer right away, you can move on quickly.

- If students know the answer to a pre-instruction concept test you may be able to decrease the amount of background or introductory material you spend time on.

- If many students vote for a common wrong answer, you have an idea of an important misconception to address.

- If voting is all over the place, you may need to go back and re-cover the topic for clarity.
Kahoot and Quizlet

• Kahoot!
  o Use multiple choice questions from the book as a starting point.
  o Easy to ensure that the wrong answers correspond to common misconceptions.
  o Student is responsible for his/her answer.

• Quizlet
  o Group activity with group help; high-level peer-to-peer interaction
Kahoot.it
Think of one of the classes in which you would like to use differentiated instruction. Create a Concept Check for one of the commonly confusing topics in that course.
Concept Checks – Sample 1

Question

1) Answer 1
2) Answer 2
3) Answer 3
4) Answer 4
5) Answer 5
Determine whether the following expressions are equivalent to $-8(x + 2)$. Provide a justification in the space provided.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Equivalent? Yes/No</th>
<th>Why or Why Not?</th>
</tr>
</thead>
<tbody>
<tr>
<td>$-8x + 2$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$-8x - 16$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(x + 2) - 8$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(x + 2)(-8)$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0 - 8(x + 2)$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Equivalence Justifications

What are they?

- A template asking students to decide if several expressions are or are not equivalent to a given expression, and a space to provide justification.

What makes them low-floor, high-ceiling?

- Low floor: All students can participate in making true/false decisions and justifying their responses.
- High-ceiling: All students can improve their justifications.
Equivalence Justifications

How are they implemented?

- Have students spend time individually deciding if the expressions are equivalent, and providing justifications. (Think)
- Have students compare their answers with those of their group members and decide on the “correct” answer, and a justification. (Pair/Small group)
- Discuss answers and compare justifications as a class. (Share)
Equivalence Justifications

How do you create them?

• Look for common, thought provoking, or unusual errors and misconceptions, perhaps from old exams or homework assignments.
Equivalence Justifications

• How can they be modified?
  o Ask if equations have the same solutions.

• How can they help you make instructional decisions?
  o Based on the types of justifications given you can revisit important concepts that may have been missed.
Equivalence Justifications

Think of one of the classes in which you would like to use differentiated instruction. Create an Equivalence Justification for one of the commonly confusing topics in that course.
Novice to Expert Card Sort

Work in pairs to sort your cards.

1) It is possible to create four categories.
2) Each category should have four cards.

Write down the names of your categories.
Novice to Expert Card Sort

What are they?

○ A type of attribute activity where students identify “like” objects by defining categories.

*Categorization and Representation of Physics Problems by Experts and Novices*, by Chi, Feltovich, and Glaser
Novice to Expert Card Sort

What makes them low-floor, high-ceiling?

- Low floor: All students can participate, and there are correct sorting schemes that only require a superficial level of understanding.
- High ceiling: Students can identify multiple sorting schemes based on deeper levels of conceptual understanding.
Novice to Expert Card Sort

How are they implemented?

- Create a card-sort activity using the novice/expert scheme (more details later)

- Give cut-out sets of cards to pairs of students and ask them to sort them.

- If a pair finishes early, there are several possible follow-up questions that can be asked.

- Remember: there are no “wrong” groupings – just ones that represent different levels and ways of understanding the material
Novice vs. Expert Card Sort

How do you create them?

- Create a grid, identify the categories you want to use for “novice” (usually involves surface characteristics) and the categories you want for “expert” (usually involves deeper characteristics).
- Identify appropriate entries for each intersection of categories.
# Novice to Expert Card Sort

<table>
<thead>
<tr>
<th>Laugh</th>
<th>Cooked</th>
<th>Plant</th>
<th>Spice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nightshade</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potato</td>
<td>Roasted red pepper spread (Ajvar)</td>
<td>Tomato</td>
<td>Cayenne</td>
</tr>
<tr>
<td><strong>Mustard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnip</td>
<td>Cauliflower curry</td>
<td>Brussels sprouts</td>
<td>Horseradish</td>
</tr>
<tr>
<td><strong>Parsley</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td>Sautéed fennel</td>
<td>Parsley</td>
<td>Cumin</td>
</tr>
<tr>
<td><strong>Pea</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peanut</td>
<td>Black eyed peas</td>
<td>Green beans</td>
<td>Licorice</td>
</tr>
</tbody>
</table>

