

# Differentiation at the Secondary Level

Rebecca L. Mann  
 Co-Director of the Gifted Education Resource Institute  
 Purdue University  
 rlmann@purdue.edu

## What is Differentiation?

A process used to **maximize student learning** by **improving the match** between a student's individual needs and the curriculum.

A general term used to describe the **range of strategies**, which are used to ensure children's needs are met.

A broad term referring to the need to tailor teaching environments and practices to create appropriately **different learning experiences for different students**.

Adapting the curriculum to meet the unique needs of learners by making **modifications in complexity, depth, and pacing**.

## Differentiation...

**Allows each student to work in his or her zone of proximal development (state of moderate challenge)**

Actual development level as determined under guidance or in collaboration with more capable peers

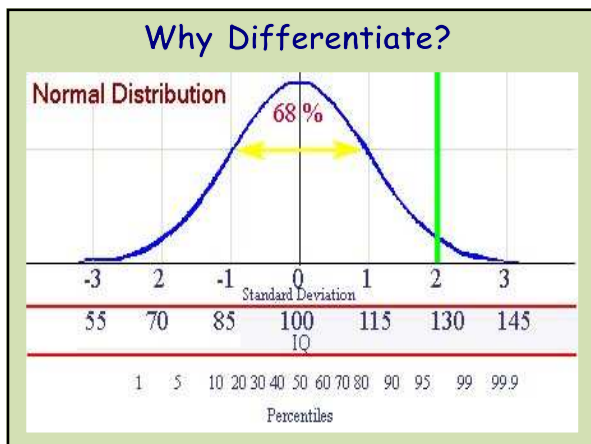
**ZPD**

Actual development as determined by independent problem solving

## ZPD

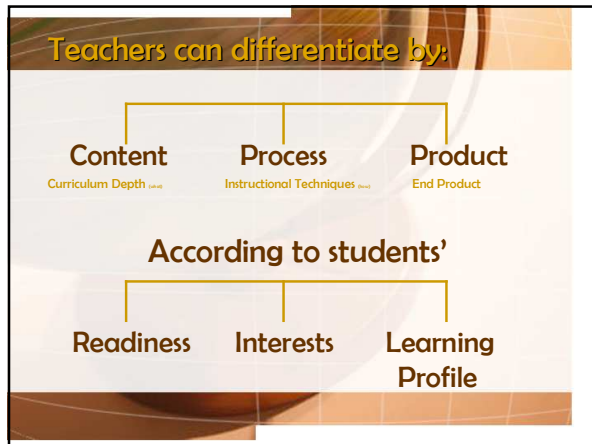
- **Too Easy**
  - Already knows
  - Gets it quickly
  - No effort needed
- **Moderate Challenge**
  - Know something
  - Have to think
  - Must persist
  - Effort leads to success
- **Too Hard**
  - Don't know where to start
  - Missing skills
  - Can't solve
  - Makes no sense

Based on C. Tomlinson, 2004



## Why Differentiate?

- Pressure to standardize learning
- Students differ in abilities, interests, and learning styles
- Learning more enjoyable when choices are available
- Enjoyment and engagement contribute to higher achievement
- And, of course, the state says you must!



- Differentiation Strategies**
- Curriculum Compacting
  - Independent Projects
  - Tiered Assignments
  - Flexible Grouping
  - Varying Questions
  - Open-ended Assignments
  - Think-Tac-Toes
  - Six Hats
  - Mentorships
  - Jigsaw
  - RAFT Assignments
  - Learning Contracts
  - Varying Journal Prompts

- To differentiate you must...**
- Know your learning goals
  - Know the ability range of your students
- 

- The Value of Assessment or ...**
- You can't figure out what to teach 'em if you don't know 'em!**
- ❑ Interest Inventories
  - ❑ Learning Profile Inventories
  - ❑ Preassessment Options - Ensure the Mastery of Basic Skills!

**Why Preassess?**

**78 to 88% of 5<sup>th</sup> and 6<sup>th</sup> grade average readers could pass pretests on basal comprehension skills before these were covered in the basal.**

Barbara M. Taylor & Barbara J. Frye, The Reading Teacher, November, 1988.

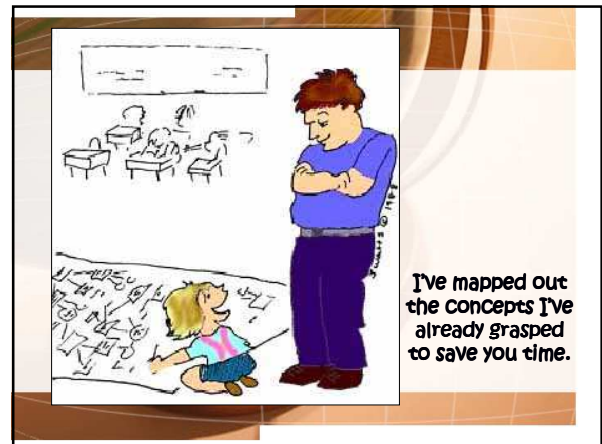
**Ensure the Mastery of Basic Skills:**

<u>Mastery</u>	<u>Not Mastery</u>
Recognition of situation requiring repeated addition, uses multiplication to shorten solution process	Can automatically recite multiplication facts
Uses variety of basketball passes depending on best strategy for the moment	Primarily uses the bounce pass in basketball regardless of its potential effectiveness
Explain role of any word in sentence & explain how role changes based on placement	Can match parts of speech to its definition

Wornell, 2006

### Preassessment Options

- Textbook Pretest
- Student/Teacher Conference - as short as a 5 minute talk
- K-N-W Chart - What do I Know, Need to know & Want to know
- Journal - Write what you know about...
- List - If I say ...
  - What does it make you think of?
- Product - Draw a bar graph...
  - Use the graphing calculator to plot...
- Concept Map...
- Five Hardest



### Questions to ask as you plan...

**Will what I have planned...**

- ❑ Enable students to learn material well?
- ❑ Meet all of the student's needs?
- ❑ Be necessary for all students?
- ❑ Meet the needs of students who learn quickly?

**How will I know that students have mastered material?**

### Why do teachers ask questions?

- ❑ Focus attention
- ❑ Arouse interest, stimulate curiosity
- ❑ Stimulate thinking
- ❑ Find out what children know, probe understanding
- ❑ Review, revise or recall learning
- ❑ Diagnose difficulties and misunderstandings
- ❑ Get children to explain, predict or give reasons

### How do teachers ask questions?

Haynes	1935	70% recall	17% fostered thinking
Gall	1970	60% recall	20% fostered thinking
Kroll	1980	29 % recall 47% routine	23% fostered thinking
Kerry	1989	54% routine 42% recall	4% fostered thinking
Wragg	1993	57% routine 35% recall	8% fostered thinking

### QUESTIONING

QUESTIONING FROM...	QUESTIONING TO...
❑ an interrogation	➔ ❑ an exploration
❑ judging an answer	➔ ❑ exploring an answer
❑ required answers	➔ ❑ answers are gifts
❑ answer as final	➔ ❑ answer as provisional
❑ a hierarchical relationship	➔ ❑ a collegial relationship
❑ emphasis on outcome	➔ ❑ emphasis on process

Georgia Department of Education Critical Thinking Skills Program

### Open Ended Questions:

- Have no “right” answer
- Can be discussed and debated
- Provoke and sustain student inquiry
- Raise other important questions
- Address the conceptual or philosophical foundations of a discipline
- Stimulate vital, ongoing reflection of big ideas and assumptions

### Questions that Differentiate?

- By their very nature open-ended questions differentiate.
- All students must think.
- Questions targeted toward readiness levels as students pull from prior knowledge and information gained from the classroom activity.
- Allows answer at level of understanding.
- Detailed explanation of photosynthesis vs. plants need sun and water to survive.
- All can contribute and all contributions are respected.

### Wait Time

- Provide time for reflection
- Students may be resistant to “having to think”
- Wait Time
  - Averages one second or less.
  - Students whom teachers perceive as slow or poor learners are given less wait-time than those teachers view as more capable.
  - Increase in wait-time over three seconds has a positive effect on the number of higher cognitive questions asked by teachers.

### Teaching Children to Ask Questions

- Students who ask questions are active learners.
- Students learn to ask questions by asking questions.
- Students learn to ask good questions by asking questions and then receiving feedback on them.
- Students learn to become scholars by learning to ask good questions.

### Fat and Skinny Questions

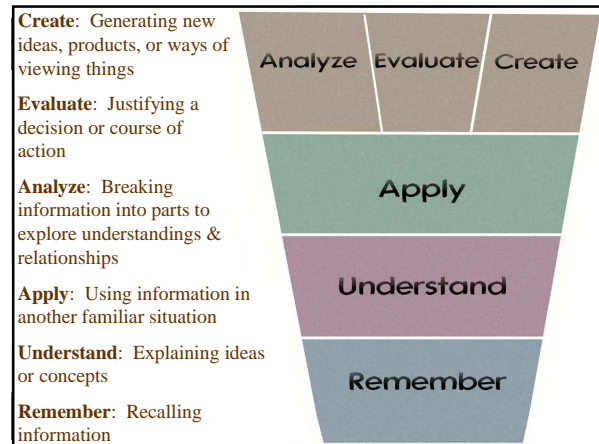
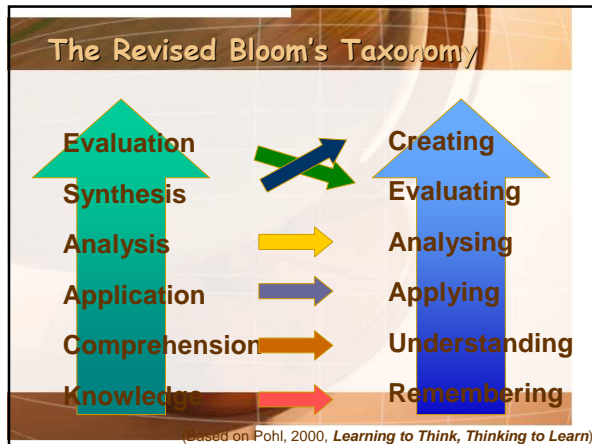
How do these 2 questions differ?

- How many legs do you have?
- How would your life be different if you had 3 legs?

“I think the 3 legs question is fat because it takes up a lot of space in your brain to think of an answer. The 2 legs one is skinny because it hardly takes up any thinking space.”

