

Tiered Lessons (Secondary)
A Strategy for Readiness Differentiation
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Definition of Tiering

Tiering is a process of adjusting the degree of difficulty of a question, task, or product to match a student's current readiness level. Varied levels of activities ensure that students explore ideas at a level that builds on their prior knowledge and prompts continued growth.

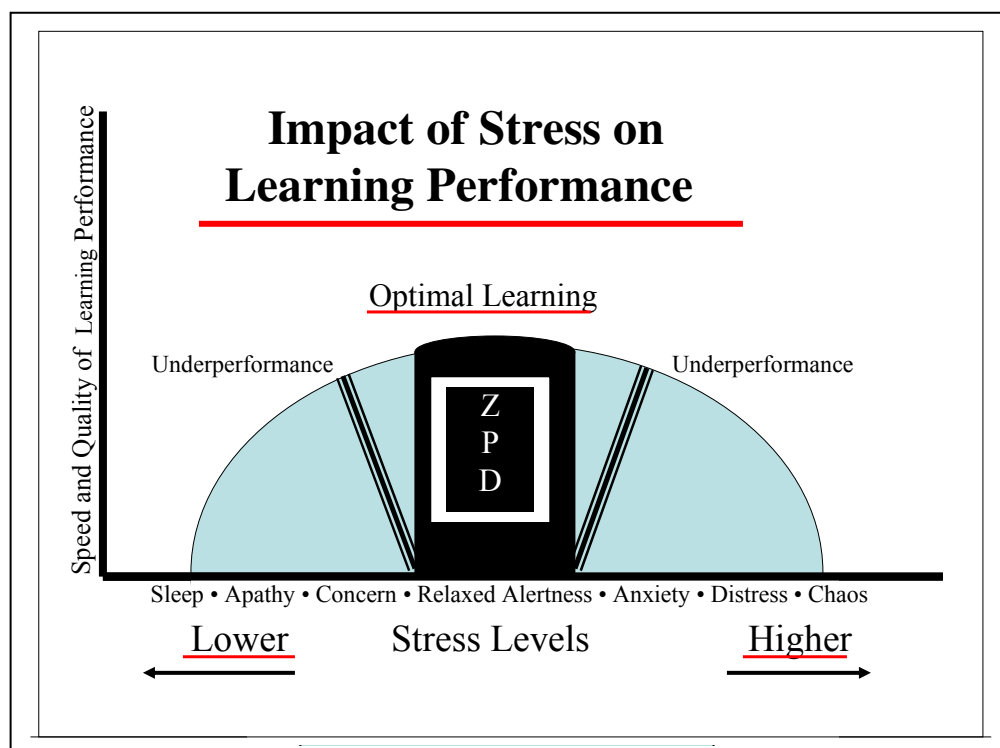
What Can Be Tiered?

- | | |
|---|---|
| <input type="checkbox"/> READINGS | <input type="checkbox"/> EXPERIMENTS |
| <input type="checkbox"/> ACTIVITIES | <input type="checkbox"/> MATERIALS |
| <input type="checkbox"/> HOMEWORK | <input type="checkbox"/> SKILLS PRACTICE |
| <input type="checkbox"/> CENTERS | <input type="checkbox"/> ASSESSMENTS |
| <input type="checkbox"/> DISCUSSION QUESTIONS | <input type="checkbox"/> WRITING PROMPTS |
| <input type="checkbox"/> WORKSHEETS | <input type="checkbox"/> GRAPHIC ORGANIZERS |
| <input type="checkbox"/> ASSIGNMENTS | <input type="checkbox"/> ETC.! |

Why Tier?

“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).

If everybody had to learn the same thing at the same time in the same way, it would be too easy or too hard because everybody is different, not the same. If it were like that, I would be bored because school would be too easy or bored because it would be too hard. - David, age 10



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

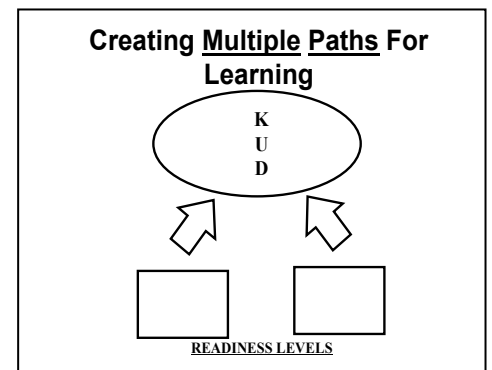
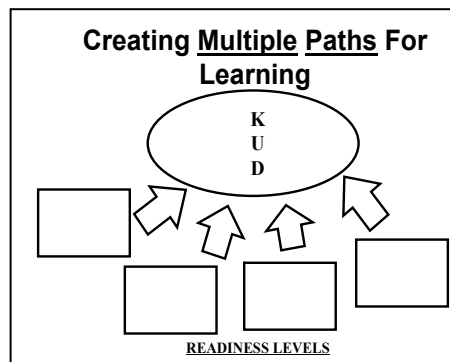
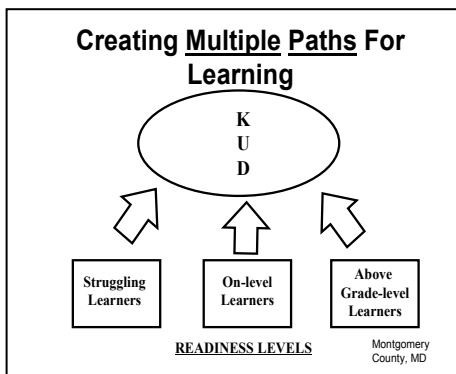
- someone to help them identify and make up gaps in their learning so they can move ahead
- more opportunities for direct instruction or practice
- activities or products that are more structured or more concrete, with fewer steps, closer to their own experiences, and calling on simpler reading skills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

To tier an assignment, a teacher

1. Determines what students should know, understand and be able to do as a result of the task
2. Considers the readiness range of students relative to these goals
3. Develops or selects an activity that is interesting, requires high-level thought, and causes students to work with the specified knowledge.
4. Clones that activity as many times as needed to address differences in student readiness. Such tasks usually cause students to work with the same or similar knowledge and skills, but always lead to the same understanding or big idea.
5. Matches task to student using appropriate assessment data.

The Teacher’s Challenge: Developing “respectful” cloned activities that are equally:

- Engaging
- Interesting
- Appropriately Challenging



Things Tiers Have in Common:

- Same concept or skill
- Whole class activity
- Begin where students are
- Some activities in the tasks may be the same

Differences in Tiers:

- Amount of structure
- Number of facets
- Complexity
- Pace
- Level of independence

All tiers should:

Build understanding
 Challenge students
 Be interesting and engaging
 Be “respectful”

Remember...**Tiering**

- Is ONE *form* of differentiation; differentiation according to readiness
- Uses groups based upon students’ *readiness* for a particular task
- Is driven by pre-assessment


Tiering Is Not

- The ONLY kind of differentiation, although it is foundational.
- Locking students into “ability boxes” because groups are *flexible* and vary according to the task

AS YOU STUDY THE EXAMPLES THAT FOLLOW, MAKE SURE YOU FOCUS ON AT LEAST TWO DIFFERENT SUBJECT AREAS. THAT WILL GIVE YOU A BETTER FEEL FOR THE STRATEGY AND ITS POSSIBILITIES

NOTE THAT MANY OF THESE EXAMPLES DO NOT INCLUDE A KUD – YOU WILL NEED TO FIGURE OUT WHAT THE COMMON LEARNING IS ON YOUR OWN. REMEMBER, DIFFERENTIATION REQUIRES THAT ALL TASKS LEAD TO THE SAME GOALS. IF YOU FIND THAT SOME TASKS VIOLATE THIS RULE – HOW WOULD YOU ADJUST THE TASKS SO THAT THEY ALL LEAD TO THE SAME KUD?

Tiered Activities ELA



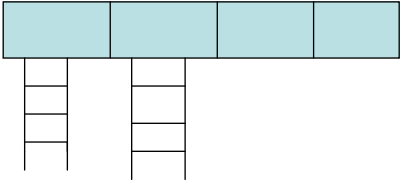
Using Small Groups Enhance Writing

Group 1

- Meet with teacher
- Brainstorm for hot topics
- Web ideas for possible inclusion
- Develop a word bank
- Storyboard a sequence of ideas
- Make support ladders
- Begin writing

Group 2

- Alone or in pairs, develop a topic
- Make a bank of power ideas
- Web or storyboard the sequence and support
- Meet with teacher to “ratchet”
- Begin writing
- Paired revision
- Paired editing



Persuasive Writing

1. Your little brother's principal is thinking about not having recess time next year. Your brother is very upset. Write a letter to the principal. Try to convince her to agree with what you think about having school recesses next year. State your opinion about whether or not the school should have recess next year. Give at least 3 reasons for your opinion. End your letter by reminding her of your opinion and asking her to make a decision in your favor
2. Your little brother's principal is thinking about not having recess time next year. Your brother is very upset. Write a letter to the principal. Try to convince her to agree with what you think about having school recesses next year
3. Your little brother's principal is thinking about not having recess time next year. Your brother is very upset. 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 the 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.

English PLOT (Tomlinson)

A. Create a fortune lines visual (with narration) that shows the emotional state of the little prince at what you believe are the 8-10 most important points in the book. Explain why you selected these events.

B. Create a fortune lines visual (with narration) that shows the emotional state of the little prince at what you believe are the 8-10 most important points in the book. Be sure to arrange them in the order in which they happened rather than the order they are written about in the book. Defend your selection of events and your chronology.

