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Engaging Learners through a Thinking Classroom: Essential to the (Common) Core

Richard M. Cash, Ed.D.

richard@nrichconsulting.com

612-670-0278

Thinking: Why it is an essential tool for the 21st Century

- ~ Diversity of problems and issues that confront our increasingly complex world
- ~ Greater need for collaboration and cooperation in the flattening and shrinking world
- ~ Advances in technology can lead to "intellectual laziness"




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How thinking fits in the differentiated classroom & curriculum

- ~ Thinking is a process embedded in all curricular domains
- ~ All students should be required to use advanced levels of thinking
 - ~ Many students will need scaffolding and practice to reach these high levels
- ~ Some students will advance thinking to more sophisticated levels
 - ~ These students will need more authentic experiences to hone this level of thinking skill




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Thinking

- ~ Is the mental process used to reach a conclusion or to solve problems
- ~ Solving problems of survival is a natural process to our brain
- ~ Solving problems beyond survival is an evolved process to our brain and requires direct instruction and practice to refine this process



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Thinking

“ **Can be:**

- “ Critical (reasoning using information)
- “ Creative (generating new and original ideas)
- “ Problem solving and decision making (reaching a conclusion)

“ **All require:**

- “ Communication
- “ Collaboration




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Some Characteristics of a Thinking Classroom



- “ Encouraging of intellectual risk-taking
- “ Nurtures the development of thinking through a supportive and collaborative environment
- “ All students are respected for the varying degrees of thought
- “ Emphasizes delaying gratification and focuses on effort
- “ Builds learner responsibility for learning
- “ Fun and enjoyable place to be


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Strategies to Improve Student Thinking

- “ Use thinking skills every day and all the time—both you and your students.
- “ Use broad, open-ended questions/essential questions.
 - “ In what ways are we a part of a whole?
- “ Use wait-time. Before asking students to respond to a question, allow at least 10 seconds for students to process their ideas and answers



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Strategies to Improve Student Thinking

- ~ Use follow-up statements or questions for deeper thinking, such as:
 - ~ "Tell me more."
 - ~ "Can you clarify your answer?"
 - ~ "Provide me with evidence to support your answer."
 - ~ "Tell me how you got to that answer."
- ~ Use focused, directed thinking strategies in every lesson.

"Honor the effort not the achievement!"

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Strategies to Improve Student Thinking


- ~ Make students aware of their thinking process.
 - ~ Thinking Journals
 - ~ Thinking Blogs, web pages, networks
- ~ Model thinking and share your own metacognition on thinking with students.
- ~ Always encourage students to ask questions.
 - ~ Blogs, networks, webpages
 - ~ Bulletin Boards
 - ~ Signs

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Creative Thinking



More than just silliness

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Creative Thinking
 The mental process used to imagine or invent through combining, changing, or reshaping existing ideas

Fluency:
The ability to generate many ideas

Elaboration:
The ability to enhance and extend ideas

Flexibility:
The ability to think of things differently

Originality:
The ability to come up with new ideas

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Brainstorming

- ~ Work quickly
- ~ Create lots of ideas
- ~ Add to other's ideas (piggybacking)
- ~ Hold back judgment

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SCAMPER

- ~ A technique to assist students in the development of creative idea generation and production
- ~ Questions are posed to students that would not normally be posed--forcing students to think outside the box
- ~ A useful checklist to assist students in making modifications and adjustment to existing products-to make new ones

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SCAMPER Examples



- ~ **Substitute:** mechanical pencil
- ~ **Combine:** iPhone®
- ~ **Adapt:** Nyquil Day-time®
- ~ **Modify/minimize/maximize:** big-screen TV/ iPod Nano®
- ~ **Put to other use:** Water-skis
- ~ **Eliminate:** Diet/Caffeine-free Coke®
- ~ **Reverse/revise:** Reversible coat

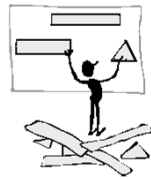
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Try SCAMPER in your classroom

- ~ Randomly select an object from your desk, backpack or from the room. Choose at least two:
 - ~ Substitute
 - ~ Combine
 - ~ Adapt
 - ~ Modify/Minimize/Maximize
 - ~ Put to other use
 - ~ Eliminate
 - ~ Reverse/Revise



- ~ Your new item will be assessed on:
 - ~ Originality
 - ~ Usefulness
 - ~ Practicality

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Assessing Originality

- ~ 1) There is something out there like it
- ~ 3) The item took an old idea and made it better in at least 3 ways
- ~ 5) The item took an old idea and made it better in at least 3 ways and has value to a broad audience




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Assessing Usefulness

- ~ 1) The item has little usefulness to others
- ~ 3) The item has usefulness to others
- ~ 5) The item has broad appeal and usefulness to a large group of people




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Assessing Practicality

- ~ 1) The item is not very practical
- ~ 3) The item has some practical applications
- ~ 5) The item is very practical and may save money, time, or resources





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Your turn to SCAMPER

- ~ With a pencil...
 - ~ Substitute
 - ~ Combine
 - ~ Adapt
 - ~ Modify/Minimize/Maximize
 - ~ Put to other use
 - ~ Eliminate
 - ~ Reverse/Revise
- ~ Your new item will be assessed on:
 - ~ Originality
 - ~ Usefulness
 - ~ Practicality

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SCAMPER in the curriculum

- ~ **Substitute:** A character in the story with one from another story, how might it change the outcome? (Literature)
- ~ **Combine:** the events into categories (Social Studies)
- ~ **Adapt:** What could happen if we plant the seeds in sand? (Science)
- ~ **Modify/minimize/maximize:** What if deer had no predators (Science)
- ~ **Put to other use:** Use letters to solve the problem (Math)
- ~ **Eliminate:** One event from the story, how would it change? (Literature)
- ~ **Reverse/revise:** Start with the answer, come up with the problem. (Math)

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SCAMPER in the curriculum

- ~ **Substitute:** Washington and Eisenhower
- ~ **Combine:** Events leading to the American Revolution into categories
- ~ **Adapt:** What if there were electricity at the time of the American Revolution, how might the events been different?
- ~ **Modify/minimize/maximize:** What if the war had lasted for 10 years?
- ~ **Put to other use:** How might the Treaty of Paris been used differently?
- ~ **Eliminate:** What if the Treaty of Paris had never happened?
- ~ **Reverse/revise:** What if the British had won the war?


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Critical Reasoning:
**The ability to use data,
 past experiences and
 evidence to make decisions**

Developed through the ability to
 ask good questions,
 analyze data,
 reflect and
 interpret fact versus opinion




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Critical Reasoning Strategies Embedded in the CCSS:

- ~ Comparing & contrasting
- ~ Sequencing & prioritizing
- ~ Analyzing arguments
- ~ Finding relevance & irrelevance
- ~ Discerning fact vs opinion
- ~ Investigating reliable & unreliable sources




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Critical Reasoning Strategies Embedded in the CCSS:

- ~ Distinguishing assumptions & generalizations
- ~ Identifying cause & effect
- ~ Understanding point of view
- ~ Recognizing bias & stereotype
- ~ Using deduction & induction




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PNI

- ~ Understanding point of view
- ~ Using deduction & induction



- ~ Discerning fact vs opinion
- ~ Distinguishing assumptions & generalizations
- ~ Identifying cause & effect

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Positive, Negative, Interesting (PNI)

Topic: POSITIVE NEGATIVE INTERESTING

POSITIVE	NEGATIVE	INTERESTING


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A major pharmaceutical company has developed a pill that can increase intelligence.

Your school is considering testing the pill. What are the possible consequences of the testing that should be taken into account?



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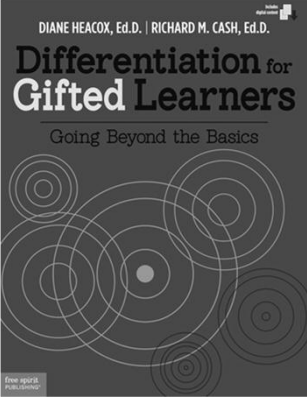
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DIANE HEACOX, Ed.D. | RICHARD M. CASH, Ed.D.