Mackenzie, 2<sup>nd</sup> grade

<i>Fat Question Starters</i>	<i>Skinny Question Starters</i>
How might...?	How many...?
Who should...?	Who was...?
When might...?	When did...?
Predict...?	What is...?
Why do you think...?	Can...?
Where might...?	Where did...?
In what ways...?	Did...?
What do you think about...?	Will...?
Why do you agree/disagree with...?	Do you agree/disagree with...?
What advice would you give...?	How did...?
What else could...?	What did...?



- ### So...what do you do with it?
- ❑ Develop higher order thinking activities.
  - ❑ Formulate questions.
  - ❑ Help students to develop “question asking skills”.

### Curriculum Compacting

Used to modify and/or streamline the regular curriculum to eliminate repetition of previously mastered material, upgrade the challenge level of the regular curriculum, and provide time for enrichment and/or acceleration activities.

- ### Compacting Steps
1. What do you want them to know?
  2. What do they know?
  3. Offer enrichment or acceleration activities to those who already know it.
  4. Keep records for accountability.
- <http://www.gifted.uconn.edu/siegle/CurriculumCompacting/INDEX.HTM>
- 

- ### Five Hardest
- ❑ Teacher or student selects the 5 (or other number) most difficult problems on the page
  - ❑ Do with 80% accuracy and...
  - ❑ NEATLY!
  - ❑ Buy self out of the remainder of the problems on the page







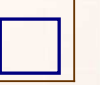
### Independent Study/Mentorship

- Individual or small group investigations
- Student(s) identifies area of interest
  - Kyle – Civil War
  - 7<sup>th</sup> graders - wetlands
- Identify audience
  - 8<sup>th</sup> Graders
  - Town Council
- Teacher helps student narrow focus
- High School students as mentors
- Community members as mentors

### Think-Tac-Toe

•A simple way to give students choices.

•Activities should be structured so that students must grapple with the key ideas and use the keys skills central to the topic or area of study

	Free Choice	
		
	Free Choice	

### Bloody Sunday - Think Tac Toe

<p><b>Imagine (Creating)</b> You are a child in the Selma to Montgomery march on Bloody Sunday. What are you thinking? Write a journal entry.</p>	<p><b>Compare (Understanding)</b> Compare this event to another event in the Civil Rights Movement studied or seen this month. Compose a rap song about the two events.</p>	<p><b>Change (Creating)</b> You are a Caucasian Freedom Rider coming from Ohio. What would have happened if you had fought back with violence in Selma? Draw a picture with a one sentence description.</p>
<p><b>Locate (Remembering)</b> Find where Ellen Levine talks about Viola Liuzzo. Write a journal entry stating the page and reflecting on her sacrifice.</p>	<p><b>Create (Creating)</b> Come up with a way to share with the class about something you read in Ch. 7. Get your idea approved by the teacher.</p>	<p><b>Describe (Understanding)</b> You are the media specialist. Describe this event as a news reporter on TV.</p>
<p><b>Respond (Understanding)</b> Respond to Ellen Levine or any person about whom you've read by writing him or her a friendly letter.</p>	<p><b>Build (Applying)</b> Build a model or diorama depicting some aspect of Ch. 7. On a notecard, write a brief explanation of your scene.</p>	<p><b>Critique (Evaluating)</b> Write an editorial for the <i>Selma Times</i> expressing your views on the day. Be sure to say whose perspective you are expressing.</p>

### Learning Contract - Ancient Civilization

<p><b>GEOGRAPHY</b></p> <p><b>PEOPLE</b></p> <p><b>CONTRIBUTIONS</b></p>	<p>As an ancient mapmaker, you are commissioned to create a map of your land including all natural land forms, a compass rose and a scale. Also find examples of each land form in a modern civilization.</p>	<p>Imagine that you are an ancient citizen who awakens to discover that all water has evaporated. Explain in detail how this would alter your way of life. Also, do this for the town where you live.</p>	<p>Assume you are persuading others to visit your ancient civilization. Design a descriptive, accurate travel brochure. Include both natural and man-made elements that would attract tourists.</p>
	<p>You are an ancient scribe. Write and illustrate a thorough description of a famous character from each time period being studied. Profile yourself also.</p>	<p>Assume the identity of a famous person from the given time period. Create a journal entry reflecting the ideas, values, and components of daily life for that person &amp; you.</p>	<p>You are a famous sculptor. Create a 3D representation of a well-known leader, god, goddess, or common citizen. Include a museum exhibit card.</p>
	<p>Written language is an essential part of everyday life. Your task is to create an alphabet. Include a translation into modern English, a written description of the language development a &amp; a 3D artifact of the new language.</p>	<p>Recreate in 3D form a famous work of architecture from your time period. Compare and contrast this piece to one piece of modern day architecture. Find one example of this architecture's presence in modern day society.</p>	<p>Find a way to explain and show the importance of music and the arts to your culture. Also show at least 2 examples with roots in our time.</p>

©Shirley Kyle & Kathy Reed "Illinois"

### Biology

<p>Make and present a 3D model of a particular organ from one of the human body systems.</p>	<p>Write and recite a poem about the importance of a body systems, include appropriate, relevant vocabulary.</p>	<p>Write and perform a rap song that teaches the organs and functions of one of the human body systems.</p>
<p>Write a children's story from the perspective of a red blood cell as it travels through the bone marrow, through the heart, to an extremity, and back.</p>	<p>Write a children's story from the perspective of a banana through the human digestive system.</p>	<p>Write an essay on the school lunch program. Include student, lunchroom personnel, and parent's perspectives.</p>
<p>Create a game for learning the organs and structures of the circulatory system, including blood flow.</p>	<p>Create a PowerPoint about the health risks of obesity. Use graphs &amp; charts to show the increase in obesity and related health issues.</p>	<p>Create a game for learning the organs and structures of the digestive system.</p>

### Fleming, KY - Civil War

<p><b>Dramatize (act out) an important event during the time period.</b></p>	<p><b>Create a timeline of the major events of the Civil War.</b></p>	<p><b>Write a story from the point of view of an escaping slave.</b></p>
<p><b>Create a PowerPoint presentation about an important event during the Civil War.</b></p>	<p><b>Compile a song book depicting the feelings of the time period. Include illustrations.</b></p>	<p><b>Read a picture book about the Civil War and create a collage depicting what you learned.</b></p>
<p><b>Develop a board game dealing with the Civil War.</b></p>	<p><b>Research a significant individual and present findings to the class using an informational poster.</b></p>	<p><b>Make an ABC book using terms from the unit to share with 2<sup>nd</sup></b></p>


Extension Menu Point Value Grid – Living Things			
<b>2 Points</b> List 5 living plant species. List 5 living animal species.	<b>2 Points</b> Label the parts of a plant and illustrate the things it needs to survive.	<b>2 Points</b> Illustrate an insect, and list 3 characteristics of an insect.	<b>2 Points</b> Write a riddle about an amphibian and one about an arachnid.
<b>4 Points</b> Explain why a spider is not an insect.	<b>4 Points</b> Compare and contrast two plants using a venn diagram.	<b>4 Points</b> Collage pictures of living things using magazines.	<b>4 Points</b> Write a poem about your favorite living species.
<b>6 Points</b> Select a living organism. Illustrate its life cycle using a graphic organizer.	<b>6 Points</b> Make a flip book illustrating the steps taken from turning a tree into paper.	<b>6 Points</b> Assume the identity of a living organism. Create journal entries describing your life.	<b>8 Points</b> Interview a wildlife specialist at a state park. Present your questions and answers in a novel way.
<b>8 Points</b> Diagram the levels of the rainforest. Write how your life would change if you lived in the canopy of the rainforest.	<b>8 Points</b> Create a diorama illustrating a natural habitat. Include animals found in that habitat.	<b>10 Points</b> Research an endangered species and design a how to plan to help populate the species.	<b>12 Points</b> Develop a 10 minute lesson on a living organism of your choice.

<b>Remember</b> list, define, tell, describe, identify, show, label, collect, examine, quote, name, who, when, where	<b>Understand</b> summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, discuss, extend	<b>Apply</b> apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment,
<b>Analyze</b> analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer	<b>Create</b> combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite	<b>Evaluate</b> assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare
<b>Understand or Evaluate</b>	<b>Apply or Evaluate</b>	<b>Remember or Analyze</b>

### Tiered Activities

**Tiered Instruction features:**

- ✓ Whole group introduction and initial instruction
- ✓ Identification of developmental differences
- ✓ Increase or Decrease the:
  - ✓ Abstraction
  - ✓ Extent of Support
  - ✓ Sophistication
  - ✓ Complexity of goals, resources, activities & products



### What constitutes a tiered activity?

- A focus on a key concept – parallel tasks
- Adjust to students’ achievement levels
- Adjust number of steps to the students’ productivity levels
- Students working with appropriately challenging tasks
- Result = Respectable work for everyone
- Students understand why they are all not doing the same thing.

Tiered Activity: Biographies	
Level	Prompt
Tier 1: These students benefit from structure and direct instruction.	Write a biography of your famous person. Use the timeline you created to help you organize your ideas. Remember to answer the following questions as you write. <ul style="list-style-type: none"> <li>▪ When and where was your famous person born?</li> <li>▪ Where did your person live while growing up?</li> <li>▪ What was his or her childhood like?</li> <li>▪ What did he or she do when he or she became an adult?</li> <li>▪ Why is your person famous?</li> </ul>
Tier 2: These students can organize ideas without too much prompting.	Write a biography of your famous person. Use your timeline to help you organize your ideas. Remember to emphasize why your person is famous.
Tier 3: These students thrive on high levels of challenge.	Tell the reader about your famous person’s life through a series of letters written over his or her lifespan from that person to a friend.

### Vacation Time!

Calculate approximate cost of gas

<b>Prompt One</b> Given the cost of gas and mpg of car	<b>Prompt Two</b> Given mpg of car	<b>Prompt Three</b> Asked to approximate cost and justify answer
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Family plans to average 50 miles per hour and travel 6 hours per day stopping twice to eat for an hour each time.

How long will it take to get to their destination? How many nights? Cost of hotel is about \$80 per night – calculate hotel cost for trip to destination.	How long will it take? How many nights will they need to spend in hotels? Calculate hotel cost for trip to destination.	How long? How many nights? Find hotels that include breakfast. Calculate hotel costs for each stay.
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Persuasive Essay			
	Basic	Intermediate	Advanced
Outcome	Write a cohesive paragraph with a main idea and supporting details.	State a point of view and cite multiple reasons to defend that viewpoint.	Expand the quality of their essay by adding multiple, credible sources of support.
Assessment	Describe their opinion about a topic by writing 5-6 detailed sentences explaining their opinion – to be assessed using the NYS independent writing rubric.	Use the Learning Activity as a rough draft to develop a multi-paragraph persuasive essay – to be assessed using the NYS independent writing rubric.	Write a persuasive essay using multiple reasons, logical explanations and credible sources to support their point of view – to be assessed using the NYS independent writing rubric.