**Novice:**
- Root
- Cooked
- Plant
- Spice

**Expert:**
- Nightshade
- Mustard
- Parsley
- Pea
Novice to Expert Card Sort

<table>
<thead>
<tr>
<th></th>
<th>Mask</th>
<th>Cape</th>
<th>Weapon</th>
<th>Armor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Justice League</td>
<td><img src="image1" alt="Justice League Mask" /></td>
<td><img src="image2" alt="Justice League Cape" /></td>
<td><img src="image3" alt="Justice League Weapon" /></td>
<td><img src="image4" alt="Justice League Armor" /></td>
</tr>
<tr>
<td>Avengers</td>
<td><img src="image5" alt="Avengers Mask" /></td>
<td><img src="image6" alt="Avengers Cape" /></td>
<td><img src="image7" alt="Avengers Weapon" /></td>
<td><img src="image8" alt="Avengers Armor" /></td>
</tr>
<tr>
<td>X-men</td>
<td><img src="image9" alt="X-men Mask" /></td>
<td><img src="image10" alt="X-men Cape" /></td>
<td><img src="image11" alt="X-men Weapon" /></td>
<td><img src="image12" alt="X-men Armor" /></td>
</tr>
<tr>
<td>The Champions</td>
<td><img src="image13" alt="The Champions Mask" /></td>
<td><img src="image14" alt="The Champions Cape" /></td>
<td><img src="image15" alt="The Champions Weapon" /></td>
<td><img src="image16" alt="The Champions Armor" /></td>
</tr>
</tbody>
</table>

Novice:
- Mask
- Cape
- Weapon
- Armor

Expert:
- Justice League
- Avengers
- X-Men
- The Champions

Dana Center
Mathematics Pathways
### Novice vs. Expert Card Sort

<table>
<thead>
<tr>
<th>Novice Category 1: Graph</th>
<th>Novice Category 2: Table</th>
<th>Novice Category 3: Equation</th>
<th>Novice Category 4: Verbal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Table" /></td>
<td>$y - 2 = -\frac{3}{2}(x - 1)$</td>
<td>A line perpendicular to $x - 2 = -\frac{3}{2}(x - 1)$, with the same y-intercept as the expert category 1 line.</td>
</tr>
<tr>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Table" /></td>
<td>$x = 8 - y$</td>
<td>The sum of $x$ and $y$ is 8</td>
</tr>
<tr>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Table" /></td>
<td>$y = 5$</td>
<td>A line with slope zero and y-intercept</td>
</tr>
<tr>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Table" /></td>
<td>$3x - 2y = 6$</td>
<td>A line with intercepts and y-intercept</td>
</tr>
</tbody>
</table>
## Novice vs. Expert Card Sort

<table>
<thead>
<tr>
<th>Expert Category 1: Line 1</th>
<th>Novice Category 1: Graph</th>
<th>Novice Category 2: Table</th>
<th>Novice Category 3: Equation</th>
<th>Novice Category 4: Verbal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Graph" /></td>
<td></td>
<td></td>
<td>$y - 2 = -\frac{3}{2}(x - 1)$</td>
<td>A line perpendicular to , with the same y-intercept as</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expert Category 2: Line 2</th>
<th>Novice Category 2: Table</th>
<th>Novice Category 3: Equation</th>
<th>Novice Category 4: Verbal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2.png" alt="Table" /></td>
<td><img src="image3.png" alt="Table" /></td>
<td>$x = 8 - y$</td>
<td>The sum of and is 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expert Category 3: Line 3</th>
<th>Novice Category 3: Table</th>
<th>Novice Category 4: Equation</th>
<th>Novice Category 4: Verbal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4.png" alt="Table" /></td>
<td><img src="image5.png" alt="Table" /></td>
<td>$x = 5$</td>
<td>A line with slope zero and - intercept</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expert Category 4: Line 4</th>
<th>Novice Category 4: Table</th>
<th>Novice Category 3: Equation</th>
<th>Novice Category 4: Verbal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image6.png" alt="Table" /></td>
<td><img src="image7.png" alt="Table" /></td>
<td>$3x - 2y = 6$</td>
<td></td>
</tr>
</tbody>
</table>
## Novice vs. Expert Card Sort

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert Category 1:</td>
<td>Expert Category 1: Linear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert Category 2:</td>
<td>Expert Category 2: Quadratic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert Category 3:</td>
<td>Expert Category 3: Exponential</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert Category 4:</td>
<td>Expert Category 4: Logarithmic</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Novice vs. Expert Card Sort

How can they be modified?

- The type of instructions you give students.
- Leave blanks (one per each sorting scheme) and ask students to fill in the blank with the appropriate information.
- Can include intentional “error” cards so that students can’t identify a group as “all the ones that are left”.

Novice vs. Expert Card Sort

How can these help you make instructional decisions?

- If students are consistently using the “novice” scheme, may need to go back and help them make explicit connections that would lead to the “expert” scheme.

- If students are consistently using the “expert” scheme, it is probably appropriate to move on to the next topic.
Novice vs. Expert Card Sort

How can these help you make instructional decisions?

- Warning: in research the “novice” and “expert” schemes are heavily tested for validity. Remember that your students may not be sorting according to your preconceived schemes not because they don’t understand, but because of ineffective card and category design.

*Rigging the Deck*, by Wolf, Dougherty, and Kortemeyer
Think of one of the classes in which you would like to use differentiated instruction. Identify possible “novice” and “expert” categories for one of the commonly confusing topics in that course.

If you have time, start identifying entries for your card sort.
One-Minute Summaries

What are they?

- A simple technique to answer the questions “Who does what to whom, when, where, how, and why?” about a given topic.

- Students “synthesize those answers into a single informative, grammatical, and long summary sentence.”

One-Minute Summaries

An Example from Classroom Research

- **Who?** teacher
- **Does what?** Assess
- **To What or Whom?** Their students’ learning
- **When?** Regularly during the semester
- **Where?** In their own classrooms

One-Minute Summaries

An Example from Classroom Research

- **How?** Using classroom assessment techniques and any other appropriate tools and methods of inquiry

- **Why?** So they can understand and improve teaching effectiveness and the quality of student learning

One-Minute Summaries

In sentence form:

- Teachers assess their students’ regularly during the semester in their own classrooms, by using Classroom Assessment Techniques and any other appropriate tools and methods of inquiry, so that they can understand and improve teaching and effectiveness and quality of student learning.

One-Minute Summaries

What makes them low-floor, high-ceiling?

- Low floor: All students can participate in making summaries.
- High-ceiling: All students can improve their summaries.
Reflective Journal Writing

What is it?

- A writing method that allows students to contextualize the new information they are acquiring.
- “Students are able to ask questions, admit confusion, make connections, and grow ideologically.”

Reflective Journals

What makes them low-floor, high-ceiling?

- Low floor: All students can write a journal entry that discusses their analysis of an assignment from their perspective or of the course.
- High-ceiling: All students can work to improve their writing, critical thinking, and metacognitive skills.
Literacy: Expanding the One-minute summary

Write a **reflective journal entry** about this course. In some textbooks, reflection is a step in the writing process where the writers go back and examines at your writing creations after you have been away from the work for a while. How have you grown as a writer this semester? What was your favorite assignment? Why? Which writing piece is your least favorite? Why? **What words of wisdom would you want to impart to the students next semester to help them?** In what way are you proud of yourself for the work you completed this semester?
Making Time for Differentiated Instruction

• The strategies discussed in this session are all intended to be incorporated into a standard class period.
  o Concept Check: ~5 minutes
  o Equivalence Justifications: ~30 minutes
  o Novice to Expert card sort: ~20 minutes
  o One Minute Summaries: ~15 minutes
Making Time for Differentiated Instruction

• Creating the activities is where the big time commitment exists
  o Start small
  o Collaborate and share activities
Department Support

• Faculty Learning Groups
• Peer observation
• Repository of faculty-generated activities
Differentiated Instruction

• What type of support would you need to incorporate differentiated learning strategies in your classes?
• Which activity seems most appealing to try first?
• Do you have any other questions about using any of these activities for differentiated instruction?
Links and Citations


Contact Information

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• Lesha Smith, Department Chair, Academic Foundations – Temple College
  lesha.smith@templejc.edu

• DCMP Resource Site
  www.dcmathpathways.org

• To receive monthly updates about the DCMP, contact us at
  dcmathpathways@austin.utexas.edu
The Charles A. Dana Center at The University of Texas at Austin works with our nation’s education systems to ensure that every student leaves school prepared for success in postsecondary education and the contemporary workplace.

Our work, based on research and two decades of experience, focuses on K–16 mathematics and science education with an emphasis on strategies for improving student engagement, motivation, persistence, and achievement.

We develop innovative curricula, tools, protocols, and instructional supports and deliver powerful instructional and leadership development.