



Differentiation of Instruction: The Flavours of DI

Presented by

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Based on the Work of Carol Tomlinson
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Differentiation is based on a diagnosis of student **INTEREST ** LEARNING PROFILE ** READINESS**

TYPE OF DIFFERENTIATION	WAYS TO ADDRESS	TEACHER TALK
INTEREST <ul style="list-style-type: none"> - Passions - Hobbies - Family interests or pursuits - Organizational affiliations – after school clubs, extracurriculars - What they watch on TV - Where they go on vacation - The kind of music they listen to - The friends they hang out with - Electives they take 	<ul style="list-style-type: none"> ▪ Show how current topics are related to and can enhance skills necessary for the pursuit of topics and subjects of student interest ▪ Ask students to share their interest, hobbies, passions, unique perspectives and personal experiences in order to enhance everyone's experience with the topic 	<ul style="list-style-type: none"> ▪ Some of you raise horses, and are wondering how the life cycle of a horse compares to the life cycle of humans...Others might be more interested in a pet... ▪ Choose one of the following arrangements I have here in front of the classroom to use as the model for your still life drawing. <ul style="list-style-type: none"> • For those of you who are interested in finding out more about the 4th state of matter, I put some magazines in the resource center. • For those of you who are interested in finding out more about how architects use CAD programs to save time, I put some magazines in the resource center. ▪ For those of you who are interested in finding out more about 20th century poetry, I put some samples and anthologies on the back table. ▪ What are some things that YOU hope we do during this unit? ▪ I want you to research the leisure activities popular in a French speaking country that you have visited or would most like to visit someday. Later, we'll share what we learned in mixed interest groups... ▪ I want you to look for examples of fractions in your after school activities ▪ I want you to research the ways in which a specific medium exploits a specific rhetorical device. Later, we'll share what we learned in mixed interest groups...

	<ul style="list-style-type: none"> ▪ Hunt out and support related mentorships or internships 	<ul style="list-style-type: none"> ▪ You will each take on a different role to discuss the tobacco industry: <ul style="list-style-type: none"> • Tobacco farmer • Lobbyist for the tobacco industry • Person with emphysema • Teen who smokes • Oncologist ▪ Amanda, I've found someone at our local university who is willing to have you work with him in his lab... ▪ Michael, I've found someone at the historical society who is willing to have you work with him in setting up the next exhibit.
<p>Summary: Throughout the unit, incorporate examples and illustrations based on current and emerging student interests and provide appropriate materials to further students' independent explorations of unit topics</p> <p>The appropriate question in today's diverse classrooms is no longer, "How can I motivate students?" Rather, it is, "What motivates this particular student and how do I design work that is responsive to these motivations?" Schlechty (1977)</p> <p>"In general, it appears that interest contributes to a sense of competence and self determination in learners and to positive learning behaviors, such as willingness to accept challenge and persist in it...Allowing students to do something they love is likely to help them develop both a positive attitude about learning and their creative potential" - Tomlinson, Brighton, Hertberg, Callahan, Moon, Brimijoin, Conover, & Reynolds (2004).</p> <p>The psychological state of complete involvement in an activity to the degree that time and fatigue disappear. Flow stems from interest, is highly satisfying, and may serve as a catalyst for developing new levels of skill in the interest area, particularly when the task at hand is just a bit in advance of the student's current skills level...."- Tomlinson, Brighton, Hertberg, Callahan, Moon, Brimijoin, Conover, & Reynolds (2004); Based on work by Csikzentimihalyi (1988, 1990, 1993)</p>		

<p>LEARNING PROFILE</p> <ul style="list-style-type: none"> - Learning styles; visual, auditory, kinesthetic; whole-to-part vs. part-to-whole, concrete vs. abstract, sequential vs. random, etc. - Intelligence 	<ul style="list-style-type: none"> ▪ Allow students to gain access to content through varied means: listening, reading, discussing, journaling, etc. ▪ Offer a variety of graphic organizers – some that focus on sequential 	<ul style="list-style-type: none"> ▪ To get started with today's work on rhyming words, you may choose to listen to poems that rhyme, read poems that rhyme, or write a poem that rhymes ▪ To get started with today's work on alliteration in poetry, you may choose to listen to poems using alliteration, read poems that use alliteration, or write a poem using alliteration ▪ To prepare for the debate on the causes of the World War II, you may watch a brief video, read the article provided or take part in a practice debate with a partner.
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<p>preferences; Sternberg-creative, analytical, practical; Gardner - verbal-linguistic, logical-mathematic; visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal, intrapersonal, naturalist, existential</p> <ul style="list-style-type: none"> - Environmental preferences – temperature, light, availability of food & drink, presence or absence of background noise or music, etc. - Gender or culture related preferences – competition vs. collaboration, individual vs. group emphasis - Group orientation - work alone or with others; focus on peers vs. focus on adult 	<p>recording of information, others in more random or abstract formats</p> <ul style="list-style-type: none"> ▪ As long as they do not call attention to themselves or disturb others, try to let students work where they wish in the room, alone or with a partner, sitting, standing, or lying down. Allow students to listen to music if that enhances their concentration. ▪ Provide areas of the room with few visual or auditory distractions for those who need that environment. ▪ When possible, allow students the option of competing against others or competing against themselves ▪ Provide product options whenever possible. 	<ul style="list-style-type: none"> ▪ Now that you have seen the various note-taking organizers we have available for you, choose the one that you think will work best for you. ▪ You may work alone or with a partner ▪ If you need a quiet place to work, you may use a study carrel in the back of the room or get a pass to the media center. ▪ Last week we broke into teams to see which team knew the most math facts. Today, you may compete against another student OR work by yourself, to improve your score and/or your time. ▪ Today we will work on our jump rope skills (or aerobic exercises). You may either compete against yourself to improve your endurance record or compete against a partner. Last week we broke into teams to see which team could define the most SAT prep vocab. Today, I would like you to work alone to improve your score. ▪ It doesn't matter to me HOW you show me that you know the parts of a plant and how they work together to keep a plant healthy. You could tell me, show me, or write or draw about it. ▪ You may present your final product in front of the class or to me via video or appointment ▪ To write your newsletter, you will need someone who is a good artist, someone who is a good writer, someone who is a good researcher and someone who is a good organizer
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Summary: Provide multiple ways for students to gain access to unit content, make sense of that content, and show what they know, understand, and are able to do with that content at the end of a learning experience.

Teach me my most difficult concepts in my preferred style. Let me explore my easiest concepts in a different style. Just don't teach me all the time in your preferred style and think I'm not capable of learning. - Virleen M. Carlson, Center for Learning and Teaching, Cornell University.

“Students whose instruction matched their pattern of abilities performed significantly better than the others. Even by partially matching instruction to abilities, we could improve student achievement” (Sternberg, 1997).

Addressing a student’s learning style through flexible teaching or counseling results in improved achievement and attitude gains in students from a wide range of cultures (Sullivan, 1993).

Learning profile adds to our understanding of students’ performance and should be taken into account in classrooms in terms of both instruction and assessment. Students taught with a learning profile match outperform those taught in a more traditional manner. Grigorenko, E. and R. J. Sternberg (1997). “Styles of thinking, abilities, and academic performance.” *Exceptional Children* 63: 295-312.

Campbell, L. and B. Campbell (1999). *Multiple intelligences and student achievement: Success stories from six schools*. Alexandria, VA, Association for Supervision and Curriculum Development.

A multiple intelligence focus in instruction leads to increased test scores. Students from varied cultural and economic groups flourish academically in such settings. Student and staff attitudes improve as well.

SCIENCE: An example based on interest and learning profile

Directions: You have been given a set of “windows” that show you what the sky looks like on a particular day. Please choose one of the following scenarios and show what you have learned about clouds by completing one of the products described.