LANGUAGE ARTS GRAPHIC ORGANIZERS

HARDER Comparison: Conceptual Matrix

	Romeo & Juliet	Shakespeare in Love
Rivalries		
Conflict		
Selfless Love		
Revenge		
Gaming		

EASIER Comparison: Concrete Matrix

	Romeo & Juliet	Shakespeare in Love
Plot		
Setting		
Fools		
Ending		
Themes		

LANGUAGE ARTS JOURNAL VERSION A (below grade)

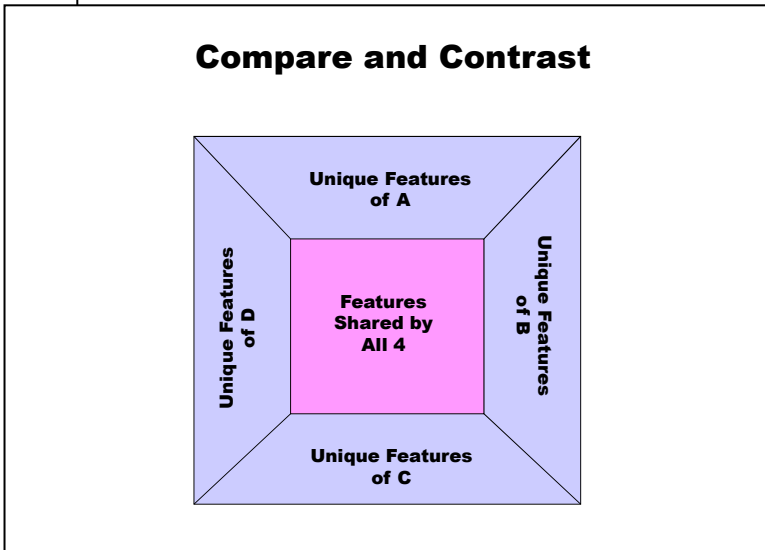
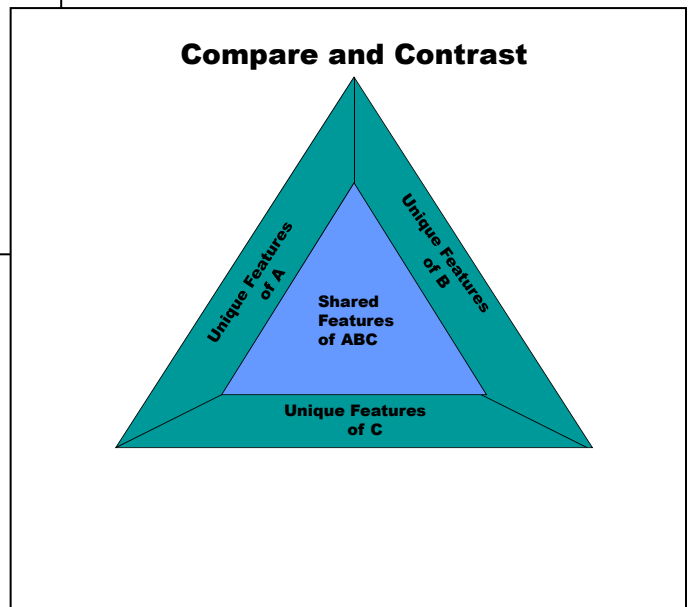
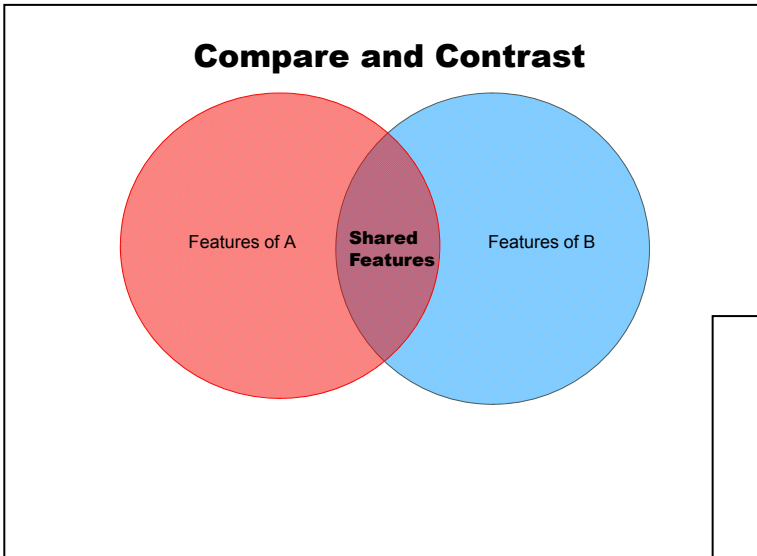
CONTENT	RESPONSE
Key phrases (provided) Important words (provided) Main ideas (provided) Puzzling passages Summaries Powerful passages Key parts Etc.	How to use ideas Why an idea is important Questions Meaning of key words, passages Predictions Reactions Comments on style Etc.

LANGUAGE ARTS JOURNAL VERSION B (at grade)

CONTENT	RESPONSE
Key phrases Important words Main ideas Puzzling passages Summaries Powerful passages Key parts Etc.	How to use ideas Why an idea is important Questions Meaning of key words, passages Predictions Reactions Comments on style Etc.

JOURNAL VERSION C (above grade)

CONTENT	RESPONSE	ANOTHER VOICE
Key passages Key vocabulary Organizing concepts Key principles Key patterns	Why ideas are important Author's development of elements How parts and whole relate Assumptions of author Key questions	Teacher Author Expert in field Character Satirist Political cartoonist Etc.



Tiered Assignment – Poetry

Group 1: Work together as a group to complete the following tasks:

Choose three poems, one from each of three provided lists of poems. (Note: Poems are screened for readability and clearness of theme.)

Read the poems and use the graphic organizer describing poetic forms to help you label the poetic form or pattern as haiku, concrete poetry, or couplet.

Select one of the poems, and use a different poetic form or pattern to express the same idea. For example: if you choose a couplet about love, change it into a concrete poem or a haiku about love. (Be sure you follow the pattern correctly!)

Highlight and/or label similarities and differences between your poem and the original.

List ways that using a different pattern for the poem changes – or doesn't change – the poem's impact. Be prepared to share your new poem with the class.

Group 2: Work together as a group to complete the following tasks:

Choose three poems, one from each of three provided lists of poems.

Read the poems and classify them by poetic form or pattern as haiku, concrete poetry, or couplet.

Select one of the poems, and use a different poetic form, pattern, to express the same idea. For example: if you choose a couplet about love, write a concrete poem or a haiku about love. (Follow the pattern carefully and label poetic form!)

Write a half page about how changing the poetic form (pattern) changes – or doesn't change – the poem's impact.

Be prepared to share your new poem with the class.

Group 3: Work together as a group to complete the following tasks:

With text, locate three poems: one haiku, one concrete poem, and one couplet.

Read the poems. For each poem, identify the poetic form, and label the pattern.

Select one of the poems, and use a different poetic form to express the same idea.

In detail, compare and contrast your new poem and the original poem.

Write about how changing the poetic form – or doesn't change – the poem's impact.

Be prepared to share your new poem with the class.


The Maturation of Tom Sawyer

Learning Preference	<u>Level 1:</u> <u>On or Below Grade Level</u>	<u>Level 2:</u> <u>On or Above Grade Level</u>
Artist	The Writing's On the Wall You ARE Tom Sawyer. You will create a "Growth Mural" of yourself to give to Becky in order to show her how much you've matured.	Life is Like a Box of Chocolate Illustrate Tom's growth or maturation through the use of an extended metaphor or simile that compares Tom's growth process to _____
Announcer:	Hannibal on a Wire Create an audio recording of the scene that you feel was the most important to	Tommy Goes to Hollywood Create and produce an NPR segment in which the hosts of the show interview Steven Sielberg

	Tom's growth.	about his upcoming film adaptation of <i>The Adventures of Tom Sawyer</i>
Writer:	<p>Growth Report Card</p> <p>You are a psychologist hired by Aunt Polly to examine Tom's behavior and assess his growth.</p>	<p>Investigative Report</p> <p>Develop a Private investigator's Report about Tom's emotional and mental growth and well-being.</p>
Actor:	<p>Lights, Camera, Action!</p> <p>Choose an important scene that demonstrates Tom's growth of character, and act it out using props, costumes, etc.</p>	<p>Live with Dr. Phil!</p> <p>Act out an episode of the Dr. Phil show in which characters from the book will discuss whether or not they believe that Tom has grown or changed and how.</p>

Character Map Character Name _____

How the character looks




How the character thinks or acts

Most important thing to know about the character

Character Map Character Name _____

Clues the author gives us about the character




Why the author gives THESE clues

The author's bottom line about this character

Character Map Character Name _____

What the character says or does



What the character really MEANS to say or do

What the character would mostly like us to know about him or her

The Little Prince

Version A	Version B
<ul style="list-style-type: none"> • Complete an analysis matrix that specifies the fox’s feelings about responsibility toward those we tame and why he believes as he does. Be sure to note the page and paragraph numbers that support your analysis. • Read <u>Bloodstain</u> • Select an article from the folder (Varied reading levels and interest areas) • Complete an analysis matrix for each selection. Support your analysis with specific references to texts. 	<ul style="list-style-type: none"> • Find at least one piece of writing that shares the fox’s view on responsibility for those we tame and 2 contrasting pieces (more or less scaffolding as needed; note varied genres) • <u>Sample Literature: (Varied genre; varied reading levels)</u> <ul style="list-style-type: none"> ○ <i>The Little Prince</i> ○ <i>Anne Frank by Miep Gies</i> ○ <i>‘Bloodstain’</i> ○ <i>‘I Will Create’</i> ○ <i>‘To Be’ Soliloquy</i> ○ <i>News Articles</i> • Develop notes on 2 views of responsibility with reasons and illustrations from your selections

Macbeth: Lynn Fairchild *Differentiation in Practice, Grades 9-12*

- **Struggling readers:** Read a brief, teacher-approved summary of the entire tragedy as well as Act I, scene two. This summary should be a factual report of the plot and not an analysis of character or theme. Students should highlight what they think are the most important plot elements to share with the class tomorrow. Their familiarity and expertise will give them success and a “head start” and allowing them to immediately share their expertise the following day. These students should be asked in future assignments to paraphrase specific passages, soliloquies in particular. With struggling readers, amount read is not essential, but success at independent reading is.
- **On-target Readers:** Read Charles and Mary Lamb’s summary of the play (see *Tales from Shakespeare* by Charles and Mary Lamb), and read Act I, scenes two and three. Students should paraphrase (translate into their own words) the passage where Macbeth’s character is introduced to us in detail: “For brave Macbeth...upon our battlements” Act I, sc ii, l. 18-25). Come ready to discuss Macbeth’s character tomorrow.
- **Advanced Readers:** Divide these students into three groups: Plot, Character and Language, and assign them questions available on the Making Sense of Shakespeare handout. Ask students to read Act I, scenes two, three and four. If you would prefer not to use the handout, another workable assignment is to ask the students to do the following: 1) Highlight instances of motifs and figurative language; 2) Scan a speech of five lines or more for iambic and trochaic pentameter and 3) Come ready to analyze Macbeth and choose a speech to present.

Writer’s Voice: Holly Hertberg *Differentiation in Practice, Grades 5-9*

Group One: Students will work closely with the teacher to read and analyze a short piece of fiction, non-fiction, or poetry (their choice) to identify tone, word choice, and rhythm and how they contribute to a writer’s voice. Then students will practice using these different elements to develop different voices. Give students the following set of questions (you can substitute almost anything for an animal—types of cars, TV characters, buildings, etc.—choose your topic according to the dynamics of the group, or let students choose):

- If a turtle could write, what do you think his tone would sound like? What would the tone of a bear sound like? An alligator? A hyena? What kind of words do you think an elephant would use? (Long, short, hard-to-understand, simple, funny, polite, rude?) What about a hippopotamus? A pig? A goat? What kind of sentences would a woodpecker use? (Long and involved? Short and to the point? A combination?) An owl? A jackrabbit? Now choose an animal—one of the ones mentioned above or one of your own choosing-- and write a paragraph about anything you think that animal might be interested in, using the tone, word choice, and sentence construction (or rhythm) that you think that animal would use. You are trying to recreate that animal's *voice*.

Group Two: Using what you know about what develops a writer's voice (appropriate use of tone, sentence construction, and word choice), do the following:

- Think about what the voice of thunder might sound like. What about a light rain? A gentle breeze? A big gust of wind? Molasses? Diamonds?
- Write a short paragraph or poem using the voice of one of your favorites from above (or of your own creation) about any topic you think that it would be interested in writing about. Remember, you are writing as though you ARE this thing—use the first person.

Novel Think Tac Toe - Version 1

Directions: Select & complete one activity from each horizontal row to help you and others think about your novel. Remember to make your work: **Thoughtful, Original, Rich with detail, Accurate**

Character	Make a pair of collages that compare you and a character from the book in physical and personality traits. Label your collages generously so viewers understand your thinking.	Write a bio-poem about yourself and another about a main character in the book so your readers see how you and the character are alike and different. Be sure to include the MOST important traits in each poem.	Write a recipe or set of directions for how you would solve a problem and another for how a main character would solve a problem. Your list should help us know you and the character.
Setting	Draw (or paint) and write a greeting card that invites us into the scenery and mood of an important part of the book. Be sure that the verse helps us understand what is important in the scene and why.	Make a model or a map of a key place in your life, and one in the novel. Find a way to help viewers understand both what the places are like and why they are important in your life and the characters'.	Make 2 "timelines." The first should illustrate and describe at least 6-8 shifts in setting in the book. The second should explain and illustrate how the mood changes with the change in setting.
Theme	Using books of proverbs and/or quotations, find at least 6-8 that you feel reflect what's important about the novel's theme. Find at least 6-8 that do the same for your life. Display them and explain your choices.	Interview a key character from the book to find out what lessons he/she thinks we should learn from events in the book. Use a <u>Parade</u> magazine for material. Be sure the interview is thorough.	Find several songs that you think reflect an important message from the book. Prepare an audio collage. Write an exhibit card that helps your listener understand how you think these songs express the book's meaning

Version 2: (Advanced)

Directions: Select & complete one activity from each horizontal row to help you and others think about your novel. Remember to make your work: **Insightful; Accurate; Rich with detail; Vivid in image &/or wording**

Character	Write a bio-poem about yourself and another about a main character in the book so your readers see how you and the character are alike and different. Be sure to include the MOST important traits in each poem.	A character in the book is being written up in the paper 20 years after the novel ends. Write the piece. Where has life taken him/her? Why? Now, do the same for yourself 20 years from now. Make sure both pieces are interesting feature-type articles.	You are a “profiler.” Write and illustrate a full and useful profile of an interesting character from the book with emphasis on personality traits and mode of operating, While you’re at it, profile yourself too.
Setting	Research a town/place you feel is equivalent to the one in which the novel is set. Use maps, sketches, population and other demographic data to help you make comparisons and contrasts. .	Make a model or a map of a key place in your life, and one in the novel. Find a way to help viewers understand both what the places are like and why they are important in your life and the characters’.	The time and place in which people find themselves and when events happen shape those people and events in important ways. Find a way to convincingly prove that idea using the book.
Theme	Find out about famous people in history or current events whose experiences and lives reflect the essential themes of the novel. Show us what you've learned.	Create a multi-media presentation that fully explores a key theme from the novel. Use at least 3 media (for example, painting, music, poetry, photography, sculpture, calligraphy, etc.) in your exploration.	Find several songs that you think reflect an important message from the book. Prepare an audio collage. Write an exhibit card that helps your listener understand how you think these songs express the book’s meaning

SOCIAL STUDIES

A: (Page 1) Comparing Key Leaders
List only the most important information

Adapted from Karen Austin, UVA

A: (Page 2) Now list ways in which these leaders are similar

THOMAS JEFFERSON BENJAMIN FRANKLIN

ALIKE

Adapted from Karen Austin, UVA

**B: Page 1
Comparison: Categorical**

Thomas Jefferson	DIFFERENT	Benjamin Franklin
	Politics	
	Stature	
	Lifestyle	
	Creativity	
	Reputation	
	Lasting Fame	

Karen Austin, UVA

**B: Page 2
Comparison: Categorical**

Thomas Jefferson	SAME	Benjamin Franklin
	Politics	
	Stature	
	Lifestyle	
	Creativity	
	Reputation	
	Lasting Fame	

Karen Austin, UVA

Social Studies Reading / Note Taking

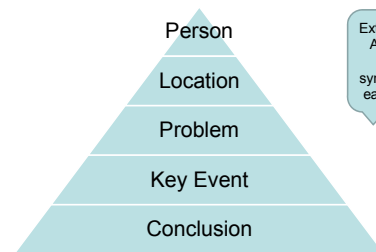
Thinking Triangle I



Extension:
Add an icon symbol for each row

Differentiation: Simplified, Realistic, and Effective: How to challenge advanced potentials in mixed-ability classrooms by Bertie Kingore, 2004, Professional Associates Publishing

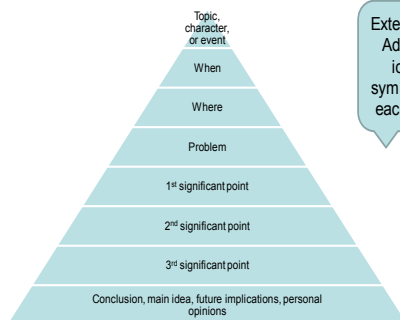
Thinking Triangle II



Extension:
Add an icon symbol for each row

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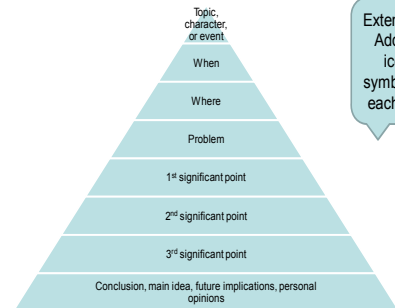
Thinking Triangle III



Extension:
Add an icon symbol for each row

Differentiation: Simplified, Realistic, and Effective: How to challenge advanced potentials in mixed-ability classrooms by Bertie Kingore, 2004, Professional Associates Publishing

Thinking Triangle III



Extension:
Add an icon symbol for each row

Differentiation: Simplified, Realistic, and Effective: How to challenge advanced potentials in mixed-ability classrooms by Bertie Kingore, 2004, Professional Associates Publishing

Social Studies (Tomlinson)

A. You are a relatively wealthy white male in the month of the 1992 presidential election. Who will you vote for and WHY (assuming you are “typical” of that group)?

- *** A relatively wealthy Hispanic female
- *** A poor Hispanic male, 26
- *** A poor White female
- *** A middle class African American male, 50
- *** A middle class, elderly, White male, 80
- *** Another category of your choice

B. You are in a town meeting the month of the 1992 presidential election. The group of six talking together comes from varied age groups, regions, ethnicities, jobs, and socio-economic status. Each is “typical” of a category of voters. Create the group. In both written and graphic form, indicate who they will vote for, why, and how they are likely to feel about their choice four years later.

Social Studies Lesson on the Industrial Revolution; Based on Dateline: Troy By

Paul Fleischmann

KNOW:

Key events of the Industrial Revolution

UNDERSTAND

Human struggles are similar across time, culture, and place. Humans are willing to struggle for the prospect of growth and a better life.

DO:

Research
Make inferences
Identify themes in history
Work cooperatively with others

STUDENTS ARE ASSIGNED TO ONE OF THE GROUPS

<p>Group T (Work in a pair)</p> <p>Look again at video we saw on the Industrial Revolution. Use it and your text to list important things that happened. For example:</p> <ul style="list-style-type: none"> • Ways people earned their living changed a lot very quickly • People moved to where the jobs were and cities got bigger • People in low-level jobs got treated poorly • You and your partner add 3 more things <p>Check these with your teacher before going on</p> <p>Watch the news video. Look for current events like listed events in IR. Complete the graphic organizer.</p> <p>Be sure both partners are ready to show a news clip and explain how it’s like an event in the IR</p>	<p>Group R (Work in a group of 3)</p> <ul style="list-style-type: none"> • What does the story on p. 14 have to do with the news story on p.15? • What’s the problem shared by Achilles (p. 48) and Daryl Strawberry (p. 49)? • How does the term Trojan Horse relate to the articles on p. 71? <p>Think about what’s really happening in the IR. Discuss with your group. Find stories from today that are like events in the IR. Find at least 5 possible matches. Select your 2 best matches. Everyone should be ready to explain why they are best before you go on.</p> <ul style="list-style-type: none"> • Create 2 opposite pages for a book called Dateline: Industrial Revolution • Tell key events on the left and make a collage of news stories on the right that show important parallels • No matter how you divide up the work, everyone must be able to present, explain, and defend
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<p>Group O (Please work in quads) Create a parallel book excerpt for the IR</p> <ul style="list-style-type: none"> • Select approx. 8 events from the IR • Be sure they absolutely show the revolutionary nature of the time • Find parallel revolutions in this century • Create collages that make parallels clear <p>Devise a way to both tell and show the parallel nature of the 2 revolutions in your book excerpt</p> <p>Clear your plans with the teacher</p> <p>Work for insightful language and visuals</p>	<p>Group Y (Please work in pairs, triads, or quads) The period we have been studying is called the IR, yet there was no army or fighting as in the French, American, or Russian Revolutions. It's also possible for individuals to have revolutionary experiences.</p> <p>Using Dateline: Troy as a model develop a way to think about and show what you would consider to be essential elements in any revolution (For example, rapid change, fear, danger, etc)</p> <p>Your comparison must:</p> <ul style="list-style-type: none"> • Include the IR, an individual revolution, and a military revolution • Use important, valid, and defensible themes • Be effective (accurate, insightful, articulate, visually powerful, easy to follow) in communicating your ideas
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Government

Prior day's whole class activity: Hand out 3-5 sticky notes in 2 contrasting colors to each student. Tell them which color is for liberty and which is for justice. Ask students to write words or phrases on the sticky notes that either define one of the words, that give an example of what is meant by one of the words, or is something that they associate with one of the words. When they are finished, they should stick the notes to the bulletin board section dedicated to the appropriate word.

Today's Activity: Divide the class into homogeneous groups of 4, based on their facility for abstract thought and their capacity for sophisticated expression. To facilitate direction giving, place the directions for each task on different colored cards to hand to each group. Ask each group to appoint a summarizer to report on their activity and the results of their work. When groups are finished, have them share with the whole class. Ask questions (or encourage students to ask questions) that clarify and extend each group's thinking.

Task One: Work together to organize the previous day's stickies related to LIBERTY and those related to JUSTICE into categories. Once you have organized the stickies to your satisfaction, write a statement for each category that summarizes how the words in each category work together to help us make sense of meaning and importance of the unit concepts LIBERTY and JUSTICE. Remember, there is no right or wrong way to group the notes, but be ready to tell why you ended up grouping them the way you did. Discuss and be ready to comment: What connections do you see between your categories and American ideals?

Task Two: Ask students to appoint a scribe to take notes on their group's discussion. Students should appoint a discussion leader to ask the following questions: What ideals do you think of when you think of the United States of America or Americans? How do the ideals we have today compare to the ideals early American had? How might our ideals change in the future? Are some ideals "better" than others? Remind students that both the scribe and the discussion leader must participate in the discussion.

Task Three: Ask students to appoint a scribe to take notes on their group’s discussion. They are to discuss whether or not they agree with the following statements:

- Enduring ideals are the basis of a people’s political identity and culture.
- Some ideals are “better” than others.

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

Version A: 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.

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

Colonization

- 1) With a partner and using your research, develop a list of characteristics about the individuals who influenced the colonization of America. How would you describe these people? Next, think about some famous people today. What hardships have they had to overcome and what acts of courage have they demonstrated? Create a list of people from current times who resemble those you have studied from the past. Be ready to defend your choices.
- 2) Working in groups of three or four and using your research, assume you are a member of a committee assigned the task of awarding a medal for courage to only one of the people your group has researched. What factors should you consider in awarding this honor? What questions must be considered? List them and then use them to select one recipient from the group of individuals to receive the award. Be ready to defend your choice.

WORLD HISTORY (Byram Hills, NY)

Regents Level Assignment:

Read pages 12-16 in World History Patterns of Interactions textbook in preparation for a class discussion and multiple choice quiz based on the reading.

Discussion topics

How did the Neolithic Revolution serve as a turning point in history

What did these settlers do differently than those who lived during the Paleolithic ear

What were some of the new techniques developed in 8000 B.C.

How do Archeologists and Anthropologists account for these changes

AP Level Assignment:

Read pages 86-113 in *The Rise and Spread of Food Production*, Jared Diamond. Guns, Germs & Steel in preparation for a class discussion and multiple choice quiz based on the reading.

Discussion topics

- How did the Neolithic Revolution serve as a turning point in history
- What did these settlers do differently than those who lived during the Paleolithic era
- What were some of the new techniques developed in 8000 B.C.
- How do Archeologists and Anthropologists account for these changes

CIVICS

Based on the results of the unit preassessment, divide students into 2 groups: Those students with little knowledge of Constitutional rights should get a basic reading introducing the Bill of Rights. Follow the reading with oral (or written) questions to be sure students have understood the material. See sample questions below.

- What is an amendment?
- How do we amend our Constitution?
- Why have there been so few amendments to the Constitution?
- What is the Bill of Rights?
- What is its function?
- What amendments make up the Bill of Rights?

Those students who appeared to have a pretty good knowledge of the rights granted to us by the Constitution may do an alternate reading on the amendments not ratified by the States, available at <http://www.law.emory.edu/FEDERAL/usconst/notamend.html>

- Ask them to be prepared to give a brief summary of what they read to the rest of the class. Push all of the students to speculate on why the amendments did not pass. Do they think these or similar amendments would pass today? What other ideas for amendments do students have?

POLITICAL SYSTEMS: Monarchy, Democracy, Authoritarian

Students are placed in groups according to the teacher's previous knowledge of student ability or from information gained through preassessment. Appropriate classroom readings and/or activities are assigned. Sample activities include the design of a graphic organizer to demonstrate the group's understanding of the similarities and differences between these 3 major types of political systems and an oral examination of the group in which individual group members must demonstrate their knowledge and understanding of these systems of government and/or related concepts.

Queen Elizabeth Group:

- Group completes separate webs showing the characteristics of a monarchy, a democracy and an authoritarian system of government. Webs must include:
 - Definition of each system
 - Traits of each system
 - Examples of countries that use this type of system
 - Pros and cons of each type of system.
- Group designs and creates a graphic organizer that clearly shows the similarities and differences between these 3 systems of government.
- Oral exam will focus on student's basic understanding of each system.

Fidel Castro Group

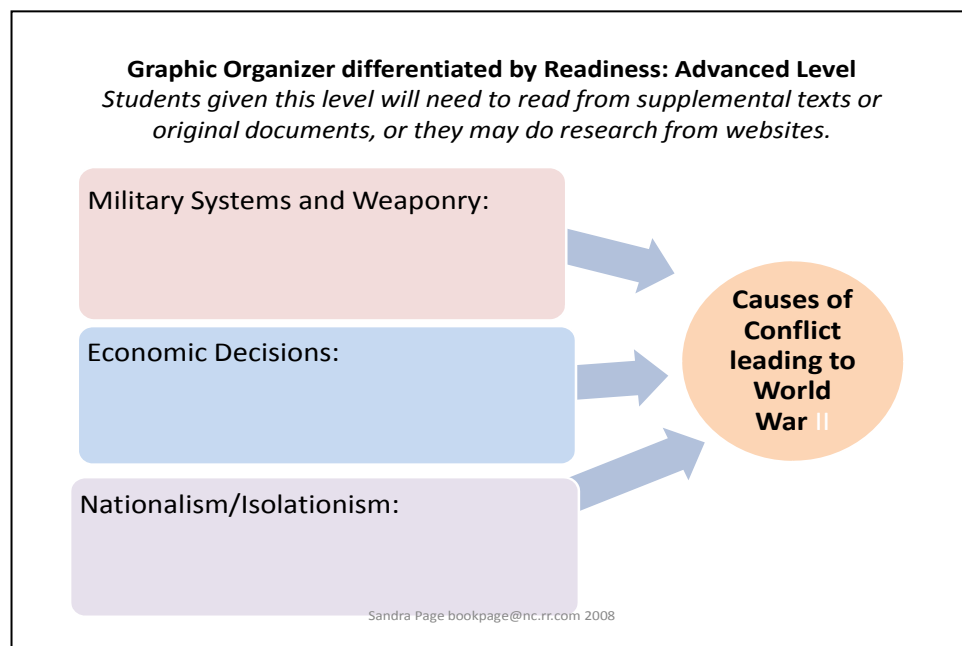
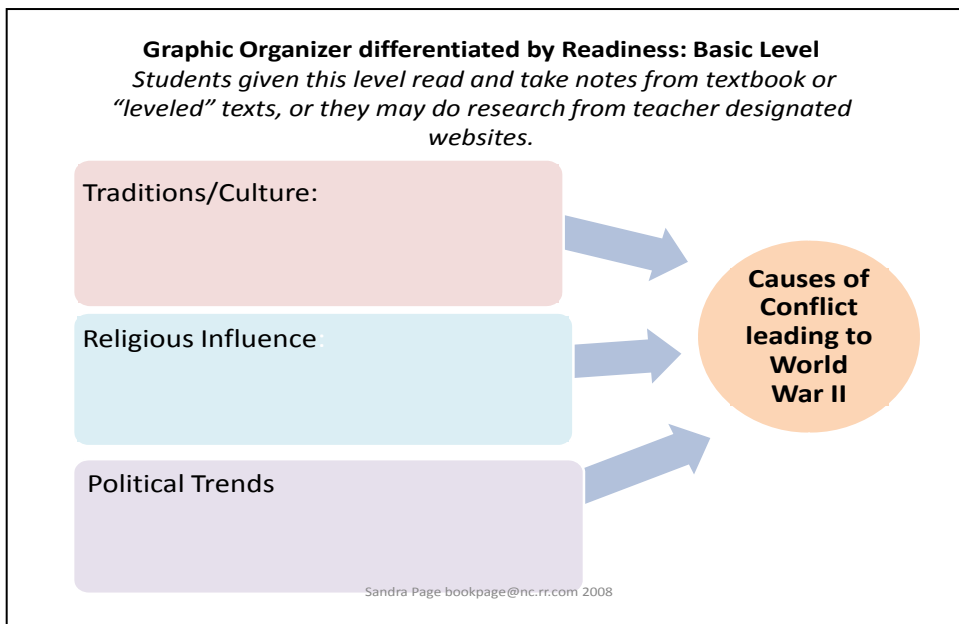
- Group designs and creates one large graphic organizer that demonstrates their understanding of each type of system and clearly explains the similarities and differences between the various systems. Organizer must include definitions, traits, and pros and cons of each type of system.

- Oral exam focuses on the pros and cons of each system and how they each strive to meet the basic needs of its citizens, such as managing the environment, solving problems, preserving culture, etc.




Jean Chrétien Group

- Group designs a graphic organizer that clearly and visually shows:
 - similarities and differences between the systems
 - pros and cons of each system
 - how each system meets the basic needs of its citizens such as managing the environment, solving problems, preserving culture, etc.
- Oral exam focuses on which theory of origin of governments best explains each system and why (evolution, force, divine right, social contract).

CONFLICT






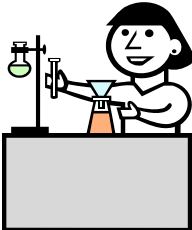
SCIENCE: ROCKS

<p>Sedimentary</p> 	<p>Igneous</p> 	<p>Metamorphic</p> 
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Rock Log

Sort your samples. Draw each sample in the correct column. Write a description that tells color, texture and other characteristics about the rock.

<p>Sedimentary</p>  <p>Look at samples----- You may see small particles of rock and other materials. The particles may look rounded. You may see layers in some rocks.</p>	<p>Igneous</p>  <p>You may see large crystals in some of these rocks. Others will not have crystals, but you will see air holes. Some may look like glass. There are no layers.</p>	<p>Metamorphic</p>  <p>These rocks may have crystals or layers. They are formed from other rocks that have been changed by heat and pressure</p>
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The class does the same activity, but more guidance is given for those who may need it.

Created by Meri-Lyn Stark
Elementary Science Coordinator
Park City School District

Physics

UNDERSTAND: Key principles of Aerodynamics


KNOW: Basic Vocabulary

DO: Construct objects that project themselves through space in the different directions as a demonstration of the key principles

Note: As you go down each list, the task becomes harder. Assign students to the appropriate task in each box.

<p><u>Paper Airplanes</u></p> <ul style="list-style-type: none"> ◆ That fly for distance ◆ That fly for hang time ◆ That fly for tricks 	<p><u>Pin Wheel:</u> Tilt propellers different ways to create:</p> <ul style="list-style-type: none"> ◆ Forward motion ◆ Backward Motion ◆ Upward Motion
<p><u>Kites</u></p> <ul style="list-style-type: none"> ◆ Box ◆ Diamonds ◆ Triangle ◆ Layered 	

NOTE TAKING



Soil Layers

Soil Outline

I. Components of Soil

A. _____

1. _____

2. _____

B. _____

1. _____

2. _____

C. _____

1. _____

2. _____

D. _____

1. _____

2. _____

II. Layers of Soil

A. _____

1. _____

2. _____

3. _____

B. _____

1. _____

2. _____

3. _____

C. _____

1. _____

2. _____

3. _____

Soil Outline

I. Components of Soil

A. Organisms

1. _____

2. _____

B. Gases

1. _____

2. _____

C. Water

1. _____

2. _____

D. Rocks & Minerals

1. _____

2. _____

II. Layers of Soil

A. Topsoil

1. _____

2. _____

3. _____

B. Subsoil

1. _____

2. _____

3. _____

C. _____

1. _____

2. _____

3. _____

Soil Outline

I. Components of Soil

A. _____

1. living plants and animals

2. dead plants and animals

B. _____

1. air

2. pore spaces

C. _____

1. carries nutrients

2. pore spaces

D. _____

1. various sizes

2. broken into pieces

II. Layers of Soil

A. _____

1. organic matter

2. rich in nutrients – dark color

3. top layer that we see

B. _____

1. layer below topsoil

2. plants don't grow well

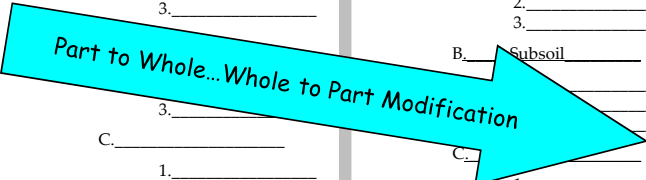
3. lighter color

C. _____

1. solid rock

2. can be at the surface or many feet below

3. made up of different rocks in different places



Created by Meri-Lyn Stark
Elementary Science Coordinator

Simple Machines Visual Activity (by Kenny '95)

Differentiation Strategy: Problem type

Students were assigned activity 1, 2, or 3. Each student received the slip of paper that corresponded with their assigned activity.

1. Draw 5 examples of levers, wheels and axles that you use in your daily life. Next to the picture, describe how this machine makes work easier. (Application, very concrete).
2. I have a huge box that I need moved from my classroom to another classroom. Design and draw a machine that uses both a wheel and axle and a lever to move it from here to there. Describe how it works. (Known problem, unknown solution).
3. Write a problem that could be solved using two or more simple machines. Show visually and describe how the combination of these two simple machines would solve the problem. (Unknown problem, unknown solution).

SCIENCE LAB: DENSITY AND BOUYANCY

Introduction: All Students take part in an introductory discussion, read the chapter, and watch a lab activity on floating toys.

Activities Common to All Three Groups

- Explore the relationship between density and buoyancy
- Determine density
- Conduct an experiment
- Write a lab report
- Work at a high level of thinking
- Share findings with the class

Soda Group

Given four cans of different kinds of soda, students determined whether each would float by measuring the density of each can.

They completed a lab procedure form by stating the materials, procedures, and conclusions. In an analysis section, they included an explanation of why the cans floated and sank, and stated the relationship between density and buoyancy.

Brine and Egg Group

- Students developed a prescribed procedure for measuring salt, heating water, cooling the brine, determining the mass of water, determining the mass of an egg, recording all data in a data table, pouring the egg on the cool mixture, stirring the solution, and observing.
- They answered questions about their procedures and observations – as well as questions about why a person can float in water, whether it is easier to float in fresh or seawater, why a helium filled balloon floats in air, and the relationship between density and buoyancy.

Boat group

- Students first wrote advice to college students building concrete boats to enter in a boat race.
- They then determined the density of a ball of clay, drew a boat design for a clay boat, noting its dimensions and its density.
- They used cylinders of aluminum, brass and steel as well as aluminum nails for cargo, and determined the maximum amount of cargo their boat could hold.
- They built and tested the boat and its projected load.
- They wrote a descriptive lab report to include explanations of why the clay ball sank, and the boat was able to float, the relationship between density and buoyancy, and how freighters made of steel can carry iron ore and other metal cargo.

Science Journal (Tomlinson)

A. A classmate had to leave the room today as the lab experiment was beginning to come to a conclusion. Please write that student a note explaining what happened in the lab, why it happened, and what practical use there is in the real work for what the experiment shows us. You're his/her only hope for clarity! Be as much help as possible.

B. Select a key or critical element in the experiment today. Change it in some way. What will happen in the experiment with that change? Why? What principle can you infer? Be sure you go for something useful, insightful, and intellectually or scientifically meaningful as your choice.

Tiered Discussion Prompts: Science (after demonstration on how little drinkable water is available on Earth) by Andrea Trank

Below grade level readiness:

- What does this demonstration help you understand about the amount of water on the earth? What new questions does it raise in your mind?
- Make a list of ways in which humans need or use water. Who or what else depends on the earth's water for survival?
- How could we increase the amount of the Earth's water that is available for human consumption?

At grade-level:

- What were your initial reactions to this demonstration? What was new or surprising to you?
- In what ways do humans affect the amount of water available on the planet? What can we change about this? What should we change?
- What other analogy can you come up with to help people understand both the abundance and the scarcity of water on this planet?

Above grade-level:

- What were your initial reactions to this demonstration? What was new or surprising to you?
- Who does the earth's water belong to? Explain your thinking. What changes in the availability of water could nature have in store for us? Humans?
- What if humans figured out a cheap way to desalinate large quantities of water? Should we do it? Why or why not?

Environment

- A. Diagram or model the relationship between humans and the rainforest. Be sure you show the positives and negatives that come from that relationship.
- B. Present an argument for or against human use of the rainforest. Be sure to consider what someone taking the opposite position might think or say as you prepare your most convincing argument

FORM / FUNCTION

Ms. Patterson is working with her students to examine structure and function in architecture. She wants them to understand the relationship between the two - and the relationship of technology to both structure and function. She is planning questions that students will answer as an in-class, mini-research activity.

She does not want to ask some students questions to which they can look up the answers and other students questions to which they have to infer answers.

What she does want to do is ask all students a question that requires them to analyze the relationship between structure, function, and technology in architecture. All students will do research, find information, draw conclusions, and present their insights in the form of a model, drawing, diagram, or written presentation.

She has designed four questions that increase in complexity, in spite of their obvious similarities.

- In what ways are structure, function, and technology related in igloos?

- In what ways are structure, function, and technology related in cathedrals?
- In what way~ are structure, Function, and technology related in skyscrapers?

In what ways are structure, function, and technology related in a space capsule's living quarters?

MATH JOURNAL (Tomlinson)

A. Write a step by step set of directions, including diagrams and computations, to show someone who has been absent how to do the kind of problem we've worked with this week.

B. Write a set of directions for someone who is going to solve a problem in their life by using the kind of math problem we've studied this week. Explain their problem first. Be sure the directions address their problem, not just the computations.

Journal: ordered pairs, Pythagorean theorem Martin, H. (2006).

Differentiated Instruction for Mathematics, Portland, MA: Walch

Level One

Explain the difference between rational and irrational numbers. Be as specific as you can and give examples of each. Be sure to explain why each of your examples is rational or irrational.

Level Two

0. 142857 (repeating) is a rational number because it can be expressed in the form of a/b. 1) Express this number as a fraction, and 2) explain why the irrational number (π) cannot be expressed in the same form.

Order of Operations

Level one

- Use order of operations to help you find the answer (12). You can add, subtract, multiply, divide, and use parentheses, exponents, or square roots. The numbers can be used in any order. (The problem can be solved in many ways.) Be ready to explain how you solved the problem.

(CARDS) 4,2,6

$$4 + 2 \cdot 6 = 12$$

Level Two

- Use order of operations to help you find the answer (0). You can add, subtract, multiply, divide, and use parentheses, exponents, or square roots. The numbers can be used in any order. (The problem can be solved in many ways.)
- (CARDS) 4,10,5,8

$$4 + 10 - 5 \cdot 8 = 0$$

Order of Operations

Level One

Use 5 4's and any of the four arithmetical operations along with parentheses to write an equation for each of the numbers 1-10

Ex: $4+4+4 \times 4=13$

There is more than one way to get each number

Level two

Using the numbers 1-7 in an equation, determine the largest possible answer as well as the smallest possible answer.

You must use each arithmetic operation at least once plus an exponent

List all of your attempts and explain why you tried each combination based on results from previous attempts

Order of Operations

Level one

Determine where to insert parentheses to make each sentence true. Use a graphing calculator to check your work.

$$32 + 8 \times 3 + 4 = 30$$

$$200 - 90 + 80 + 20 = 10$$

$$15 - 3 + 1 \times 6 = 2$$

Level 2

Which is greater

$$(3^5)^2$$

OR

$$3^{5^2}$$

Support your answer. Be sure you consider all rules of order of operations

Multiples

Level One

You are examining a Venn diagram that shows the multiples of 3 in one circle and the multiples of 7 in the other. There is no number in the middle region (Where the two circles intersect). Give an example of a number that might be placed correctly in this region. Explain how you got your answer.

Level Two

You are examining a Venn diagram that depicts the multiples of 2, 5, and 7. There is no number in the center region (where all the circles connect). Give an example of a number that might be correctly placed in this region. Explain how you got your answer.

Trigonometry

A

Problem	Strategy #1 for solving problem	Strategy #2 for solving problem	Solving and explaining a real world application of the problem
Find the missing side of a right triangle	Trig (Explain)	Pythagorean Theorem (Explain)	Will a tree of <u>X</u> dimensions hit a house of <u>X</u> distance away if it's cut down?

B

Problem	Come up with 2 strategies for solving the problem	Justify which strategy is most efficient or most elegant	Design a and solve a real-world application of the problem

Find the missing side of a right triangle			
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Tiered Balls Measurement Activity- Martin, H. (2006). *Differentiated Instruction for Mathematics*, Portland, MA: Walch

Basic version: Do you think a ball dropped from 100 cm will bounce back higher than if it is dropped from 40cm?

Rotate jobs for each height. (Or group according to skill or interest)

1. Recorder: records the bounce back height for the 3 trials
2. Measurer and dropper: Measures the correct height (40, 60, 80, 100 cm) from which the ball is to be dropped.
3. Observer: Notes the bounce –back height. (You may need a second observer)
4. Calculator: Find the mean of the three trials

Advanced version:

Change the previous version so that the ball types become the experimental variable. The height remains constant and the type of ball varies. 3 trials for each with an average taken. Ask students to designate the dependent and independent variables.

SLOPE-Nanci Smith

Advanced learners:

- Write a letter to a friend who will take this class next year and explain slope. Be sure to include what it represents, how it affects a graph, and all the ways to find it. Give examples and provide any other significant information. Be clear!

Average learners:

- Given a line graph with multiple changes, describe the changes shown in the graph in terms of rate of change and numerical slope. Predict what the graph would look like of a certain change in the graph had not occurred.

Struggling learners:

- Determine slope using additional graphs and points.
- Describe in words how to find the slope given a graph and an equation.

Probability

- *Task 1 (Lower Readiness)*
- You have told your friend secrets in the past. You figured out that she has told others 9 of the 15 secrets that you shared. Should you tell her another secret? Use probability to explain your answer.
- *Task 2: (Higher Readiness)*
- There are 20 seconds to go in the basketball game and your team is down by 7 points. Your coach has instructed you to foul so the clock will stop. The point guard has made 6 of his last 14 free throws and the center has made 4 of his last 8 free throws. Should you foul the point guard or the center? Use probability to solve the problem and explain your answer.
- *Task 3: (Highest Readiness)*
- You are trying to raise money for a 5th grade field trip. Your class has decided to sell plain, chocolate, and cream-filled doughnuts to the students at your school, but you do not know how many boxes to order. You'd take a poll, but unfortunately, all classes but the 3rd grade are on a

field trip and you need to place your order today. How should you determine how many boxes of doughnuts to order for the entire school? How does this relate to our study of probability?

Probability

- *Task 1 (Lower Readiness)*
- It's early Monday morning and your mother has laid out the following clothing items for you to choose from: a red shirt, a blue shirt, a white shirt, blue jeans, and khaki pants. How many different outfits can you make with the clothes your mother has provided?
- *Task 2 (Higher Readiness)*
- You are making cupcakes for a class celebration. Your classmates have indicated that they would like a choice of different cupcakes. You have: chocolate and yellow cake batter; strawberry, white, and caramel icing; and green and blue sprinkles. How many different types of cupcakes can you offer your classmates? (You can draw each cupcake if it helps you to solve the problem.)
- *Task 3 (Highest Readiness)*
- You are trying to determine your schedule for next year at Scott Middle School. First period, you can take art, chorus, or band. Second period, you can take technology or creative writing or be an office assistant. Third period you can take a foreign language: German, Spanish, French, or Latin. Figure out how many different schedules are possible based on these options.

Special Quadrilaterals

- Each special quadrilateral has a variety of characteristics.
- Your task is to reach conclusions about various parts of the quadrilaterals and thereby determine which characteristics belong to which quadrilaterals.

Everyone:

1. Draw diagonal AC.
2. Draw diagonal BD.
3. Draw both diagonals and name their point of intersection E.
4. Leave the fourth figure as it is, i.e. it will have no diagonals.

<p>Advanced:</p> <ol style="list-style-type: none"> 5. For each figure on each page, use the definition of the quadrilateral shown to follow these directions: <ol style="list-style-type: none"> 1. Determine pairs of congruent angles and mark them. 2. Determine pairs of congruent segments and mark them. 3. According to the markings, determine all pairs of congruent triangles. 4. Correctly name the pairs of congruent triangles next to each 	<p>On Grade</p> <ol style="list-style-type: none"> 5. For each figure on each page, use a ruler and protractor to follow these directions: <ol style="list-style-type: none"> 1. Measure and label all angles. 2. Measure and label all segments in centimeters (cm). 3. According to the measurements, determine all pairs of congruent triangles. 4. Correctly name the pairs of congruent triangles next to each appropriate figure. 5. For each pair of 	<p>Below Grade</p> <ol style="list-style-type: none"> 5. For each figure on each page, use the measurements of angles and segments shown to follow these directions: <ol style="list-style-type: none"> 1. Determine all pairs of congruent triangles. 2. Correctly name the pairs of congruent triangles next to each appropriate figure. 3. For each pair of congruent triangles named, state the postulate that makes the triangles congruent.
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<p>appropriate figure.</p> <p>5. For each pair of congruent triangles, state the postulate that makes the triangles congruent.</p>	<p>congruent triangles named, state the postulate that makes the triangles congruent.</p>	
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All

6. For each quadrilateral, examine pairs of congruent angles and congruent segments to reach conclusions about:
 1. opposite sides
 2. total number of congruent sides
 3. opposite angles
 4. total number of congruent angles
 5. diagonals
 6. pairs of congruent triangles formed by one diagonal
 7. pairs of congruent triangles formed by two diagonals
7. What conclusion can you reach about the consecutive angles in each figure that has no diagonal shown?
8. Make a list of conclusions (characteristics) for each quadrilateral.