Differentiation for Gifted Learners

Going Beyond the Basics



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SCAMPER PRODUCT DEVELOPMENT

Using a common household item, SCAMPER it to create a new product that we can't live without! Keep in mind that your product must be:

- Innovative: what you have created is better than the original item in at least 3 ways.
- Useful: what you have created appeals to a broad audience.
- Practical: what you have created can save money, time, resources...



Substitute: alternate, exchange, fill-in, rename, replace, reposition, change, swap, switch, take the place of, use instead



Combine: merge, blend, bring together, commingle, conjoin, unite, join, coalesce, mix, associate, package



Adapt/add: change, alter, adjust, vary, amend, bend, fit, conform, copy, emulate, incorporate, transform



Modify/maximize/minimize: grow, shrink, amend, mutate, curb, temper, enlarge, expand, amplify, make bigger, make smaller, extend, reduce



Put to other use: employ, utilize, apply, exploit, work, treat, manipulate, expend, exhaust, use up, consume



Eliminate: get rid of, do away with, eradicate, remove, reduce, exclude, expel, lessen,



Reverse/rearrange/reorder/reverse: turn around, undo, quash, swap, switch, invert, alter, transpose, move backwards/forwards/around

SCAMPER PRODUCT DEVELOPMENT

Draw a prototype of your new product and create an ad campaign to sell it!



Questioning Typology



Type	Question Examples
Defining the issue	<p>What is the situation? What is it all about? What are the various issues involved? Who is involved in the case? What are expected to find out?</p>
Fact V Opinion	<p>What do we know? What don't we know? What opinions do we have? How do the facts support/oppose our opinions?</p>
Prediction and inference	<p>What is at stake? What may happen if the situation is not resolved? What could be a possible outcome if the situation is resolved? Why did the people involved act the way they did? How do the people involve feel? Why might the people involved not want a solution?</p>
Inquiry	<p>What questions do we have? What other information do we need? Where can we find data? How can we find the data? What are you taking for granted?</p>
Seeking point of view	<p>What is your point of view? What does every member believe? Do we believe the people involved see it the way we do? What are the key issues you are focused on? Is your point of view reasonable? Which point of view makes the most sense given the situation?</p>
Cause & Effect	<p>What effect will each option have? What are the values or limitations of the options? What implications will each option have on the people involved? Why are these options effective ideas? What are the consequences if no decision is made?</p>
Criteria forming	<p>What criteria will we use to select an option? How do we consider all members opinions? Why do you believe the criteria to be sound? What information do you need to form sound criteria? What other experiences have you had that can help you form a sound decision?</p>
Shifting point of view	<p>How that you have heard from others-does that help or change your point of view? What conclusions can you come to after hearing other's point of view? How might each point of view be helpful in creating a decision?</p>
Considering all sides	<p>How might your opinion or view be seen differently? In what ways to other points of view support/oppose your point of view? How can other points of view be adjusted to support/oppose your point of view? In what ways do others interpret your point of view?</p>

Questioning Typology

Looking backwards	<p>What might the people involved done differently to alleviate or avoided the situation?</p> <p>How might this situation been different if any one person/event were eliminated?</p> <p>How did each event/person assist in creating the situation?</p> <p>How might the situation have been different?</p>
Urging follow-up	<p>Tell me more.</p> <p>What do you mean by that statement?</p> <p>Could you clarify your thinking for us?</p> <p>Provide examples to support your claim.</p> <p>Tell me how you got to that conclusion.</p>
Guiding to collaboration	<p>Why you think she has that idea?</p> <p>What are the various view points so far?</p> <p>Why do we have differing opinions/viewpoints?</p> <p>In what ways can you support each other in this process?</p> <p>What are the strengths of each member and how can they be used to create a workable solution?</p>