<p>Meteorologist: You are a meteorologist working for the local news. The show will “air” in 10 minutes with the weekend’s forecast, but all the equipment is failing. Look out your “windows” and use the clouds to predict the weather forecast for the local community. You can either write your script for the news show explaining your prediction and your reasons for the prediction, create a poster or prop for the news show that shows the audience what you think the weather will do and why, or role-play the part of the meteorologist and verbally present your forecast predictions and your reasoning to the audience.</p>	<p>Military: You are an officer, general, or soldier in the Army. Your troops need to finish their training this weekend because they have been assigned to a search and rescue team. In order to finish their training, they must successfully complete their last two jumps from a plane. The pilot needs to be booked and the supplies prepared. Look through your “windows” and use your knowledge of clouds to decide which day would be best to jump. Write a letter to the pilot to let him know which day and why, create a poster to inform the troops which day and why, or role-play verbally telling the troops which day and why.</p>	<p>Athletic Director/Coach: You are working for the local college team as a director, coach, or player. The championship game is this Saturday with your chief rival. If you win, it will mean big money for the school. You have a great chance of winning because the star quarterback has recovered and is back in the game. However, if it rains, he has a greater chance of slipping and injuring himself again, which would knock him out for the rest of the game and next season too. The coach needs to turn in his roster for the starting lineup. Should he risk starting this player this Saturday? The young man really wants to play because he doesn’t want to disappoint his fans and he heard there will be NFL talent scouts there, but he doesn’t want to take the risk of being injured either. Looking through your “windows” and using your knowledge of clouds, decide whether the star quarterback should play or not. Then write a note from the quarterback to the coach telling him whether he wants to start or not and why, create a poster to the fans explaining whether he will play or not and why, or role-play a conversation between the quarterback and the coach trying to make the decision and their reasoning.</p>
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<p>READINESS</p> <ul style="list-style-type: none"> - Attitude toward school/subject/topic - School and/or general experience with topic or aspect of topic - Knowledge, understanding and skill in topic prerequisites or related topics - Misunderstandings about topic or discipline - Overgeneralizations about the topic or discipline - Sophisticated use of vocabulary of the topic or discipline - Evidence of skills of the discipline - Insightful connections between the current topic and other topics in the discipline or in other disciplines - General communication, thinking, reasoning skills, etc. 	<ul style="list-style-type: none"> ▪ Offer mini-lessons or practice sessions on missing prerequisite skills & on more advanced skills for those who are ready to move ahead <ul style="list-style-type: none"> ○ Hook current topics & subject to topics and subjects where the student has experienced some success in the past ○ Provide background reading, information, and/or skills practice to students who lack exposure to a topic ○ Help students who already have a background in the topic see how the work will enhance or refine their current knowledge, understanding, and skills ▪ Become familiar with above-grade-level standards related to course topics 	<ul style="list-style-type: none"> ▪ Please see the board for this week's scheduled teacher talk time. If your name is listed you MUST attend the mini lesson. You may also attend any session that you think is right for you. <ul style="list-style-type: none"> ○ Let me show you the connection between song lyrics and poetry ○ Here is a list of key board shortcuts for those of you who haven't had a computer class before. ○ If you are already familiar with the periodic table, I will introduce you to other versions that can help you see the relationships between the elements in different ways ○ Those of you who already take piano lessons may use this time to practice one of your recital pieces. (Use the headphones!) ○ Since you three already know the notes of the treble and bass clefs, we will learn about the alto & the tenor clefs. <p>Overarching (K-12) Standard: Organisms maintain a dynamic equilibrium that sustains life</p> <p>ELEMENTARY VERSION</p> <ul style="list-style-type: none"> • describe basic life functions of common living specimens (guppy, mealworm, gerbil) • Describe some survival behaviors of common living specimens. <p>INTERMEDIATE VERSION</p> <ul style="list-style-type: none"> • compare the way a variety of living specimens carry out Basic life functions and maintains dynamic equilibrium.
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| | | <ul style="list-style-type: none"> • explain the need for a constant input of energy for living organisms <p>COMMENCEMENT VERSION</p> <ul style="list-style-type: none"> • Explain the basic biochemical processes in living organisms and their importance in maintaining dynamic equilibrium. |
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Summary: Work to provide instruction that is just a little too hard for a student's current readiness levels along with the scaffolding needed for success

"Tasks must be at the proper level of difficulty to be and to remain motivating: tasks that are too easy become boring; tasks that are too difficult cause frustration" (Bransford, Brown, and Cocking, 1999 & 2000).

In regard to readiness for a given task, Vygotsky proposed that an individual learns in his or her "zone of proximal development" (ZPD). This term refers to a point of required mastery where a child cannot successfully function alone, but can succeed with scaffolding to support. In that range, new learning will take place. The teacher's job is to push the child into his or her ZPD, coach for success with a task slightly more complex than the child can manage alone, and thus, push forward the area of independence. - Lev Vygotsky (1978, 1986)

Advanced students may need

- to skip practice with previously mastered skills and understandings
- activities and products that are quite complex, open-ended, abstract, and multifaceted, drawing on advanced reading material
- A brisk pace of work, or perhaps a slower pace to allow for greater depth of exploration

Students with less-developed readiness may need

- someone to help them identify and make up gaps in their learning so they can move ahead
- more opportunities for direct instruction or practice
- activities or products that are more structured or more concrete, with fewer steps, closer to their own experiences, and calling on simpler reading skills
- a more deliberate pace of learning

Secondary Social Studies: New World Explorers

KNOW	UNDERSTAND	BE ABLE TO DO
<ul style="list-style-type: none"> • Names of New World Explorers • Key events of contribution 	<ul style="list-style-type: none"> • Exploration involves <ul style="list-style-type: none"> • risk • costs and benefits • success and failure 	<ul style="list-style-type: none"> • Conduct research • Share results • Demonstrate key knowledge and understandings



Using a teacher-provided list of resources and list of product options, show how 2 key explorers took chances, experienced success and failure, and brought about both positive and negative change. Provide proof/evidence.

Using reliable and defensible research, develop a way to show how New World Explorers were paradoxes. Include and go beyond the unit's principles.

Elementary Language Arts: Writing prompts

<p>Your principal is thinking about not having recess time next year. Before she decides what to do, she wants to know what students think.</p> <p>Write a letter to the principal. Try to convince her to agree with what you think about having school recesses next year.</p> <p>State your opinion about whether or not your school should have recess next year.</p> <p>Give at least 3 reasons for your opinion.</p> <p>End your letter by reminding her of your opinion and asking her to make a decision in your favor.</p>	<p>Your principal is thinking about not having recess time next year. Before she decides what to do, she wants to know what students think.</p> <p>Write a letter to the principal. Try to convince her to agree with what you think about having school recesses next year. Think about all the grade levels in your school when coming up with good reasons. Would kindergarteners have the same opinion as 4th graders? Remember that the principal is an adult and she might have different ideas than you about recess. You will have to come up with arguments that will be meaningful to her and other adults. Be sure your letter is persuasive, but respectful.</p>	<p>Your principal is thinking about not having recess time next year. Before she decides what to do, she wants to know what students think and why.</p> <p>Write a letter to the principal.</p> <p>Try to convince her to agree with what you think about having school recesses next year</p>
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To Think About

Possible KUD	Should the teacher assign activities or let kids pick?	How could the teacher differentiate this activity for interest as well?

MATH: ORIGINAL ASSIGNMENT

Work with your group to design and carry out a survey. Follow the steps below:

1. Carefully write the question you wish to ask.
2. Choose four or five answer choices
3. Design a frequency table to collect the choices, frequency each occurred, fraction it occurred, and percent it occurred.
4. Design a graph to represent the data (bar or pie)
5. Write an analysis of your survey as if it were an article for a newspaper. What was your question? Who did you ask? What were the results?

Ideas to Differentiate for Interest & Learning Profile	Ideas to make the task challenging to more advanced students	Ideas to support struggling learners

Ideas to Differentiate for Interest & Learning Profile	Ideas to make the task challenging to more advanced students	Ideas to support struggling learners
<p>There is interest DI built in in terms of question they ask. You could make some specific suggestions that you know would appeal to the students in your class based on their interests.</p> <p>Suggest other ways to display/discuss results: Present your findings in a short speech, for example.</p>	<p>Same as original EXCEPT:</p> <p>3. Choose and depict the best way to represent the data. Be ready to explain why you chose the type of graph you did and why your choice was a good one.</p> <p>5. Write an analysis of your survey as if it were an article for a math journal. What was your question? Who did you ask? What were the results? What are possible sources of error? What are the real-world implications for your findings?</p>	<ul style="list-style-type: none"> • Provide the question and the data. • Provide the frequency table. • Provide sample graphs • Answer questions about findings rather than writing a newspaper article. • Suggest other ways to display/discuss results: <ul style="list-style-type: none"> ○ Annotate your graph so that it is clear what your question was, who you asked, and what the results were. ○ Be ready to explain your findings aloud.

Flexible Grouping

What is flexible grouping?

- A policy in which teachers ensure that students, over time, work in a great variety of grouping configurations

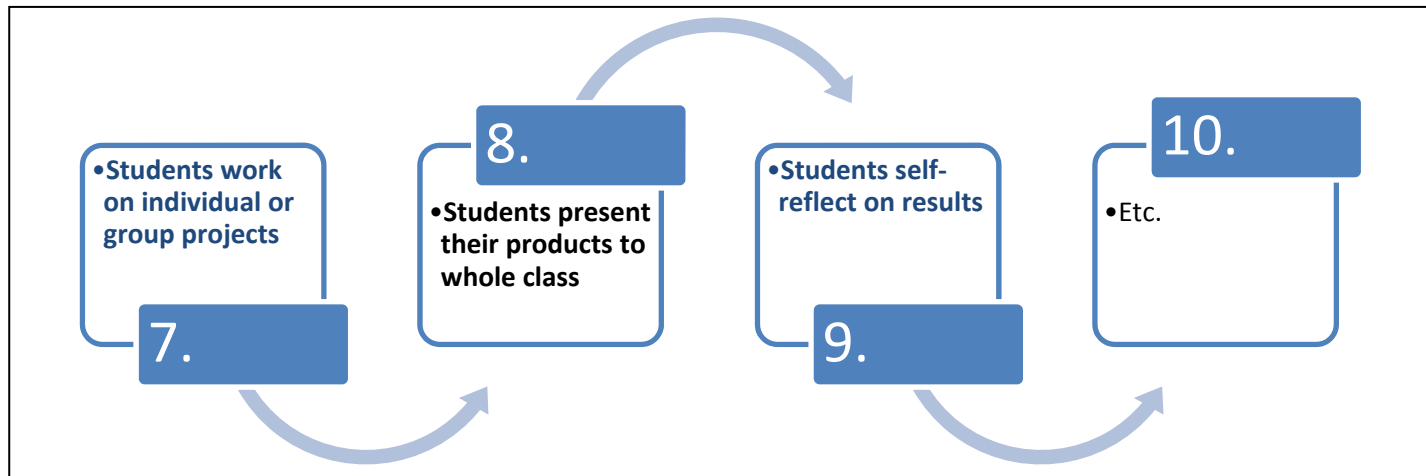
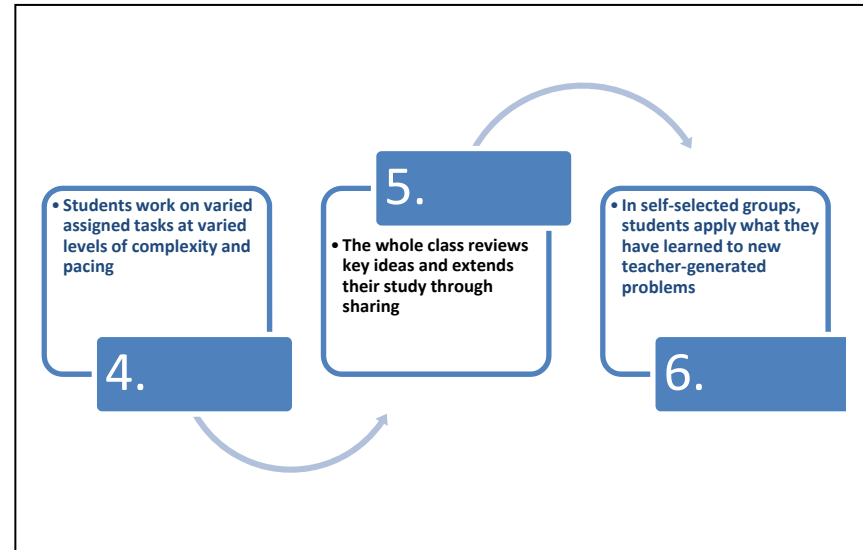
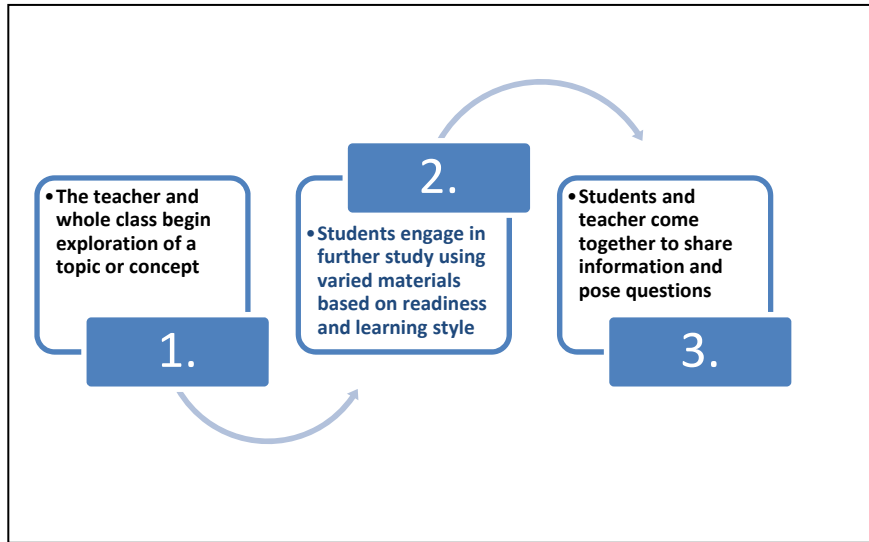
Why use flexible grouping?

