## GATE Strategies
*(Gifted and Talented Education)*

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### Bloom’s Revised Taxonomy

<table>
<thead>
<tr>
<th><strong>Remembering</strong></th>
<th>Retrieving, recognizing, and recalling relevant knowledge from long-term memory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding</strong></td>
<td>Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining</td>
</tr>
<tr>
<td><strong>Applying</strong></td>
<td>Carrying out or using a procedure through executing or implementing</td>
</tr>
<tr>
<td><strong>Analyzing</strong></td>
<td>Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing</td>
</tr>
<tr>
<td><strong>Evaluating</strong></td>
<td>Marking judgments based on criteria and standards through checking and critiquing</td>
</tr>
<tr>
<td><strong>Creating</strong></td>
<td>Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing</td>
</tr>
</tbody>
</table>

Source: Anderson & Krathwohl as cited in Forehand, 2008

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### CREATIVE PROBLEM SOLVING

(based on the original work of Osborn (1963) and Parnes (1981))

**Step 1: Problem Awareness** – Students should identify the problem on their own

**Step 2: Fact Finding** – relevant information of how, why, who, when, what, and where is gathered

**Step 3: Defining the Problem** – in open-ended statement – I.W.W.M.W. stands for “In what ways might we...” and can be used to restate a problem. For example, trying to create a better mouse trap has more options for possible solutions if restated: In what ways might we get rid of rodents?

**Step 4: Idea Finding** – to generate several possible solutions to the problem

**Step 5: Solution Finding** – determine the best solution from the previously generated ideas. Prioritize solutions during this step.

**Step 6: Acceptance Finding** – formulate a step-by-step plan to implement the solution. Older students may develop a flow chart to detail this step.

**Step 7: Implementation and Rethinking** – students execute their plan in real life, simulation, or in writing. Then students reflect upon changes they made in the plan and relate those changes.
Traffic Light Thinking

**Red Light Thinking** – STOP…

* Find the Facts
* Notice important details
* Literal thinking (Notice)

1. What is/was?
2. Who did/does?
3. Where did/does?
4. When did/does?
5. What did/does?
6. When is/was?

**Yellow Light Thinking** – SLOW DOWN…

* Use Reasoning
* Try to figure it out – Process
* Interpretive thinking (Think), Opinion, judgments.

1. Why can/can’t?
2. How will?
3. How is ____ like?
4. Why would/wouldn’t?
5. Why did?
6. Why should/shouldn’t?

**Green Light Thinking** – GO…

* Use imagination
* Develop new ideas
* Creative thinking (Wonder)

1. What could?
2. What if…?
3. How to…?
4. Why might?
5. In what ways might?
6. How would?

**SCAMPER**  
(Creative Problem Solving/Creative Thinking)

- **S**ubstitute or Replace
- **C**ombine two or more objects
- **A**dapt or change to fit the situation
- **M**odify/Minify/Magnify- change an attribute
- **P**ut to other use – a new use for something
- **E**liminate – remove or omit one or more parts
- **R**everse/Rearrange – put it in a different order

**FFOE: Creative/Productive Thinking Skills**

**FLUENCY**

For example:
- List many ways to…
- Think of several possible ways to…
- Come up with multiple ideas for…

**FLEXIBILITY**

For example:
- List many different kinds of ways to…
- Think of different kinds of reasons for…
- What are the different kinds of…

**ORIGINALITY**

For example:
- Think of ideas no one else will think of.
- Think of unique and unusual ways to…
- Consider wild or outrageous ideas.