<p>Advanced</p> <p>9. Study the characteristics of each quadrilateral and rank order the quadrilaterals from least to most special.</p> <p>10. Based on the characteristics that the quadrilaterals have in common, create a “Family Tree of Quadrilaterals”, using square, parallelogram, rectangle, rhombus, quadrilateral and trapezoid.</p>	<p>On grade</p> <p>9. Create a table that lists all the characteristics in rows and the different quadrilaterals in the columns. Complete the table by placing an x in a cell to indicate the quadrilateral has that particular characteristic.</p> <p>10. Study the characteristics of each quadrilateral and rank order the quadrilaterals from least to most special.</p>	<p>Below Grade</p> <p>9. Create a table that lists all the characteristics in rows and the different quadrilaterals in the columns.</p> <p>10. Complete the table by placing an x in a cell to indicate the quadrilateral has that particular characteristic</p>
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Vectors (Kim Pettig)

- Task 1: A travel assistant at the auto club planned two routes for two different families to go from [Rochester, NY to NYC]. One route went mostly south towards [Corning, NY] and the other went mostly east towards [Albany, NY]. The families stopped for the night in those cities. Assuming the roads could go mostly straight, show and calculate which family had further to go the next day
- Task 2: A flight from [Rochester, NY to Charlottesville, VA has a stopover in Philadelphia, PA]. Show how much further the passengers traveling on that stopover route had to go than if they could have flown directly from [Rochester, NY to Charlottesville, VA]?
- Task 3: A homing pigeon was released from [Rochester, NY] to go home. It landed [75] miles west and [23] south of the city. Pinpoint which town is nearest the pigeon’s home? How far did it fly?

Graphing with a Point and a Slope

All groups:

- Given three equations in slope-intercept form, the students will graph the lines using a T-chart. Then they will answer the following questions:
- What is the slope of the line?
- Where is slope found in the equation?
- Where does the line cross the y-axis?
- What is the y-value of the point when $x=0$? (This is the y-intercept.)
- Where is the y-value found in the equation?
- Why do you think this form of the equation is called the “slope-intercept?”

Struggling Learners: Given the points

- $(-2,-3)$, $(1,1)$, and $(3,5)$, the students will plot the points and sketch the line. Then they will answer the following questions:
- What is the slope of the line?
- Where does the line cross the y-axis?
- Write the equation of the line.

The students working on this particular task should repeat this process given two or three more points and/or a point and a slope. They will then create an explanation for how to graph a line starting with the equation and without finding any points using a T-chart.

Grade-Level Learners: Given an equation of a line in slope-intercept form (or several equations), the students in this group will:

- Identify the slope in the equation.
- Identify the y-intercept in the equation.
- Write the y-intercept in coordinate form $(0,y)$ and plot the point on the y-axis.
- use slope to find two additional points that will be on the line.
- Sketch the line.

When the students have completed the above tasks, they will summarize a way to graph a line from an equation without using a T-chart.

Advanced Learners: Given the slope-intercept form of the equation of a line, $y=mx+b$, the students will answer the following questions:

- The slope of the line is represented by which variable?
- The y-intercept is the point where the graph crosses the y-axis. What is the x-coordinate of the y-intercept? Why will this always be true?
- The y-coordinate of the y-intercept is represented by which variable in the slope-intercept form?

Next, the students in this group will complete the following tasks given equations in slope-intercept form:

- Identify the slope and the y-intercept.
- Plot the y-intercept.
- Use the slope to count rise and run in order to find the second and third points.
- Graph the line.

Unit: Graphs of Polynomials
Lesson Topic: Polynomial Graph Behaviors
Concept: Behavior and Prediction

Introductory Discussion (Whole Class):

- Can you predict how people will act or what they will do?
- What characteristics would you look for in doing so?
- Can you predict a family member better than a stranger?
- How well can you predict what your friends will think?
- What factors will affect people's behaviors?
- What else can be predicted in the world by behavior? (stocks, economy, weather, etc.)
- How are world behaviors predicted? (Data, graphs, etc.)
- How can we predict what an extension of a graph might do? (patterns)
- If you don't have a piece of the graph, could you predict what a graph might look like, or how it will behave? Based on what?

Whole group introduction to activities:

You are all going to investigate characteristics of the graphs of polynomials. Your goal is to draw conclusions about their general behaviors based on specific attributes of the equation. (Discuss what an end behavior and zeros are if the students do not already know this term.) Each group will share their findings when finished in order for all to have a complete picture.

Groups are based on readiness: Tiered Activity

Sea Green Group

Students are given four quadratic equations, two with positive lead coefficients and two with negative lead coefficients. They are to graph the parabolas in a graphing calculator, then copy the graphs onto graph paper with the equations.

Repeat this process with four cubic polynomials, four quartic polynomials, and four quintic polynomials.

Describe the change in the behavior of the graph of a polynomial based on the sign of the lead coefficient.

What conclusions can you draw?

Test your hypothesis with equations and graphs of your own.

Defend mathematically why graphs respond the way that they do based on the sign of the lead coefficient

Indigo Group

Students are given several even degree polynomials. They are to graph on a graphing calculator and then sketch on graph paper with the equation.

Repeat the process with several odd degree polynomials.

What conclusions can you draw from your graphs about end behaviors related to the degree of the polynomial? What about the number of zeros of the function?

Students are then given equations of polynomials. They are to predict what the graph will look like based on the degree.

Students are given graphs of polynomials. They are to write an equation of a polynomial that would be appropriate. (These do not have to be exact.)

Violet Group

Students are asked to graph the following graphs in a graphing calculator, then copy the graphs and equations onto graph paper.

$$Y_1=(x + 1)(x - 2)$$

$$Y_2= - (x - 3)^2$$

$$Y_3= 2x^2 + 5x + 6$$

Describe the behavior of the graph including its relationship to the x-axis and its end behaviors.

Do you see any patterns?

Repeat the process with the following polynomials:

$$Y_1=(x + 3)(x + 2)(x - 1)$$

$$Y_2= - (x - 2)(x + 1)^2$$

$$Y_3= - x^3 + 2x - 5$$

Describe the behavior of the graph including its relationship to the x-axis and its end behaviors.

Do you see any patterns?

What conclusions can you draw?

How can you predict the number of times a graph will touch or cross the x-axis?

Based on your observations, describe how a graph behaves from its equation. Include end behaviors and x-intercepts.

Dark Red Group

Give students multiple polynomials to graph. Some should be in factored form. Both even and odd degrees and positive and negative lead coefficients should be included.

Students are to graph and copy the graphs and equations onto graph paper.

Draw conclusions about how the equation of a polynomial can predict the behavior of a graph. Include end behaviors and zeros.

Test your conclusions by writing polynomial equations and predicting the corresponding graphs. Check your prediction with a graphing calculator.

Three Levels of Quadratic Exploration - Kate Reed

Group 1

In order to work on this problem, you will need to find an appropriate window for your graphing calculator. Why?
Can you predict from the equation what the graph will look like? Draw a rough sketch of what you expect to see on your calculator. Why do you expect to see this?
Use your calculator to confirm/correct your prediction.
What does each axis represent?
What is the height of the ball one second after it is thrown? Describe at least two ways to answer this question.
When is the ball 80 feet high? When is the ball 20 feet high? Explain your answers.
Write two questions you would like to investigate about the behavior of the ball in this situation.
Complete these investigations, writing your results in full sentences

Group 2

In order to work on this problem, you will need to find an appropriate window for your graphing calculator. What should it be? Why?
Can you predict from the equation what the graph will look like? Draw a rough sketch of what you expect to see on your calculator. Why do you expect to see this?
Use your calculator to confirm/correct your prediction.
What does each axis represent?
When is the ball 80 feet high? Explain your answer, and how you found it. Describe at least one other way to find this answer. Is one method preferable over the other? Why?
For how many seconds is the ball in the air?
What is the maximum height of the ball? When does the ball attain this height?
Consider when the ball is at its maximum height, when it is 80 feet high, and how long it is in the air. If you are told that the ball reaches a height of 30 feet after .4 seconds, can you predict when it will again be at this height? What feature of this graph allows you to make such a conjecture?

Group 3

In order to work on this problem, you will need to find an appropriate window for your graphing calculator. What should it be? Why?
Can you predict from the equation what the graph will look like? Draw a rough sketch of what you expect to see on your calculator. Why do you expect to see this?
Use your calculator to confirm/correct your prediction.
For how many seconds is the ball in the air?
What is the maximum height of the ball?
What value do you get for the height at $x = 7$? Explain this value in terms of the equation, and then in terms of this particular situation. Do you need to put some restrictions on the value of x in this situation? What are they?