### Middle School Unit: Dinosaurs

Task 1 - After researching and identifying various theories of dinosaur extinction, students will be able to create their own theory and draw a picture or diagram illustrating that theory.

Task 2 - After researching and identifying various theories of dinosaur extinction, students will be able to create a visual representation of their theory (i.e. diorama, timeline, or three dimensional model).

Task 3 - After researching and identifying various theories of dinosaur extinction, students will be able to create a visual representation of their theory and defend their theory during a class debate.

### Differentiation Quiz...

	Yes	No
1. Should every student do it?	___	<u>X</u>
2. Would every student want to do it?	___	<u>X</u>
3. Could every student do it?	___	<u>X</u>

*Remember:*

*Start small*

*Make friends and share*

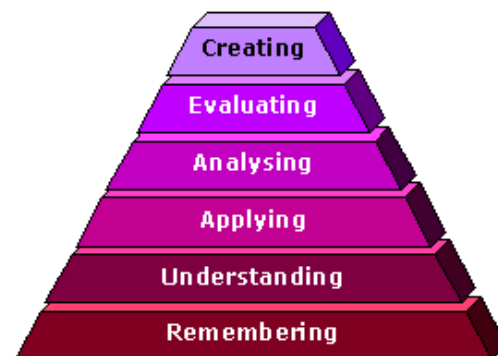
*Your mantra:*

*"Different, not more"*



## Bloom's Taxonomy – Revised

- › Six different levels of thinking
- › Increasing in difficulty
- › Rote memorization to high levels of critical thinking



Critical Thinking Activity	Sample Verbs	› Possible Activities or Products
<p><b>Remembering:</b> Retrieving, recalling, or recognizing knowledge from memory. Remembering is when memory is used to produce definitions, facts, or lists, or recite or retrieve material.</p> <p><b>Can the student RECALL information?</b></p>	<p>Acquire, Define, Distinguish, Draw, Find, Label, List, Match, Read, Record</p>	<ul style="list-style-type: none"> <li>› Make a list of the main events of the story.</li> <li>› Make a time line of events.</li> <li>› Make a facts chart .</li> <li>› Write a list of any pieces of information you can remember.</li> <li>› Make a chart showing...</li> <li>› Make an acrostic.</li> <li>› Recite a poem.</li> </ul>
<p><b>Understanding:</b> Constructing meaning from different types of functions be they written or graphic messages activities like <b>interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.</b></p> <p><b>Can the student EXPLAIN ideas or concepts?</b></p>	<p>Compare, Demonstrate, Differentiate, Fill in, Find, Group, Outline, Predict, Represent, Trace</p>	<ul style="list-style-type: none"> <li>› Cut out, or draw pictures to show a particular event.</li> <li>› Illustrate what you think the main idea may have been.</li> <li>› Make a cartoon strip showing the sequence of events.</li> <li>› Write and perform a play based on the story.</li> <li>› Retell the story in your own words.</li> <li>› Write a summary report of the event</li> <li>› Prepare a flow chart to illustrate the sequence of events.</li> <li>› Write and perform a play based on the story.</li> </ul>
<p><b>Applying:</b> Carrying out or using a procedure through <b>executing, or implementing.</b> Applying related and refers to situations where learned material is used through products like models, presentations, interviews or simulations.</p> <p><b>Can the student USE the new knowledge in another familiar situation?</b></p>	<p>Convert, Demonstrate, Differentiate between, Discover, Discuss, Examine, Experiment, Prepare, Produce, Record</p>	<ul style="list-style-type: none"> <li>› Construct a model to demonstrate how it works</li> <li>› Make a diorama to illustrate an event</li> <li>› Make a scrapbook about the areas of study.</li> <li>› Make a model to include relevant information about an event.</li> <li>› Take a collection of photographs to demonstrate a particular point.</li> <li>› Make up a puzzle game.</li> <li>› Write a book about this topic for others.</li> </ul>

<p><b>Analyzing:</b> Breaking material or concepts into parts, determining how the parts relate or interrelate to one another or to an overall structure or purpose. Mental actions included in this function are <b>differentiating, organizing, and attributing</b>, as well as <b>being able to distinguish between</b> the components or parts. When one is analyzing he/she can illustrate this mental function by creating spreadsheets, surveys, charts, or diagrams, or graphic representations.</p> <p><b>Can the student JUSTIFY a decision or course of action?</b></p>	<p>Classify, Determine, Discriminate, Form generalizations, Put into categories, Illustrate, Select, Survey, Take apart, Transform</p>	<ul style="list-style-type: none"> <li>▸ Design a questionnaire to gather information.</li> <li>▸ Write a commercial to sell a new product</li> <li>▸ Make flow chart to show the critical stages.</li> <li>▸ Construct a graph to illustrate selected information.</li> <li>▸ Make a family tree showing relationships.</li> <li>▸ Devise a play about the study area.</li> <li>▸ Write a biography of a person studied.</li> <li>▸ Prepare a report about the area of study.</li> </ul>
<p><b>Evaluating:</b> Making judgments based on criteria and standards through <b>checking and critiquing</b>. Critiques, recommendations, and reports are some of the products that can be created to demonstrate the processes of evaluation. In the newer taxonomy evaluation comes before creating as it is often a necessary part of the precursory behavior before creating something.</p> <p><b>Can the student JUSTIFY a decision or course of action?</b></p>	<p>Argue, Award, Critique, Defend, Interpret, Judge, Measure, Select, Test, Verify</p>	<ul style="list-style-type: none"> <li>▸ Conduct a debate about an issue of special interest.</li> <li>▸ Make a booklet about five rules you see as important. Convince others.</li> <li>▸ Form a panel to discuss views.</li> <li>▸ Write a letter to. ..advising on changes needed.</li> <li>▸ Prepare a case to present your view about...</li> </ul>
<p><b>Creating:</b> Putting elements together to form a coherent or functional whole; <b>reorganizing</b> elements into a new pattern or structure through <b>generating, planning, or producing</b>. Creating requires users to put parts together in a new way or synthesize parts into something new and different a new form or product. This process is the most difficult mental function in the new taxonomy.</p> <p><b>Can the student GENERATE new products, ideas or ways of viewing things ?</b></p>	<p>Synthesize, Arrange, Blend, Create, Deduce, Devise, Organize, Plan, Present, Rearrange, Rewrite</p>	<ul style="list-style-type: none"> <li>▸ Invent a machine to do a specific task.</li> <li>▸ Design a building to house your study.</li> <li>▸ Create a new product. Give it a name and plan a marketing campaign.</li> <li>▸ Write about your feelings in relation to...</li> <li>▸ Write a TV show play, puppet show, role play, song <i>or</i> pantomime about..</li> <li>▸ Design a record, book or magazine cover for...</li> <li>▸ Sell an idea</li> <li>▸ Devise a way to...</li> </ul>

# Cubing

## What is Cubing?

Cubing is an instructional strategy designed to help students think about a topic or idea from many different angles. A cube includes 6 commands, one on each of its six faces, followed by a prompt that describes the task the students should do related to the command. Cubing can help students think at different levels of Bloom's Taxonomy.

## How are cubes used?

- Step 1: Identify the concept or targeted skill that will be the focus of the activity.
- Step 2: Create commands for the cubes that align with the key concept. The commands on each cube should be differentiated to meet the needs of the learners
- Step 3: Make sure that students understand the commands and the directions of the tasks.
- Step 4: Group students according to readiness, interest, or learning profile. Cubes or task cards can be different colors in order to align with the needs of the different groups.
- Step 5: Students in each group take turns rolling the die. To provide choice, allow the student to roll again if he/she did not want to do the first command. Each student rolls the die and completes their given task. The group members should all be doing different tasks.

## What are the advantages to using Cubing?

- Incorporates higher level thinking skills.
- It is a simple way to differentiate, while still instructing each student on the same topic or skill. Each cube may contain the same commands, but the tasks on the cubes will be different according to the needs of the various groups.
- Rolling the die adds excitement and anticipation. It takes what may be a "boring" assignment and makes it fun and engaging.
- Cubing is an excellent strategy for the tactile/kinesthetic learners.

## Things to Remember:

- Cubes are differentiated by readiness, interest, and learning profile.
- Each side of a cube must have a command followed by a prompting question or statement.
- Cubing doesn't have to only be used in small groups. It can also be used independently or with pairs of students.
- All of the cubes should cover the same types of questions and skills, just at various levels.

## Terrific Tips for Cubing:

- Use more than one cube. Each cube should contain commands and tasks that are aligned with the ability levels of the different groups.
- Create 1 average ability cube first. Then, use those tasks as a guide to create 2 other cubes- low ability and high ability.
- Allow students to roll the die 2-4 times (if they choose) depending on the length and magnitude of the assignment.

### **Terrific Tips Continued...**

- Leave one face on the cube as an opinion task where there is no right or wrong answer.
- Always have one easier question and one harder question on each cube, regardless of the level the cube is intended for.
- For some cubing activities, students may be responsible for doing more than one of the sides of the cube.
- Differentiate cubing questions by color-coding the cubes. Ex. Blue=Knowledge and Comprehension (Low) Green=Application and Analysis (Average) Red=Synthesis and Evaluation (High). But remember to change the colors periodically to align with different levels so that students do not get “labeled” as the low blue group, etc...
- Differentiating by Interest or Learning Profile: Create many cubes for learning or review activities. 2-3 sides of all the cubes can have the same task. The remaining 3-4 sides can have tasks related to specific interests or learning profiles.

### **Example of how a command and task can be related to the same topic, but differentiated in order to meet the needs of lower ability and higher ability students:**

1. Lower Question- Describe the desert using as much information as you can, and involve your five senses in the description.
2. Higher Question- Describe how your life would change if you moved to the desert. Use your senses and explain why changes would occur.

### **Where can I find questions for cubes?**

- Quizzes
- Worksheets
- Textbooks
- Study Guide Problems
- Teacher Generated/Student Generated

### **Cubing Activities for Stories (Product Options)**

- Write a letter to Character.
- Create and perform a puppet show of the story
- Create a mural or picture to show a scene from the story.
- Make a Venn Diagram to compare and contrast 2 characters, 2 stories, etc...
- Develop a story map for Book.
- Create an art project that illustrates the sequence of events in the book (1<sup>st</sup>, 2<sup>nd</sup> ...)
- List characteristics of the characters.
- Write a different ending.
- Write a letter to the author.
- Read another book by the same author. Compare and contrast.
- Read another book about the same topic. Compare and contrast.
- Choose 4 interesting words from the story. Then, use a thesaurus to find synonyms for each of the words.