**ELABORATION**

For example:
- Add supplemental ideas to make basic idea clearer.
- Think of details to add to your main idea.
- Add ideas to make your basic idea more interesting.
<table>
<thead>
<tr>
<th>The Six Types of Socratic Questions</th>
<th>Five Types of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>by, R. W. Paul</td>
<td>by, Leslie Owen Wilson</td>
</tr>
<tr>
<td><strong>Questions for clarification:</strong></td>
<td><strong>Factual</strong></td>
</tr>
<tr>
<td>- How do you say that?</td>
<td>- Soliciting reasonable simple, straight-forward answers based on obvious facts or awareness. Lowest level of cognitive or affective processes and answers are frequently right or wrong</td>
</tr>
<tr>
<td>- How does this relate to our discussion?</td>
<td></td>
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<tr>
<td><strong>Questions that probe assumptions:</strong></td>
<td><strong>Convergent</strong></td>
</tr>
<tr>
<td>- What could we assume instead?</td>
<td>- Answers to these questions are usually within a very finite range of acceptable accuracy. These may be at several different levels of cognition – comprehension, application, analysis, or ones where the answerer makes inferences or conjectures based on personal awareness, or on material read, presented or known.</td>
</tr>
<tr>
<td>- How can you verify or disapprove that?</td>
<td></td>
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<tr>
<td><strong>Questions that probe reasons or evidence:</strong></td>
<td><strong>Divergent</strong></td>
</tr>
<tr>
<td>- What would be an example?</td>
<td>- These questions allow students to explore different avenues and create many different variations and alternative answers or scenarios. These questions often require students to analyze, synthesize or evaluate a knowledge base and then project or predict different outcomes.</td>
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<tr>
<td>- What is … analogous to:</td>
<td></td>
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<tr>
<td>- What do you think causes to happen….? Why?</td>
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<tr>
<td><strong>Questions about viewpoints and perspectives:</strong></td>
<td><strong>Evaluate</strong></td>
</tr>
<tr>
<td>- What would be an alternative?</td>
<td>- These types of questions usually require sophisticated levels of cognitive and/or emotional judgement. In attempting to answer, students may be combining multiple logical and/or affective thinking processes. Answers are analyzed at multiple levels and from different perspectives for answerer to arrive at newly synthesized information or conclusions.</td>
</tr>
<tr>
<td>- What is another way to look at it?</td>
<td></td>
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<tr>
<td>- Would you explain why it is necessary or beneficial, and who benefits?</td>
<td></td>
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<tr>
<td>- What are the strengths and weaknesses of …?</td>
<td></td>
</tr>
<tr>
<td>- How are … and …. similar?</td>
<td></td>
</tr>
<tr>
<td>- What is a counterargument for …?</td>
<td></td>
</tr>
<tr>
<td><strong>Questions that probe implications and consequences:</strong></td>
<td><strong>Combinations</strong></td>
</tr>
<tr>
<td>- What generalizations can you make?</td>
<td>- These are questions that blend any combination of the above.</td>
</tr>
<tr>
<td>- What are the consequences of that assumption?</td>
<td></td>
</tr>
<tr>
<td>- What are you implying?</td>
<td></td>
</tr>
<tr>
<td>- How does …. affect … ?</td>
<td></td>
</tr>
<tr>
<td>- How does …. tie in with what we learned before?</td>
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<tr>
<td><strong>Questions about the question:</strong></td>
<td></td>
</tr>
<tr>
<td>- What is the point of this question?</td>
<td></td>
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<tr>
<td>- Why do you think I asked this question?</td>
<td></td>
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<tr>
<td>- What does … mean?</td>
<td></td>
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<tr>
<td>- How does … apply to everyday life?</td>
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</tbody>
</table>
Six Thinking Hats®
Quick Summary

**Blue Hat - Process**
Thinking about thinking.  
What thinking is needed?  
Organizing the thinking.  
Planning for action.

**White Hat - Facts**
Information and data.  
Neutral and objective.  
What do I know?  
What do I need to find out?  
How will I get the information I need?

**Red Hat - Feelings**
Intuition, hunches, gut instinct.  
My feelings right now.  
Feelings can change.  
No reasons are given.

**Green Hat - Creativity**
Ideas, alternatives, possibilities.  
Provocations - "PO".  
Solutions to black hat problems.

**Yellow Hat - Benefits**
Positives, plus points.  
Logical reasons are given.  
Why an idea is useful.

**Black Hat - Cautions**
Difficulties, weaknesses, dangers.  
Logical reasons are given.  
Spotting the risks.
Introducing Thinking Maps

Questions from Texts, Teachers and Tests → Thinking Processes → Thinking Maps as Tools

How are you defining this thing or idea? What is the context? What is your frame of reference?

DEFINING IN CONTEXT

How are you describing this thing?
Which adjectives would best describe this thing?

DESCRIBING QUALITIES

What are the similar and different qualities of these things?
Which qualities do you value most? Why?

COMPARING and CONTRASTING

What are the main ideas, supporting ideas, and details in this information?

CLASSIFYING

What are the component parts and subparts of this whole physical object?

PART-WHOLE

What happened?
What is the sequence of events? What are the substages?

SEQUENCING

What are the causes and effects of this event?
What might happen next?

CAUSE and EFFECT

What is the analogy being used?
What is the guiding metaphor?

SEEING ANALOGIES

Circle Map

Bubble Map

Double Bubble Map

Tree Map

Brace Map

Flow Map

Multi-Flow Map

Bridge Map

1-9
Project Based Learning (PBL)  
(Buck Institute of Education)

PBL is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging and complex question, problem, or challenge. In Gold Standard PBL, Project Design Elements include:

- **Key Knowledge, Understanding, and Success Skills** - The project is focused on student learning goals, including standards-based content and skills such as critical thinking/problem solving, collaboration, and self-management.

- **Challenging Problem or Question** - The project is framed by a meaningful problem to solve or a question to answer, at the appropriate level of challenge.

- **Sustained Inquiry** - Students engage in a rigorous, extended process of asking questions, finding resources, and applying information.

- **Authenticity** - The project features real-world context, tasks and tools, quality standards, or impact – or speaks to students’ personal concerns, interests, and issues in their lives.

- **Student Voice & Choice** - Students make some decisions about the project, including how they work and what they create.

- **Reflection** - Students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles and how to overcome them.

- **Critique & Revision** - Students give, receive, and use feedback to improve their process and products.

- **Public Product** - Students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom.