22. Engaging Students in Cognitively Complex Tasks Involving Hypothesis Generation and Testing

The teacher engages students in short- and long-term complex tasks that require them to generate and test hypotheses and analyze their own thinking.

Example Teacher Evidence
- Teacher engages students with an explicit decision making, problem solving, experimental inquiry, or investigation task that requires them to
  - Generate conclusions
  - Identify common logical errors
  - Present and support claims
  - Navigate digital resources
- Teacher facilitates students in generating their own individual or group tasks that require them to generate and test hypotheses
  - Generate conclusions
  - Identify common logical errors
  - Present and support claims
  - Navigate digital resources

Example Student Evidence
- Students participate in tasks that require them to generate and test hypotheses
- Students can explain the hypothesis they are testing
- Students can explain whether their hypothesis was confirmed or disconfirmed and support their explanation
- Student artifacts indicate that while engaged in decision making, problem solving, experimental inquiry, or investigation, students can
  - Generate conclusions
  - Identify common logical errors
  - Present and support claims
  - Navigate digital resources
  - Identify how one idea relates to others

Scale

<table>
<thead>
<tr>
<th>Not Using</th>
<th>Beginning</th>
<th>Developing</th>
<th>Applying</th>
<th>Innovating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaging students in cognitively complex tasks involving hypothesis generation and testing</td>
<td>Strategy was called for but not exhibited.</td>
<td>Uses strategy incorrectly or with parts missing.</td>
<td>Engages students in cognitively complex tasks requiring hypothesis generation and testing and analysis of their own thinking, but the majority of students are either not monitored for or not displaying the desired effect of the strategy.</td>
<td>Engages students in cognitively complex tasks requiring hypothesis generation and testing and analysis of their own thinking and monitors for evidence of the extent to which the majority of students are generating and testing hypotheses and analyzing their own thinking.</td>
</tr>
</tbody>
</table>

Reflection Questions

<table>
<thead>
<tr>
<th>Not Using</th>
<th>Beginning</th>
<th>Developing</th>
<th>Applying</th>
<th>Innovating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaging students in cognitively complex tasks involving hypothesis generation and testing</td>
<td>How can you begin to incorporate some aspects of this strategy into your instruction?</td>
<td>How can you engage students in cognitively complex tasks involving hypothesis generation and testing and analysis of their own thinking?</td>
<td>In addition to engaging students in cognitively complex tasks involving hypothesis generation and testing and analysis of their own thinking, how can you monitor the extent to which the majority of students are generating and testing hypotheses and analyzing their own thinking?</td>
<td>How might you adapt and create new strategies for engaging students in cognitively complex tasks involving hypothesis generation and testing that address unique student needs and situations for all students?</td>
</tr>
</tbody>
</table>