General Music

BASSO	ALTO	SOPRANO
Using the provided grid, compare the musical styles of Ives and Elgar. Note that some cells are already filled in for you. Consider type of compositions, instrumentation, cultural influence and at least one other variable.	Using the provided grid or another graphic organizer of your choice, compare the musical styles of Ives and Elgar. Consider type of compositions, instrumentation, cultural influence and at least one other variable.	In a graphic organizer of your choice, compare and contrast the musical styles of Ives and Elgar. Include at least 4 important variables for comparison. Be ready to justify your choice of variables
Compose a 16-bar melody accompanied by chords	Compose a 16-bar melody accompanied by chords that can be sung as a 2-part round	Compose a 16-bar melody accompanied by chords that can be sung as a 3 part round.
Create an evaluation tool that could be used to judge the effectiveness of a composer's attempts to evoke emotion in a particular work	Choose a composer that you think does an exceptional job of conveying emotion in his or her work and explain why you chose this composer.	Appraise and evaluate the usefulness of the techniques commonly used by composers to evoke emotion in a work.
Demonstrate how sound is produced on a clarinet, violin, and trumpet	Illustrate the major ways in which modern instruments produce sounds	Illustrate how the concept of "vibration" relates to the production of sound on various modern instruments

MUSIC SECTIONALS

Play through the passage as written at half tempo. Gradually increase the tempo each time you play through the passage. VS Transpose the passage (woodwinds and brass). Play a different part (percussion).	Play through the passage at a very quiet dynamic; listen carefully to those around you. VS Challenge yourself to play the passage at the extremes of dynamics and tempo. Listen carefully to those around you.	Play the passage at a very quiet dynamic. One section (e.g., clarinets) should play at the marked dynamics. Listen carefully to how your part parallels and differs from the clarinets. Repeat with other sections highlighted. VS SAME
Sing (or clap) your parts instead of playing them. VS Play the passage in different musical styles (e.g., jazz, big band, baroque). OR Rearrange the sections of the piece or change the mood.	BOTH LEVELS: Have one section play (e.g., trumpets). All others visualize and "hear" their parts played with the others. Repeat with other sections highlighted. OR Leave out one section (e.g., snare drums). This section should follow along in your parts as you listen to the other instruments. Visualize yourself playing your part along with the others. Switch sections.	Listen to a professional recording of the passage and "play along" without making a sound. VS Listen to a professional recording of the passage and play along. Then try to mirror (imitate) the recording as closely as possible.

Elements of Music

Know: Elements of music, especially meter and rhythm.

Understand: The elements of music are used across various music genres and cultures.

Music expresses the culture.

- Analyzing music for elements in small groups:
 - M group will be given a simple piece of recorded music to listen to and fill in a detailed outline identifying specific elements
 - U group will be given a slightly more sophisticated piece of music, but still relatively simple, and asked to identify and describe any elements they hear
 - S group will be given a more complex piece of music to identify and describe the elements
 - I group will be given sheet music and an accompanying recording to analyze the elements
 - C group will be given sheet music to analyze for all elements. Students should hypothesize what the intent of the composer was

Skill: Contour Drawing

1. Students with less refined eye-hand coordination
 - Complete a contour drawing of a hand, look at your hand and the paper as you draw. Study lengths of finger segments shapes of finger tips, widths of fingers as you draw.
 - Draw a teacher selected object in your sketch book looking at the paper and object as you do your drawing.
2. Students with somewhat more refined eye-hand coordination
 - Complete a half-blind contour drawing of your hand.
That means you can look at your hand and the paper but cannot draw any time you look at the paper.
 - Draw a teacher selected object in your sketchbook doing a half-blind contour drawing.
3. Students with excellent eye-hand coordination
 - Do a blind contour drawing of your hand.
 - Do a blind contour drawing of a teacher selected object in your sketchbook.

BASKETBALL

1. Dribble from point A to point B in a straight line with one hand
Switch to the other hand and repeat.
Use either hand and develop a new floor pattern from A to B (not a straight line)
2. ZIGZAG –
 - a. One hand
 - Other hand
 - Increased speed
 - Change pattern to simulate going around opponents
3. In and out of pylons as fast as possible
 - Change hand
 - Increase speed
4. Dribble with one hand – and a partner playing defense.
 - Increase speed and use other hand
 - Trade roles
5. Through pylons, alternating hands, & partner playing defense
 - Increase speed
 - Trade roles

PE JOURNAL

A. A classmate had to leave the room today just as we were beginning to play kickball. Please write that student a note explaining what happened in today's game, why it happened the way it did, and what your team could do to improve your performance. Be as much help as possible.

B. Pretend you were the coach of your kickball team today. Select a key or critical play in today's game. Pretend it happened in some other way. What might the results have been? Why? What principle can you infer? Be sure you pick something that will help your team in its efforts to improve over time.

FL Writing

- A. Answer the following questions concerning a member of your family.
- What is the name of the person?
 - What is his/her relationship to you?
 - What does he look like?
 - Where does she work/go to school?
 - What does he like to do for fun?
 - Why do you like her?
 - Etc...
- B. Write a composition describing a member of your family. Be sure you discuss both their appearance and their personality.
- C. Write a composition describing a member of your family. Start with what they look like on the outside and then describe what they are like on the inside. You want the reader to have a clear and complete picture of this person after reading your description.

FL Vocabulary

Provide each student with a sheet of "aliens" with varied numbers of arms, legs, eyes, noses, mouths, and ears.

Target Group

Student A selects one of the aliens. Student B asks questions in an attempt to figure out which Alien student A selected. Student A answers the questions in complete sentences. All questions must be "yes" "no" questions having to do with the aliens' features. Students then switch roles.

Advanced Group

Student B also asks questions about why the alien is formed as it is. Student A makes up responses. In the end, the students write a descriptive statement about the structure and function of the alien. Students then switch roles.

Struggling Group

If there are students who cannot succeed with the target activity, the teacher can provide ONE of the following:

- A list of possible questions in the language
- A list of helpful vocabulary
- A brief period of teacher coaching to help students develop a model for the task.

FOLLOW UP

Following this initial activity, students design, describe and name their own alien. These are displayed in the classroom and the whole class engages in a questioning activity to determine who created each alien. (Ex: Does Will's alien have long legs?)

Based on a differentiated Spanish I activity developed by Ellin Gallagher, Park City, Utah, from *Enhancing Foreign Language Instruction in Your Classroom* by Barbara Snyder.

GERMAN

Mr. Phillips is working today with his German 1 students in oral expression. He will pose questions to them that they must answer aloud and with little time for reflection. His students range from those who have great difficulty with grammar and oral expression to those who anticipate new grammatical constructions from previous ones.

He does not want to ask some questions that can be answered with a single word or phrase and others that require complete thoughts and sentences.

What he does want to do is encourage all students to use a range of grammatical constructions at levels of appropriate challenge.

He will pose different questions to various individuals as a way of challenging their oral expression, with particular emphasis on verb tenses. The questions become more open ended, more abstract, require greater leaps of mind, and grow more complex.

- Whom should I ask about directions to your favorite restaurant from school and what advice would they give me about how to get there and the length of time it would take?
- Whom should I ask about the way things were here at school before the new wing was added and what do you think that person or those people would tell me about then and now?
- What important responses would you give if someone asked you to give them advice about raising a child from birth to the time they leave home so that the child has the greatest chance for happiness and success?

Varied Journal Prompts: Foreign Language

- A. Write a step by step set of directions, including diagrams, to show someone who has been absent how to form and use the future tense. You may write in English or in French.
- B. Write a set of example sentences in French that clearly show the differences and similarities between the formation and use of the present and the future tenses.

Varied Journal Prompts: Foreign Language; Giving Advice

- A. How can I get from here to your favorite restaurant from school? What advice would you like to give me about how to get there, the length of time it would take to get there, and what to order?
- B. What does it take to make a good school great? What advice would you give a principal who was about to start a school from scratch?
- C. What important responses would you give if someone asked you to give them advice about raising a child from birth to the time they leave home so that the child has the greatest chance for happiness and success?

Technology

A. You are writing for *PowerPoint for Dummies*. Write a simple, yet clear explanation on how to import sound, graphics and video into a PowerPoint presentation. You may NOT use graphics in your explanation.

B. You are designing a quick reference chart to help students remember how to import sound, graphics, and video into PowerPoint. Use as few words as possible to get the information across.

Desktop Publishing by Mrs. Gareau-Kurtz and Ms. Steedman Monroe 2 – Orleans BOCES

The pre-evaluation checklist lists 23 Desktop Publishing tasks. The student must check whether they “can do” each task on the list.

If they feel that they can do 14 or more of the items on the list, they can work on the Newsletter. Those who are able to do 9 – 17 of the functions will work on the Flyer activity. If they feel that they can do 8 or less, they can start with the Menu activity.

- Group 1: Beginners. Complete a one-page menu.
- Group 2: Intermediate. Complete a one-page flyer.
- Group 3: Advanced. Complete a one-page newsletter.

Planning A Tiered Lesson

STEP 1: Devise a KUD (What do I want students to know, understand, and be able to do?)

STEP 2: USUAL STARTING POINT

What would I typically do in this lesson if I were NOT going to differentiate? (Sketch out the steps you would follow or the assignment you would give.)

STEP 3: Differentiated Plans

Think about the most advanced student you have ever had. Design an activity (clearly related to your KUD) that would stretch this student.

Now figure out ways to scaffold the task so that students at or near grade-level can be successful with the task. Make sure this version still matches your KUD.

Now figure out ways to further scaffold the task so that students would struggle with the above task could be successful. Double check that you have not watered down the task to the point that students miss out on the KUD.

STEP 4: To Think About:

1. Where might you run into trouble in carrying out the differentiation in this lesson?
2. How will you give directions for each version of the task? Will you color code task cards or assignment sheets? Tape record directions?
3. Will you tell students the lesson is differentiated? If so, how? If not, why not?
4. What will you do if some students or groups finish early?
5. If necessary, how will you get students into groups efficiently? Back to a whole class configuration?
6. How will you know if today’s lesson “worked?” What will you watch for? How will you use what happens in this lesson to improve the next day’s instruction?

Thinking About Your Results (Wormeli, 2007, p. 62)

- What worked, and what didn't?
- If something worked, how do I know? What evidence do I have that my students learned the content and skills I intended to convey?
- If the lesson didn't work, what will I need to change the next time I teach? And what will I need to do with my students tomorrow to help them achieve?
- Did I meet the varied learning needs of my students? If so, how?
- If I was nervous about one or more elements, how did they turn out?
- What surprised me?
- What do I now know that I wish I had known before I started this lesson or unit? What advice would I give a colleague who might use these materials in the future?
- Did the sequence of the lesson work? If not, how would I rearrange it?
- How would a highly accomplished teacher improve this lesson?



KUD

ADVANCED

ON GRADE

BELOW GRADE