- Flexible grouping ensures that all students learn to work independently, cooperatively and collaboratively in a variety of settings and working with a variety of peers
- Increases chance that learning activities will match more students' needs more of the time, leading to faster, better, deeper learning...without streaming

Flexible grouping means consistently fluid working arrangements

- Whole class, individuals, pairs, triads, quads, etc.
- Student selected, teacher selected, at random
- Based on interest, learning profile, readiness
- Homogeneous, heterogeneous

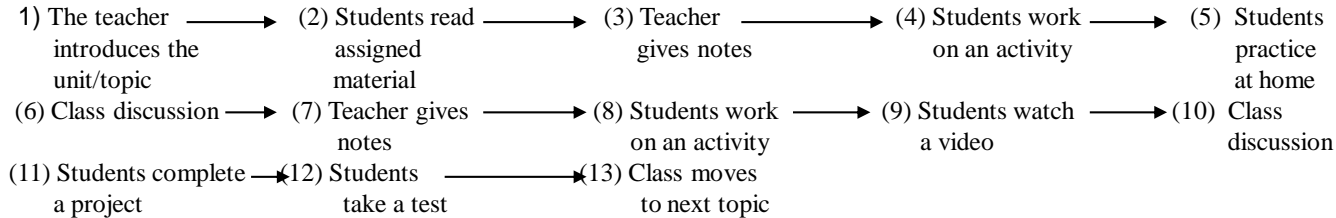
A SAMPLE FLOW OF DIFFERENTIATION



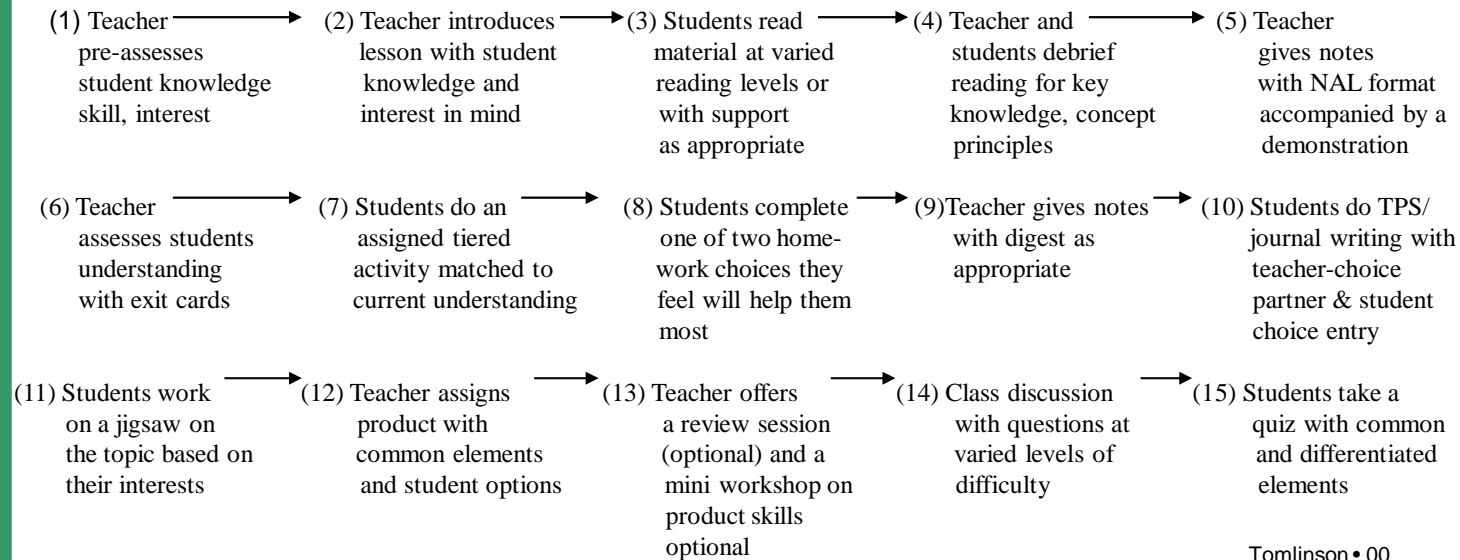
Before and After: The Flow of Instruction

(A Secondary Example)

BEFORE



AFTER



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Grade 3 READING UNIT: PROBLEMS AND SOLUTIONS; Dr. DeSoto by William Steig

Big ideas about problem-solving

Problem-solving can be viewed as a process.

Inspiration to solve problems can come from a variety of places.

How a person defines a problem can affect the solutions that she/he develops.

Differentiated Component

All students will read the story.

Story will be on tape for students who need/choose to listen to the stories while they read.

Some students will receive vocabulary support prior to reading the story

Whole-Class Component

- Students will think & discuss problem-solving:
 - Are there other ways to out-fox the fox?
 - How else could Dr. DeSoto have solved his problem?
 - What characteristics of Dr. Desoto and his wife help him solve the problem?
- All students will write entries in their Reading Response Journals about the stories they read.
- Students will read other trickster tales and compare story elements/problem-solving behavior in the stories.

Differentiated Component: Varied Tales

- Struggling students will choose from a list of tales that they are familiar with & that are on the appropriate reading level.
- Students working at grade level will choose from a list of tales that are on the appropriate reading level. Some will be familiar and others will be less so.
- Advanced students will choose from a list of less-familiar tales & that are at an advanced reading level.