### **Question Cubes**

Who	What	When
Where	Why	How

Might	Can	Will
Is	Should	Did

### **Story Starter Cubes**

On the moon	Caught in a Tornado	The Best Vacation
The game winning play	The new invention	Favorite animal
The rainforest	On the farm	Cafeteria Disaster

### **Cube Commands**

Describe	Illustrate	Evaluate	What is the significance of
Compare	Change	Cartoon	Put ___ in historical perspective
Associate	Solve	Contrast	What are the causes/effects
Analyze	Question	Investigate	Relate ___ to ___
Apply	Rearrange	Argue for...	Tell the parts of
Connect	Satirize	Argue against...	In your opinion

### **References and Resources**

<http://www.floridahotteachers.org/strategies.htm>

<http://www.lincolnparkboe.org/DI.htm>

[http://curry.edschool.virginia.edu/files/nagc\\_cubing\\_think\\_dots.pdf](http://curry.edschool.virginia.edu/files/nagc_cubing_think_dots.pdf)

[http://boe.ming.k12.wv.us/teachers/di/di\\_docs/strategies\\_cubing\\_think\\_dots/CubingThinkdotpp.ppt#256,1,CUBING/THINKDOTS](http://boe.ming.k12.wv.us/teachers/di/di_docs/strategies_cubing_think_dots/CubingThinkdotpp.ppt#256,1,CUBING/THINKDOTS)

# Exit Cards

## **What are they?**

Exit cards are a quick assessment tool for teachers to help them become more aware of student understanding of concepts taught. Exit cards are written student responses to questions posed at the end of a class or learning activity or at the end of a day. They may be used at any grade level and every subject area.

## **How long does this exit card take to complete?**

Exit cards take about five minutes to complete and reveal important information about student understanding.

## **When should exit cards be used?**

Exit cards may be used as part of ongoing assessment and may be used in daily routines or lessons as a closure activity.

## **How do I choose appropriate questions?**

The questions chosen by the teacher depend on what information or type of response is expected from students. The questions can be varied and target skill development through demonstrations, explanations, understanding, or a reflection of how students feel about their learning success or frustration. Opinions are often requested in exit cards to address personal feelings or perceptions. The questions should be short and only take a few minutes to write (and read) so they become a quick assessment check.



**Students reflect and respond to Exit Card questions.**

## **How do I use exit cards?**

Distribute a slip of paper or index card to each student. Students put their name on the card and wait for the teacher to pose the question(s). Students respond to the question(s) and turn in the card before they leave the classroom. It can be used as a pass or ticket out of the classroom.

## **What student expectations should be set?**

Students need to know what the exit cards are being used for. Let them know that you want to know how well they understand what is being taught or difficulties they may be having so you can plan to help them. There are no wrong answers but effort is expected. Student sharing of responses could be a model to build from. A mark could be assigned from time to time if effort becomes an issue (evaluation).

## **How will exit card information be useful?**

Teachers assess the responses on the exit cards in order to provide differentiated instruction to meet the diverse needs of learners in the classroom.

# Exit Card Question Samples

## A. General open-ended questions

1. Write one thing you learned today.
2. What area gave you the most difficulty today?
3. Something that really helped me in my learning today was ....
4. What connection did you make today that made you say, "AHA! I get it!"
5. Describe how you solved a problem today.
6. Something I still don't understand is ...
7. Write a question you'd like to ask or something you'd like to know more about.
8. What mathematical terms do you clearly understand or have difficulty understanding?
9. Did working with a partner make your work easier or harder. Please explain.
10. In what ways do you see today's mathematics connected to your everyday life?

## B. Questions targeted towards content

### 1. Numbers and Operations (Place Value)

Tomorrow something is going to change in our lives. Tomorrow there will be no more zeroes. Zero will cease to exist. Will this affect you or not? Is this a good thing or a bad thing? Write your opinion.

### 2. Measurement

What rules are important to measure accurately? Write out three of the most important measuring rules you would teach someone else.

### 3. Geometry (Tessellations)

I have been given a special privilege. Tomorrow I am in charge of the world for one day. I have decided that for tomorrow everything on the planet will tessellate perfectly together. Every cloud in the sky, every blade of grass, every bird will be tessellated so it fits together perfectly. Nothing will stand out with gaps or overlaps. Tell me your opinion. Do you think everything should be tessellated or not? Please back up your opinion with a reason.

### 4. Data Management and Analysis

Of the three graphs you made, which one was the easiest for you to interpret and why?

### 5. Problem Solving

How do you solve a problem best? Do you create a plan or do you just keep trying until some idea clicks. Explain the approach you used and how it helped or didn't help you solve a problem today.

### 6. Algebra

How does the algebraic meaning of variable differ from its root word 'vary' ?

### 7. Ratio and Proportion

What does it mean for something to be out of proportion and how does that relate to mathematics?

**Higher level thinking skills can be explored through exit cards by using [Bloom's Taxonomy](#) with hypothetical questions or real life scenarios.**

# Literature Circles

Katherine L. Schlick Noe, Ph.D and Nancy J. Johnson

## WHAT ARE LITERATURE CIRCLES?

According to Harvey Daniels, author of the book *Literature Circles: Voice and Choice in the Student-Centered Classroom* (Stenhouse Publishers, 1994), literature circles are small, temporary discussion groups of students who have chosen to read the same work of literature. Each member agrees to take specific responsibilities during discussion sessions. The circles meet regularly, and the discussion roles change at each meeting. When the circle finishes a book, the members decide on a way to showcase their literary work for the rest of the class.

Daniels points out that community book-discussion groups, which have become popular across the United States, follow the same format. He adds, however, "the formalized, in-school version of this activity is barely a decade old."

## DISCUSSION ROLES

Daniels believes in introducing literature circles by using predefined roles that students take turns fulfilling. Although the terminology used to name the roles may vary, the descriptions remain similar. Pam Chandler, a sixth-grade English, reading, and social studies teacher at Sequoia Middle School in Redding, California, defines the roles her students take on in literature circles in this way:

- **Artful artist** uses some form of artwork to represent a significant scene or idea from the reading.
- **Literary luminary** points out interesting or important passages within the reading.
- **Discussion director** writes questions that will lead to discussion by the group.
- **Capable connector** finds connections between the reading material and something outside the text, such as a personal experience, a topic studied in another class, or a different work of literature.
- **Word wizard** discusses words in the text that are unusual, interesting, or difficult to understand.

Both Chandler and Noe agree that modeling the various roles within a small group in front of the whole class is an effective way of teaching students how those roles allow the group to function. Chandler says that it usually takes one and a half to two weeks for students to learn how to handle the group discussion.

When the students are comfortable with the group-discussion format, the formal use of roles can be discontinued. Noe told *Education World*, "None of the teachers with whom I've worked used them for long." She explains that the roles "have the potential of undermining students' natural conversations" and says that the chapter about discussion in her book *Getting Started With Literature Circles* focuses on alternatives for teachers who want students to learn to discuss without roles.

## THE TEACHER'S ROLE

Chandler believes that when students are able to conduct a literature circle meeting on their own, the teacher should drop out of the group. "The whole purpose of literature circles is for students to discuss literature with their peers," she wrote in an article published in the middle school newsletter of the National Association of Elementary School Principals. "Literature circles should be an arena for students to explore literature together. The discussions should not be controlled by an adult."

Noe does not completely agree. "For the teachers with whom I've worked, I would say that student independent management of their own groups is not necessarily an end product," she told *Education World*. "Many teachers do work toward that end, and many do not -- all for their own reasons."

Noe offered this explanation for the different approaches of two teachers: "For example, although her students were definitely able to carry on literature circle discussions on their own, middle school teacher Janine King found that she gained such valuable assessment information from observing the groups that she couldn't give that up. What worked best for her was having one group meet at a time while she sat nearby and took anecdotal



notes. Intermediate teacher Lori Scobie, in her first year of teaching when we worked together on literature circles, had all groups meet at once while she roamed among them. That decision came not from an overarching goal that her students run their literature circles independently, but from a more basic challenge -- keeping the other students productively occupied while she met with one group."

## **HETEROGENEOUS OR HOMOGENOUS GROUPS?**

Daniels believes that students in literature circles should not be grouped according to reading ability, and Noe agrees. "The greatest benefits come as students talk about the books they're reading with others," Noe told Education World.

"Even students who have difficulty reading every word of a book can learn a great deal from that book when given an opportunity to share insights in a group," Noe continued. "The collaboration of the group can be a powerful part of the comprehension process."

Chandler disagrees. "I have found that students of lesser ability are not about to speak out for fear of embarrassment if they are grouped with students of greater ability," she told Education World.

Before grouping her class into literature circles, Chandler meets individually with each student to discuss the student's reading ability. She and the student also discuss how frustrating it would be to be in a small group with others whose reading ability differs greatly from the student's own.

After the meetings, Chandler asks students to write down the names of three students they would like to be grouped with in a literature circle. She finds that students generally specify at least one classmate whose reading ability is similar to their own. She then sets up the groups on the basis of both the student requests and her own assessment, keeping the range of reading ability within each circle to about two grade levels.

## **WHICH AGE GROUP?**

Daniels believes that literature circles can be used successfully for students of all ages, from primary grades through college. Noe says that she has observed teachers and students in literature circles from first grade through high school.

"Of course, many aspects of literature circles differ widely from grade to grade," Noe told Education World. "For example, high school students are far more adept at in-depth analysis of the books they read than are first graders."

Noe continued: "But I've listened in on some amazingly insightful discussions with beginning readers too. I would say that students at different ages get different benefits from literature circles. But everyone can get the most important benefit -- building a personal connection with and deeper understanding of literature in collaboration with others."

Chandler told Education World that "the best discussions will occur with students of middle school age and beyond." She explained that "in order for students to be able to enjoy fairly sophisticated discussions, they must be able to think beyond the words on the page."

Chandler went on to say, however, "This does not mean that it is not beneficial for younger kids to experience literature circles. It just means that teacher expectations should be appropriate to the age of the students." She also noted that literature circles would be "especially appropriate for gifted children of third grade or so and above."

## **AN EFFECTIVE TOOL FOR AT-RISK STUDENTS**

Can literature circles help improve the reading skills and enjoyment of at-risk students such as ESL (English as a second language) students, poor readers, or reluctant learners?

"The answer is a thunderous 'Yes!'" Noe told Education World. "The power of working together to make meaning cannot be underestimated for challenged readers, whether their challenges are related to language, learning, or motivation."

Chandler's experience confirms this. "I will not tell you that I have had 100 percent success in getting all kids to fully participate in literature circles," she said, "By the end of the year, my kids are reading, and not just reading, but they are motivated to read."

Chandler added that she sees the largest growth in motivation and enjoyment among the more challenged students. "I have documented this in the last several years by using multiple assessments of reading ability," she said. "Many aspects of literature circles offer natural support for at-risk students. Those aspects include choosing great books with real characters working their way through real lives; reading the books with support from partners, volunteers, or tutors, a recording of the book, or a resource teacher; talking about books with other readers -- confirming what you understand and adding your own insights; writing about books; and extending understanding through artistic response."

"With this multidimensional approach to reading, less able students have more opportunities for success," concluded Noe, who illustrated her point with a personal experience:

Once, when observing a group of intermediate students discussing a novel set during the Revolutionary War, Noe was challenged by the teacher to pick out the one student in the group who was a struggling reader who spent time with the resource teacher.

"I couldn't," she said. "Each of the students demonstrated a passionate response to the book, offering both personal insights and well-supported evidence from the text. The discussion was lively, informative, and heated."

## **GIVING STUDENTS A CHOICE**

"The most central principle of literature circles is student choice," Noe told *Education World*, "building deeper understanding and more personal response through selecting the books that each student *wants* to read. ... If the goal of literature circles is to build understanding and response in collaboration with others, then student choice needs to be honored."

Chandler agrees that students should have a part in choosing what books they read. For that reason, she tries to group students into literature circles by ability, so that each circle can choose a book appropriate for its reading level. "Students appreciate the fact that they are given books to choose from that are of an appropriate level for their reading ability," she told *Education World*.

## **A HIGHLY ADAPTABLE TEACHING METHOD**

Perhaps what makes the literature circle such an effective teaching approach is that it's highly adaptable. "I learned early on that there are as many ways of structuring literature circles effectively as there are teachers and students eager to try," Noe told *Education World*.

She added that there is no recipe for using literature circles successfully. "Teachers have to begin wherever they are and look for a next step," Noe said.

"There are too many people eager to tell teachers how to teach," she continued. "I firmly believe that teachers must trust themselves and their students, and find what works for them. So although a recipe for literature circles doesn't exist, my professional mission is to help teachers find lots of possibilities."

Chandler has this advice for teachers who want to try literature circles in their classrooms: "Teachers who try this technique should try to pair up with a colleague or a group of colleagues who have either used literature circles before or who are trying them for the first time in order to support each other. ... Discussing successes as well as difficulties encountered with others will help teachers to be successful in using this strategy."

## Question Generation Cubes

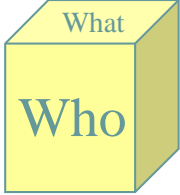
You need two wooden cubes or blank dice and a thin permanent marker.

#1 - on each side of the cube write:

**Questioning Cubes**

**On one cube:**

- Who**
- What**
- Where/When**
- How**
- Why**
- Which**

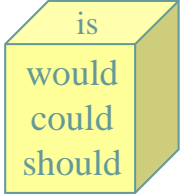


#2 - on each side of the cube write:

Can  
Is  
Might  
Will  
Did  
Would/Could/Should

**On the other cube:**

- **Is**
- **Might**
- **Did**
- **Will**
- **Would/could/should**
- **Can**



Great place to purchase cubes - [www.barclaywoods.com](http://www.barclaywoods.com) - select Craft cubes and they are around \$0.08 each

## **What is RAFT?** - <http://olc.spsd.sk.ca/DE/PD/instr/strats/raft/>

The RAFTs Technique (Santa, 1988) is a system to help students understand their role as a writer, the audience they will address, the varied formats for writing, and the expected content. It is an acronym that stands for:

- Role of the Writer - Who are you as the writer? Are you Sir John A. Macdonald? A warrior? A homeless person? An auto mechanic? The endangered snail darter?
- Audience - To whom are you writing? Is your audience the Canadian people? A friend? Your teacher? Readers of a newspaper? A local bank?
- Format - What form will the writing take? Is it a letter? A classified ad? A speech? A poem?
- Topic + strong Verb - What's the subject or the point of this piece? Is it to persuade a goddess to spare your life? To plead for a re-test? To call for stricter regulations on logging?

Almost all RAFTs writing assignments are written from a viewpoint different from the student's, to another audience rather than the teacher, and in a form different from the ordinary theme. Therefore, students are encouraged to use creative thinking and response as they connect their imagination to newly learned information.

### **What Is Its Purpose?**

The purpose of RAFTs is to give students a fresh way to think about approaching their writing. It occupies a nice middle ground between standard, dry essays and free-for-all creative writing. RAFTs combines the best of both. It also can be the way to bring together students' understanding of main ideas, organization, elaboration, and coherence...in other words, the criteria by which compositions are most commonly judged.

### **How Can I Do It?**

**Step one:** Explain to the students how all writers have to consider various aspects before every writing assignment including role, audience, format, and topic. Tell them that they are going to structure their writing around these elements. (It may be helpful to display the elements on chart paper or a bulletin board for future reference).

**Step two:** Display a completed RAFTs example on the overhead, and discuss the key elements as a class.

**Step three:** Then, demonstrate, model, and "think aloud" another sample RAFTs exercise with the aid of the class. Brainstorm additional topic ideas, and write down the suggestions listing roles, audiences, formats, and strong verbs associated with each topic.

**Step four:** Assign students to small, heterogeneous groups of four or five or pairs and have them "put their heads together" to write about a chosen topic with one RAFTs assignment between them.

**Step five:** Circulate among the groups to provide assistance as needed. Then have the groups share their completed assignments with the class.

**Step six:** After students become more proficient in developing this style of writing, have them generate RAFTs assignments of their own based on current topics studied in class.

## How Can I Adapt It?

- This strategy is great for differentiation; teachers (and students) can develop any number of possible RAFTs based on the same text that can be adjusted for skill level and rigor.
- Paula Rutherford's book, *Instruction for All Students*, offers a comprehensive list of "Products and Perspectives" from which to choose.
- The RAFTs strategy can be used as a prewriting strategy and/or as a strategy for helping students prepare for a small or large group discussion.

Desert Unit RAFT choices (3rd grade) - <http://www.somers.k12.ny.us/intranet/reading/desertassign.html>

Students have the opportunity to do the following RAFT:

Pretend that you are a saguaro cactus. Using what you have learned about this type of cactus, create an advertisement that announces that you have rooms available for rent. Your advertisement should include all the information an "animal" would need to know about the rooms for rent as well as where to contact you if interested. The voice of your advertisement is a saguaro cactus. Your audience is animals that use saguaros as their homes. Be creative and remember to sell yourself as having the best rooms in the desert! - Ms. Lovelett, Mrs. Schoenberg, Mrs. Stoll, Mrs. Sandvoss

...or to choose from the list below:

<b>ROLE</b>	<b>AUDIENCE</b>	<b>FORMAT</b>	<b>TOPIC</b>
nomad	oasis	thank you letter	value of water
kangaroo rat	sun	complaint	sun out too long
lost student in the desert	classmates	travel guide	survival tips
saguaro cactus	animals	advertisement	rooms for rent
cook	other cooks	saguaro recipes	jams, candy, etc.
mommy & daddy bats	baby bats	instructions	how to drink nectar from a saguaro cactus
Native American	self	diary	hardships of the desert
camel	Gobi Desert	news release/interview	sand walk
desert	sun	thank you	sun's role in the desert
camel	water	love letter	water's role in the camel's existence

-Mrs. Schoenberg, Mrs. Cannata, Mrs. Hoffman, Mrs. Stoll, 3rd gr. teachers; and Mrs. Ostermann, Library Media Specialist

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- Audience - To whom are you writing? Is your audience the Canadian people? A friend? Your teacher? Readers of a newspaper? A local bank?
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saguaro cactus	animals	advertisement	rooms for rent
cook	other cooks	saguaro recipes	jams, candy, etc.
mommy & daddy bats	baby bats	instructions	how to drink nectar from a saguaro cactus
Native American	self	diary	hardships of the desert
camel	Gobi Desert	news release/interview	sand walk
desert	sun	thank you	sun's role in the desert
camel	water	love letter	water's role in the camel's existence

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Desert Unit RAFT choices (3rd grade) - <http://www.somers.k12.ny.us/intranet/reading/desertassign.html>

Students have the opportunity to do the following RAFT:

Pretend that you are a saguaro cactus. Using what you have learned about this type of cactus, create an advertisement that announces that you have rooms available for rent. Your advertisement should include all the information an "animal" would need to know about the rooms for rent as well as where to contact you if interested. The voice of your advertisement is a saguaro cactus. Your audience is animals that use saguaros as their homes. Be creative and remember to sell yourself as having the best rooms in the desert! - Ms. Lovelett, Mrs. Schoenberg, Mrs. Stoll, Mrs. Sandvoss

...or to choose from the list below:

<b>ROLE</b>	<b>AUDIENCE</b>	<b>FORMAT</b>	<b>TOPIC</b>
nomad	oasis	thank you letter	value of water
kangaroo rat	sun	complaint	sun out too long
lost student in the desert	classmates	travel guide	survival tips
saguaro cactus	animals	advertisement	rooms for rent
cook	other cooks	saguaro recipes	jams, candy, etc.
mommy & daddy bats	baby bats	instructions	how to drink nectar from a saguaro cactus
Native American	self	diary	hardships of the desert
camel	Gobi Desert	news release/interview	sand walk
desert	sun	thank you	sun's role in the desert
camel	water	love letter	water's role in the camel's existence

-Mrs. Schoenberg, Mrs. Cannata, Mrs. Hoffman, Mrs. Stoll, 3rd gr. teachers; and Mrs. Ostermann, Library Media Specialist

# SCAMPER

## When to use it

Use it to discover more ideas when you are running out.

Use it to stimulate new ways of thinking about the problem, perhaps to kick you out of your current rut.

## How to use it

SCAMPER is an acronym for useful list of words that can be applied as stimuli to make you think differently about the problem area.

### Substitute

What can you substitute? What can be used instead? Who else instead? What other ingredients? Other material? Other process? Other power? Other place? Other approach? Other sounds? Other forces?

Instead of ... I can ...

### Combine

What can you combine or bring together somehow? How about a blend, an alloy, an assortment, an ensemble? Combine units? Combine purposes? Combine appeals? Combine ideas?

I can bring together ... and ... to ...

### Adapt

What can you adapt for use as a solution? What else is like this? What other idea does this suggest? Does past offer a parallel? What could I copy? Who could I emulate?

I can adapt ... in this way ... to ...

### Modify

Can you change the item in some way? Change meaning, colour, motion, sound, smell, form, shape? Other changes?

Also: *Magnify*: What can you add? More time? Greater frequency? Stronger? Higher? Longer? Thicker? Extra value? Plus ingredient? Duplicate? Multiply? Exaggerate?

And: *Minify*: What can you remove? Smaller? Condensed? Miniature? Lower? Shorter? Lighter? Omit? Streamline? Split up? Understate?

I can change ... in this way ... to ...

### Put to other uses

How can you put the thing to different or other uses? New ways to use as is? Other uses if it is modified?

I can re-use ... in this way ... by ...

### Eliminate

What can you eliminate? Remove something? Eliminate waste? Reduce time? Reduce effort? Cut costs?

I can eliminate ... by ...

### Rearrange

What can be rearranged in some way? Interchange components? Other pattern? Other layout? Other sequence? Transpose cause and effect? Change pace? Change schedule?

I can rearrange ... like this ... such that ...

## Example

I want to invent a new type of pen.

Substitute - ink with iron, nib with knife

Combine - writing with cutting, holding with opening

Adapt - pen top as container

Modify - body to be flexible

Put to other uses - use to write on wood

Eliminate - clip by using velcro

Rearrange - nib to fold outwards

## How it works

SCAMPER works by providing a list of active verbs that you associate with your problem and hence create ideas. As they are all verbs, they are about doing, and so get you to think about action.

SCAMPER was defined by Robert Eberle, after an initial list from Brainstorming originator Alex Osborn.

# Six Hats

The **Hats** represent six thinking strategies, as identified by Edward de Bono. He championed the cause which drove the creative processes in individuals. He would often hypothesize that of these approaches, most people used only one or two of the approaches and that people developed thinking habits which in turn limited people to those approaches. De Bono believed that if the various approaches could be identified and a system of their use developed which could be taught, that people could be more productive in meetings and in collaborating within groups and teams by deliberately using the approaches.

As a result of his investigations, de Bono was able to describe a process of deliberately adopting a particular approach to a problem as an implementation of parallel thinking, as well as an aid to lateral thinking. Six different approaches are described, and each is represented by the act of putting on a colored hat, either actually or imaginatively. This he suggests can be done either by individuals working alone or in groups.

The Red Hat represents Emotional thinking. The Yellow Hat represents Positive thinking. The Black Hat represents Critical thinking. The White Hat is purely the facts. The Green Hat is Creative thinking. The Blue Hat represents the Big Picture, sort of looking at it from all the viewpoints. These Thinking Hats have recently been incorporated in school business programs such as the IBT (International Business and Technology) program.

## Six de Bono hats

- White hat (Blank Sheet): Information & reports, facts and figures (*objective*)
- Red hat (Fire): Intuition, opinion & emotion, feelings (*subjective*)
- Yellow hat (Sun): Praise, positive aspects, why it will work (*objective*)
- Black hat (Judge's Robe): Criticism, judgment, negative aspects (*objective*)
- Green hat (Plant): Alternatives, new approaches & 'everything goes', idea generation & provocations (*speculative/creative*)
- Blue hat (Sky): "Big Picture," "Conductor hat," "Meta hat," "thinking about thinking", overall process (*overview*)

## Main purposes

- Enhance the thinking process
- Encourage creative, parallel and lateral thinking
- Improve communication
- Speed up decision making
- Avoid debate

## **de Bono's thinking hats diagram**

Edward de Bono's thinking hats were developed in order to illustrate the various methods of thinking utilized by individuals within problem solving processes. Each of the hats represent a method of thinking commonly used by individuals within problem solving. It is hoped that through such representations more individuals will be able to recognise the various methods of thinking that they utilise and therefore better understand their own thinking processes. It is also hoped that individuals will be able to better understand the thinking processes of others and therefore even incorporate some of these processes within their own thinking. Included below is a description of each of the hats and the thinking processes that they represent. Their use will be illustrated through the analysis of a simple classroom issue. By doing so the problem can be more easily deconstructed and therefore an answer more easily sought.

For example take the following problem into consideration. I will give an issue, and then explain how each thinking hat addresses it using different views:

**Issue** – *Students are talking while their teacher is talking*

### **White hat – factual (state the facts)**

- Students are talking while the teacher is talking
- There is noise and therefore other students are distracted and can't hear the teacher
- Students don't know what to do once instructions are given
- Many students become distracted and off task resulting in the failure to complete work

### **Red Hat – emotional (state the emotions)**

- The teacher feels offended
- Students become frustrated because they can't hear directions
- Those talking enjoy joking around and being heard.

### **Black Hat – critical (negative aspects)**

- Time is wasted
- Learning is compromised
- Those speaking feel that listeners do not respect them and do not wish to hear what they are saying

### **Yellow hat – positive (positive aspects)**

- Everyone is able to say what is on their minds
- It can be fun
- Not only the 'smart kids' get to speak
- One doesn't have to wait to share their ideas and therefore risk forgetting information

### **Green hat – creative (creative ideas that originate as a result of seeing information in a new light)**

- Teacher will be more aware about the amount of time they spend talking
- Teacher will try to incorporate interaction from a variety of different students rather than just the 'smart kids'

- Students will resist the urge to say whatever is on their mind. They will think about what they have to say and whether it is relevant to the topic
- Students will take into account whether their comment will interfere with other people's learning

### **Blue hat – process control (ensure each hat gets effectively the big picture)**

- Teacher learns that they need to monitor the amount of time that they spend talking within the classroom
- Teacher needs to involve all students within discussions
- Teacher needs to recognize that some students need thinking time before responding. Allowing these students time to compute solutions promotes wider participation and increased learning
- Students realize that their talking makes the speaker feel unappreciated and disrespected
- Students realize that their comments are jeopardizing the learning of other individuals
- Students realize that talking out of time demonstrates a lack of self-discipline and that not all comments require sharing

### **Summary**

Utilizing a variety of approaches within thinking and problem solving allows the issue to be addressed from a variety of angles, thus servicing the needs of all individuals concerned. The thinking hats are useful for learners as they illustrate the need for individuals to address problems from a variety of different angles. They also aid learners as they allow the individual to recognize any deficiencies in the way that they approach problem solving, thus allowing them to rectify such issues.

de Bono believed that the key to a successful use of the Six Think Hats methodology was the deliberate focusing of the discussion on a particular approach as needed during the meeting or collaboration session. For instance, a meeting may be called to review a particular problem and to develop a solution for the problem. The Six Thinking Hats method could then be used in a sequence to first of all explore the problem, then develop a set of solutions, and to finally choose a solution through critical examination of the solution set.

So the meeting may start with everyone assuming the **Blue** hat to discuss how the meeting will be conducted and to develop the goals and objectives. The discussion may then move to **Red** hat thinking in order to collect opinions and reactions to the problem. This phase may also be used to develop constraints for the actual solution such as who will be affected by the problem and/or solutions. Next the discussion may move to the (**Yellow** then) **Green** hat in order to generate ideas and possible solutions. Next the discussion may move between **White** hat thinking as part of developing information and **Black** hat thinking to develop criticisms of the solution set.

Because everyone is focused on a particular approach at any one time, the group tends to be more collaborative than if one person is reacting emotionally (Red hat) while another person is trying to be objective (White hat) and still another person is being critical of the points which emerge from the discussion (Black hat).

# Six Hats® -- Effective Thinking and Higher Level Questioning

Dr. Benjamin Bloom and Dr. Edward DeBono's Hierarchies

 <p><b>WHITE HAT®</b></p> <p><b>KNOWLEDGE (Bloom)</b>  <b>REMEMBERING (Revised Bloom)</b>  <b>FACTS</b>  <b>INFORMATION</b>  <b>DATA</b>  <b>RESEARCH</b></p>	<p>Who, What, When, Where?          What do you know about ...?          What are the facts about ... ?          What do you need or want to know about ...?          Where might you go to find out about ...?</p>
 <p><b>RED HAT®</b></p> <p><b>EVALUATION (Bloom)</b>  <b>FEELINGS</b>  <b>HUNCHES</b>  <b>EMOTIONS</b>  <b>INTUITION</b></p>	<p>What are your feelings now?          Did your feelings change? How?          Which way do you like best based on your feelings?          What prejudices are present?          What is your hunch about...          What is your gut feeling about ...?          What does your intuition tell you?</p>
 <p><b>BLACK HAT®</b></p> <p><b>ANALYSIS (Bloom)</b>  <b>CAUTION</b>  <b>BE CAREFUL</b>  <b>DANGER</b>  <b>WISDOM</b>  <b>RISKS</b>  <b>WEAKNESSES</b></p>	<p>What should you be cautious about ...          What words of wisdom come from this?          What are the consequences of...          What were the difficulties of...          Why won't / didn't this work?          What did you dislike about...          What are the risks of ...          What are some Uh-Ohs?</p>



**YELLOW HAT®**

**ANALYSIS (Bloom)**

**BENEFITS**

**GOOD**

**POSITIVES**

**VALUE**

**STRENGTHS**

What are the benefits of ...?

What is good about ...

What is a positive outcome of...

What is the value of...

Can this be made to work? Explain.

What did you like about... ?



**GREEN HAT® -**

**SYNTHESIS (Bloom)**

**CREATING (Revised Bloom)**

**CREATIVITY**

**IMAGINATION**

**NEW IDEAS**

**POSSIBILITIES**

What if ... ?

Can you create other ways to do this?

How would you solve the problem?

What new ideas can you think of?

What other possibilities are there for...?

Express yourself through literature, poetry, drama, media etc.



**BLUE HAT® -**

**COMPREHENSION (Bloom)**

**UNDERSTANDING (Revised Bloom)**

**APPLICATION (Bloom)**

**THINKING ABOUT THINKING**

**PROCESS**

**BIG IDEAS/MAIN IDEA**

**CONCLUDE/SUMMARIZE**

**LIST**

Why?

List. Journal.

Tell how you got your answer.

Sequence the events.

Explain?

Summarize.

What is your conclusion?

What next?

Action plan?

What is the main idea? What are the big ideas?

What was the problem; how was the problem solved?

Track your thinking.

Look from another perspective.

Look (think) as if you were in the sky.

# Culturally Relevant Instruction

## Think, Pair, Share

### *Teacher Tip*

*October 15, 2005*

Think, Pair, Share is a strategy first developed by Professor Frank Lyman at the University of Maryland in 1981. It introduces into the peer interaction element of cooperative learning the concept of wait or think time, which has been demonstrated to be a powerful factor in improving student responses to questions.

The strategy is simple and can be effectively used with early childhood students through higher education classes. It is a very versatile structure, which has been adapted and used, in an endless number of ways. This is one of the foundation stones for the development of the “cooperative classroom.”

Think, Pair, Share ensures a high level of engagement and is more secure than a large group. Results include increased student participation and improved retention of information. Students learn from one another and get to try out their ideas in a non-threatening context before making their ideas more public. Learner confidence improves and all students are given a way to participate in class.

Think, Pair, Share has many advantages over the traditional questioning structure. The think time incorporates the important concept of wait time. It allows all children to develop answers. Longer and more elaborate answers can be given. Answers will have reasons and justifications because they have been thought about and discussed. Students are more willing to take risks and suggest ideas because they have already tested them with their partner.

The benefits for the teacher include increased time on task in the classroom and greater quality of student contribution to class discussions. Both students and teachers gain much clearer understandings of the expectation for attention and participation in classroom discussions.

The strategy should be introduced early in the process of establishing a cooperative classroom. There are four steps to think, pair, share, with a time limit on each step signaled by the teacher.

### **Step One - Teacher poses a question**

The process of Think, Pair, Share begins when the teacher poses a thought-provoking question for the entire class. This may be a straightforward question or a problem the teacher wants to pose to the class for solution. Low level, single right answer questions are to be avoided in this model. Questions must pose problems or dilemmas that students



will be able to think about. The success and quality of the think, pair, share strategy will depend on the quality of the question posed.

### **Step Two - Students think individually**

Next the students are given individual think time to formulate their answer to the problem/ question. The time should be decided by the teacher on the basis of knowledge of the students and the nature of the question. It may be helpful, though it is not required, to have students write out their individual responses and solutions. Students should understand that while there may be no one right answer, it is important that everyone come up with some reasonable answer to the question. This step of the process automatically builds "wait time" into the classroom.

### **Step Three - Each student discusses his or her answer with a fellow student**

At the end of the think time step the student begins working with one other student to agree on an answer to the question. Each student now has a chance to try out possibilities. Together, each pair of students can reformulate a common answer based on their collective solutions to the problem. At times, the process can go one step farther by asking pairs of students to regroup into foursomes to further refine their thoughts before sharing with the group at large. These small group settings are less threatening to individual students than sharing an untried answer with the whole group. The pair step in the model also promotes much more conversation among students about the issues entailed by the question.

### **Step Four - Students share their answers with the whole class**

In this final step, solutions are presented to the whole class. Each pair of students can then share responsibility for the product of their thinking. The final step of think, pair, share has several benefits to all students. They see the same concepts expressed in several different ways as different individuals find unique expressions for answers to the question. The concepts embedded in the answers are in the language of the learners rather than the language of textbook or teacher. And where students can draw or otherwise picture their thoughts, different learning styles can come into play in the attempt to understand the ideas behind the answers.

### **Variations:**

- ***Formulate, Share, Listen, Create*** -developed by Johnson, Johnson and Smith in 1991 for use with problems or questions that can be addressed in a variety of ways. The "create" step gets students to synthesize their ideas and come up with the best solution to a problem. The steps include formulating an individual response to a question; sharing the response with a partner; listening to partners' responses noting similarities and differences; then creating a new response that incorporates the best of the ideas.
- ***Write, Pair, Share*** – this variation requires that students write an individual response as the first step. The next two steps remain the same as the original strategy. Another variation is to have students write down their thoughts on note

cards and collect them. This gives the teacher an opportunity to see whether there are problems in comprehension.

- ***Timed-Pair-Share*** - If you notice that one person in each pair is monopolizing the conversation, you can switch to "Timed-Pair-Share." In this modification, you give each partner a certain amount of time to talk. For example, say that Students #1 and #3 will begin the discussion. After 60 seconds, call time and ask the others to share their ideas.
- ***Rally robin*** - If students have to list ideas in their discussion, ask them to take turns. For example, if they are to name all the geometric shapes they see in the room, have them take turns naming the shapes. This allows for more equal participation.

Streaming video of teachers demonstrating Think, Pair Share may be viewed at the following MCPS webpage:

[http://www.mcps.k12.md.us/departments/development/resources/strategies/think\\_pair\\_share.html](http://www.mcps.k12.md.us/departments/development/resources/strategies/think_pair_share.html)

*Adapted from Gunter, M. A., Estes, T. H., & Schwab, J. H. (1999).  
Instruction: A models approach, 3rd edition. Boston: Allyn &  
Bacon.*

## Planning the Ultimate Vacation

### Purpose

The purpose of this task is to assess the student's ability to effectively plan and budget for a vacation within given confines.

### Knowledge, Skills, and Dispositions to Assess

Students will demonstrate their ability to...

- read and interpret maps
- organize information about geography by preparing maps, charts, and other graphic displays
- acquire, analyze and synthesize information about geography, which has been obtained from a variety of sources such as maps, texts and other reference sources
- prepare a budget

### Related Standards of Learning

Students will ...

- apply critical reading and reasoning skills
- select the best sources for a given purpose
- use a variety of planning strategies to generate and organize ideas
- solve problems that include addition, subtraction, multiplication and division
- solve multi-step consumer application problems involving decimals
- present data and conclusions in paragraphs, tables, or graphs

### Prerequisite Skills

- Familiarity with reading and interpreting maps
- Basic reading skills
- Basic writing skills
- Basic math skills

### Required Materials

- Access to computers with Internet capability
- Travel brochures, restaurant guides, maps, etc.
- Calculators

### **Context, Form, Rater**

This task is designed to be completed in 3-4 class periods and to be rated by the teacher. Students may work alone, or in groups. (See teacher notes.) Portions of the task may be suitable for homework, although most parts require access to maps, travel brochures, and other geographic materials that may not be equally available to all students in their home setting.

### **Prompts**

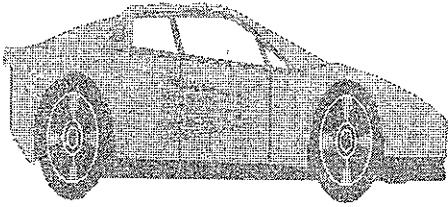
There are three prompts. Prompt One is for students functioning below grade level in English, geography, and math skills and/or who need help with organizational skills. It includes more specific parameters and an extensive graphic organizer to help with the budget portion of the task. Prompt Two is for students functioning at grade level in English, geography, and math. It includes a moderate degree of help with defining task parameters. Prompt Three is for students working above grade level in English, geography, and math and who can function with a greater degree of ambiguity. Although the tasks differ, the rubric remains the same for each prompt.

### **Additional Notes to Teacher**

Teachers may wish to fill out the planning sheet attached to Prompt One before assigning destinations and budget amounts to individual students. (A trip of about 1000 miles, as presented in Prompt One, will cost approximately \$2000.)

Teachers may wish to provide intermediate deadlines for tasks for those students who struggle with organizational and planning issues.

If this task is adapted to group work, teachers may wish to add a group-work component to the rubric. In this case, teachers should make be sure to provide for individual accountability for outcomes.



## The Ultimate Vacation

### Prompt One

The AAA Travel Agency in your town is extremely shorthanded and needs additional staff to help travelers plan their vacations for next summer. A list of destinations has been created. Your task will be to plan a *road trip* for a family of four (2 adults, 2 children under 12) who want to visit an interesting destination for their vacation next summer. You will be told the maximum distance they wish to travel and how much money the family has budgeted for the trip. You will have access to resources such as maps, tour guides, brochures, the Internet, etc. Use the attached graphic organizer to help you do the following:

1. Calculate the mileage on available routes from your town. Identify the most direct route (the shortest distance in miles to the destination). This is the route the family prefers to travel so that they spend the most time possible at their destination.
2. Calculate the approximate cost of gas for the trip. (Assume their car gets 30 miles to the gallon and gas costs an average of \$1.12/gallon.)
3. The family plans to average 50 miles per hour while driving and travel 6 hours a day. How long will it take them to get to their destination?
4. How many nights will they need to spend in hotels on the way to and from their destination? If they stay 4 nights at their destination what will their total cost be for hotels? (Assume that a hotel room costs an average of \$75 per night and that the family will stay in one room.)
5. The family will eat three meals a day. Budget \$75 per day. Calculate total meal cost for the complete trip.
6. Once at the destination, the family will need recommendations on what to do. The family's entertainment budget is approximately \$100/day. Make recommendations on the best way to spend this money. Be sure you balance the entertainment and activity needs of both the adults and children of the family!

7. Total the cost of travel to the destination, the 4-day stay at the destination, and the cost of the trip back to your town. (If you wish, you may plan an alternative route for their return trip.) Assume the family will average the same amount of driving time per day on the return trip as on the trip to their destination.
8. Are you within the budget? If not, make whatever changes and/or recommendations you need to be within budget.

Now design a detailed itinerary for the family that explains their options for travel and your best recommendations for their trip. Be sure your itinerary is easy to read and understand, since it will be mailed to the family. Include budget information and recommendations, as appropriate. Create a map (drawn to scale and including all important map elements) and a set of written directions that tells the family what routes to take, when to turn onto a new route, when and where to stop for the night, etc. from initial departure to safe return home.

*BONUS: Include with your itinerary both an itemized estimate and a detailed explanation of additional expenses that the family may incur on this vacation in order to help them plan more completely and accurately.*

You will be evaluated on your ability to advise the family appropriately, the quality of the maps and itinerary you prepare, and the accuracy of your budget. See the attached rubric for more complete information.

# The Ultimate Vacation

## Planning Sheet

### Prompt One

DESTINATION: \_\_\_\_\_

BUDGET: \_\_\_\_\_

1. Mileage: (Star the *most direct route.*)

Route 1 \_\_\_\_\_

Route 2 \_\_\_\_\_

Route 3 \_\_\_\_\_

2. Cost of Gas:

One way = \_\_\_\_\_ miles

X 2 (roundtrip) = \_\_\_\_\_ miles

+ 30 mpg = \_\_\_\_\_ gallons

X \$1.12/gallon =

(Total cost of gas for trip)

3. Total miles one way = \_\_\_\_\_ miles

+ 50 mph = \_\_\_\_\_ hours

+ 6 hours/day = \_\_\_\_\_ days

(Total days to destination)

4. Cost of hotel

Days of travel = \_\_\_\_\_ days

X \$75/night = \_\_\_\_\_

X 2 (roundtrip) = \_\_\_\_\_

+ \$300 (4 days at destination @ \$75/night) =  Total hotel

5. Cost of meals

Total days away from home = \_\_\_\_\_ days

X \$75 (cost per day) =  Total meals

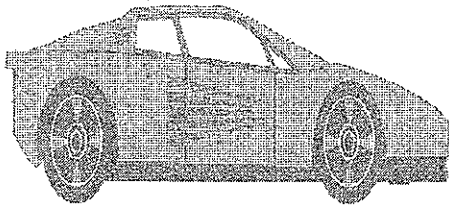
6. Entertainment

Total days at destination = 4 days

X \$100/day =  Total ent.