Differentiated Component: Struggling & On-Grade Level Learners

Students will select one story and compare it to the Dr. DeSoto tale using either Graphic Organizer L (on-grade) or M (struggling)

Note: Version M would have some or all of this column already filled in – or teacher may work with a small group to complete this portion of the organizer.

Organizers L & M

Choice Story	Comparison elements	Doctor DeSoto
	Setting	
	Characters	
	Problem	
	Events	
	Where did the character get the ideas to solve problems?	
	Solution	
	(Your choice)	

Organizer N

Choice Story	Comparison Elements	Doctor DeSoto
	Story elements (character, setting)	
	Problem	
	Solution	
	Inspiration sources (Where did the character get the ideas to solve problems?)	
	How are these stories a reflection of the cultures that created them?	
	(Your Choice)	

Differentiated Component: Advanced Learners

Students will compare and contrast their two stories using the provided graphic organizer (N).

Whole-Class Component

Together, the class will

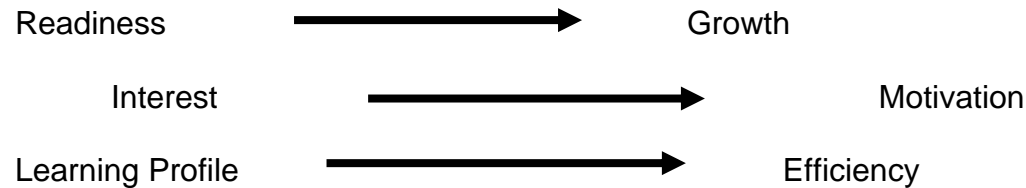
- make a class list of “inspiration sources” for solving problems from the different tales they have read.
- brainstorm additional ideas from their own lives, and add them to the class list.

Differentiated Component

Pick one character that interests you. Write, draw or tell about how the character reminds you of someone you know. Include information about times when *you’ve* been like this character.

Do you solve problems the same way as this character or in a different way? Explain your thinking. (OR: Describe how you or someone you know solved a problem in a similar way to the character you chose.)

So, What's the Point?



Differentiated Instruction is a complex skill that takes time and support to develop

Begin

- At a comfortable pace
- With a comfortable topic
- Using one or two strategies
- In one subject area or prep

Reflect

- Give yourself a chance to develop
- Don't give up if it doesn't work the first time
- Work to improve in small steps, to move in right direction

Growing in Differentiation

- Read and discuss one or more of the suggested ASCD books (study guides available online at www.ascd.org)
 - Staff Development for Differentiated Instruction: An ASCD Toolkit by Cindy Strickland (in press)
 - Professional Learning Communities & Differentiation (in press)
 - Tools for High Quality Differentiation: An ASCD Toolkit by Cindy Strickland
 - Fulfilling the Promise of the Differentiated Classroom by Carol Tomlinson
 - The Differentiated Classroom: Responding to the Needs of All Learners by Carol Tomlinson
 - How to Differentiate Instruction in Mixed-Ability Classrooms, 2nd Edition by Carol Tomlinson
 - Leadership for Differentiating Schools and Classrooms by Carol Tomlinson
 - Differentiation in Practice: A Resource Guide for Grades K- 5 & for Grades 5-9 (by Carol Tomlinson with Caroline Eidson)
 - Differentiation in Practice: A Resource Guide for Grades 9-12 (by Carol Tomlinson with Cindy Strickland)
 - Integrating Differentiated Instruction and Understanding By Design (by Carol Tomlinson with Jay McTighe)
- Get together with colleagues to view instructional videos (available through ASCD)
- Attend the University of Virginia's Institutes on Academic Diversity (Website at http://curry.edschool.virginia.edu/gifted/projects/siad/index.php?option=com_content&task=view&id=908&Itemid=170)
- Attend an ASCD conference on differentiation - www.ascd.org
- Take an ASCD online course – www.ascd.org (Beginning and intermediate courses available)

CELEBRATE YOUR EFFORTS TO GROW PROFESSIONALLY