Add up shaded amounts:

**GRAND TOTAL COST OF TRIP:** \_\_\_\_\_



## The Ultimate Vacation

### Prompt Two

The AAA Travel Agency in your town is extremely shorthanded and needs additional staff to help travelers plan their vacations for next summer. A list of destinations has been created. Your task will be to plan a *road trip* for a family of four (2 adults, 2 children under 12) who want to visit an interesting destination for their vacation next summer. You will be told the maximum distance they wish to travel and how much money the family has budgeted for the trip. You will have access to resources such as maps, tour guides, brochures, the Internet, etc.

1. Calculate the mileage on available routes from your town. Identify the most direct route (the shortest distance in miles to the destination). This is the route the family prefers to travel so that they spend the most time possible at their destination.
2. At current prices, calculate the approximate cost of gas for the trip. (Assume their car gets 30 miles to the gallon.)
3. The family plans to average 50 miles per hour while driving, travel 6 hours a day, stopping twice to eat for an hour each time, how long will it take them to get to their destination? How many nights will they need to spend in hotels on the way? (The family will stay in one room.)
4. The family will eat three meals a day. Make a recommendation about how much, on average, to budget for each meal. Justify your decision. Calculate the approximate total meal cost for the trip.
5. The family will stay 4 nights at their destination. Calculate hotel and meal costs for a 4-night stay.
6. Once at the destination, the family will need recommendations on what to do. The family's entertainment budget is approximately \$100/day. Make recommendations on the best way to spend this money. Be sure you balance the entertainment and activity needs of both the adults and children of the family!

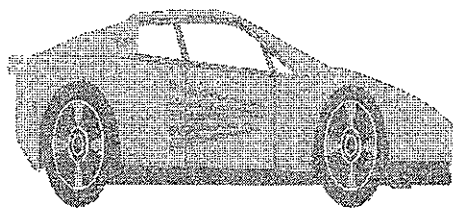


7. Total the cost of travel to the destination, the 4-day stay at the destination, and the cost of the trip back to your town. (Please plan an alternative route for their return trip.)
8. Are you within the budget? If not, make whatever changes and/or recommendations you need to be within budget.

You will also need to design a detailed itinerary for the family that explains their options for travel and your best recommendations for their trip. Be sure your itinerary is easy to read and understand, since it will be mailed to the family. Include budget information and recommendations, as appropriate. Create a map (drawn to scale and including all important map elements) and a set of written directions that tells the family what routes to take, when to turn onto a new route, when and where to stop for the night, etc. from initial departure to safe return home.

*BONUS: Include with your itinerary both an itemized estimate and a detailed explanation of additional expenses that the family may incur on this vacation in order to help them plan more completely and accurately.*

You will be evaluated on your ability to advise the family appropriately, the quality of the maps and itinerary you prepare, and the accuracy of your budget. See the attached rubric for more complete information.



## **The Ultimate Vacation**

### **Prompt Three**

The AAA Travel Agency in your town is extremely shorthanded and needs additional staff to help travelers plan their vacations for next summer. A list of destinations has been created. You will be assigned a favorite client of the agency, a family of four (2 adults, 2 children under 12). The family has just purchased a brand new mini-van that they plan to take on vacation this summer. Your task will be to suggest an interesting road trip for them to take during this vacation. You will be told how much money the family has budgeted for their trip. You are eager to present them with an interesting and highly appealing trip. You will have access to resources such as maps, tour guides, and brochures, the Internet, etc.

Your task is to do the following:

1. Choose a destination within a reasonable driving distance from your town. Calculate the mileage on available routes. Identify the most direct route. This is the route the family usually prefers to travel so that they spend the most time possible at their destination.
2. Calculate the approximate cost of gas for the trip. Justify your estimate.
3. The family prefers to average 50 miles per hour while driving, travel 6 hours a day stopping twice to eat for an hour each time. How long will it take them to get to the destination? How many nights will they need to spend in hotels on the way? Check guidebooks for a hotel that has at least a 2-diamond rating. They prefer hotels that include breakfast. The family usually stays in one room when they travel. Compute hotel costs for each stopover.
4. The family eats three meals a day. Calculate average total meal costs for each trip. Suggest a specific restaurant (or type of restaurant, such as Shoney's, etc.) for each meal. The family generally eats at fast food or family-style restaurants, but they like to splurge on one fancy dinner per trip. You will need to make a recommendation for when and where to enjoy this dinner.

5. The family prefers to stay at least 4 nights at their destination. Calculate hotel and meal costs for a 4-night stay.
6. Once at the destination, the family will need recommendations on what to do. The family's entertainment budget is approximately \$100/day. How can they best spend this money? Be sure you balance the entertainment and activity needs of both the adults and children of the family!
7. Suggest at least 1 day-trip. (They must be able to drive to the site, see what they want to see, and return to the hotel in the evening.) Plan a trip that is likely to be interesting to both adults and children.
8. The family prefers to take a different route home from their trip.
9. Total the cost of travel to the destination, the 4-day stay at the destination, and the cost of the trip back to your town. Are you within the budget you were given? If not, make whatever changes and/or recommendations needed in order to be within budget.

Now design a detailed itinerary for the family that explains their options for travel and your best recommendations for their trip. Be sure your itinerary is easy to read and understand, since it will be mailed to the family. Include budget information and recommendations, as appropriate. Create a map (drawn to scale and including all important map elements) and a set of written directions that tells the family what routes to take, when to turn onto a new route, when and where to stop for the night, etc. from initial departure to safe return home.

*BONUS: Include with your itinerary both an itemized estimate and a detailed explanation of additional expenses that the family may incur on this vacation in order to help them plan more completely and accurately.*

You will be evaluated on your ability to advise the family appropriately, the quality of the maps and itinerary you prepare, and the accuracy of your budget. See the attached rubric for more complete information.

## The Ultimate Vacation Rubric

	<b>STILL IN TRAINING</b>	<b>TRAVEL AGENT</b>	<b>WORLD CLASS PLANNER</b>
<b>BUDGET</b>	Little or no evidence of logic is applied to the analysis and development of your budget. Mathematical calculations and/or estimations are incorrect, making your budget plan unusable.	You use logic to analyze and solve budget problems. Appropriate mathematical strategies are chosen, resulting in accurate calculations and/or estimations.	Budget problems are analyzed and solved using logic. Appropriate mathematical strategies are chosen which enable you to accurately calculate or estimate needed figures. The travel budget is not only consistent; it allows room for unexpected or emergency needs.
<b>PLANNING</b>	Your planning contains little or no structure. The travel plans fails to follow a logical sequence. You do not consider important aspects of the trip in your plan. Your recommendations for sightseeing and/or other activities are not appropriate for a family vacation. This trip will be a disappointment to both adults and children.	Your planning is structured. The travel plans follow a logical sequence. You provide sound advice for major aspects of the trip. Recommendations are appropriate, although they tend to favor either the adult OR child perspective. Overall, this trip will be a success.	Your planning is well structured and easy to follow. The travel plans are complete and logical. Your advice to the family is unique and inspired. Recommendations are highly appropriate for all family members, offering a good balance between activities that are likely to please adults and /or children. This trip will be the vacation of a lifetime!
<b>DOCUMENTS</b>	Overall presentation is messy and hard to understand. Your map is not drawn to scale and does not include important elements. Travel routes are not clearly labeled and mileage is missing. Accompanying materials such as charts and/or graphs are illegible or not clearly related to itinerary.	Overall presentation is neat and easy to understand. Your map is drawn to scale and includes major elements. Travel routes are labeled, but hard to locate. Mileage is indicated, but in an inconsistent manner. Accompanying materials such as charts and/or graphs are easy to read and relate to the itinerary.	Overall presentation is neat and exciting. Your map is drawn to scale, and includes all appropriate elements. Travel routes are clearly labeled and mileage is indicated. Accompanying materials such as charts and/or graphs are professional looking and greatly enhance and/or explain the itinerary.





## Jigsaw in 10 Easy Steps

The jigsaw classroom is very simple to use. If you're a teacher, just follow these steps:

1. Divide students into 5- or 6-person jigsaw groups. The groups should be diverse in terms of gender, ethnicity, race, and ability.
2. Appoint one student from each group as the leader. Initially, this person should be the most mature student in the group.
3. Divide the day's lesson into 5-6 segments. For example, if you want history students to learn about Eleanor Roosevelt, you might divide a short biography of her into stand-alone segments on: (1) Her childhood, (2) Her family life with Franklin and their children, (3) Her life after Franklin contracted polio, (4) Her work in the White House as First Lady, and (5) Her life and work after Franklin's death.
4. Assign each student to learn one segment, making sure students have direct access only to their own segment.
5. Give students time to read over their segment at least twice and become familiar with it. There is no need for them to memorize it.
6. Form temporary "expert groups" by having one student from each jigsaw group join other students assigned to the same segment. Give students in these expert groups time to discuss the main points of their segment and to rehearse the presentations they will make to their jigsaw group.
7. Bring the students back into their jigsaw groups.
8. Ask each student to present her or his segment to the group. Encourage others in the group to ask questions for clarification.
9. Float from group to group, observing the process. If any group is having trouble (e.g., a member is dominating or disruptive), make an appropriate intervention. Eventually, it's best for the group leader to handle this task. Leaders can be trained by whispering an instruction on how to intervene, until the leader gets the hang of it.
10. At the end of the session, give a quiz on the material so that students quickly come to realize that these sessions are not just fun and games but really count.

## Explore the Jigsaw Classroom:

- ▶ [Overview of the Technique](#)
- ▶ [History of the Jigsaw Classroom](#)
- ▶ [Jigsaw in 10 Easy Steps](#)
- ▶ [Tips on Implementation](#)
- ▶ [Books and Articles Related to the Jigsaw Technique](#)
- ▶ [Chapter 1 of Aronson's Book "Nobody Left to Hate: Teaching Compassion After Columbine"](#)
- ▶ [Links on Cooperative Learning and School Violence](#)
- ▶ [About Elliot Aronson and This Web Site](#)

