

Direct Teaching Of Skills/Procedures Strategy

SURFACE	Example: <i>Investigating</i>
1. Define the Skill/Procedure	Investigating is the process of making an investigation by using a set procedure for finding the answer to a question using various research methods.
2. Define/Develop the related Concept.	<p>Investigation: An investigation is something people do to find answers to questions. (See sample concept attainment activity for the concept "investigation")</p> <p>Scientific Investigation: A scientific investigation uses a set procedure involving various methods for finding the answer to a question.</p>
3. Identify Steps (Procedures) in the Skill/Procedure.	1) Ask questions. 2) Make predictions 3) Plan the investigation (Descriptive, Comparative, Experimental) 4) Observe and record data 5) Analyze the data. 6) Make conclusions. 7) Discuss observations and conclusions.
4. Identify Key Concepts in the Steps a. Ensure students understand the concepts before proceeding, including the concept directly related to the skill (eg. <i>Discussion</i> is the related concept to the verb/skill <i>discuss</i> .)	1) Ask questions . 2) Make predictions 3) Plan the investigation 4) Observe (observation) and record data . 5) Analyze (analysis) the data. 6) Make conclusions . 7) Discuss (discussion) observations and conclusions . See sample concept attainment activities for the concepts highlighted in red)
5. Identify Key Sub-Skills in the Steps a. Ensure students are competent in the sub-skills before proceeding.	1) Ask questions. 2) Make predictions 3) Plan the investigation.(video example) (Note: The teacher supplies the materials and students design the experiments). 4) Observe and record data. 5) Analyzing data 6) Make conclusions . 7) Discuss observations and conclusions.
5.Share and model the steps.	Choose a simple problem to investigate. Example: <i>What causes an elastic to provide a stronger force: it's thickness or its length?"</i>
6. Provide opportunities to for guided practice. <ul style="list-style-type: none"> At the start, use "easy" texts so that learners can focus on the skill and not have their attention competing with 	<i>Can any of the sub-skills be used in any other course?</i> <i>Can any of these concepts be used in any other course?</i>

<p>understanding the text.</p> <ul style="list-style-type: none"> • Use intermittent (not massed) practice with increasing complexity and a variety of contexts to support transfer. • Use the steps to assess and provide feedback. 	<p><i>Can an investigation be used in any other course?</i></p>
--	---

Deepen	Example: <i>Investigating</i>
1. Encourage students to talk about what they are doing (metacognition)	<p><i>As students are working, ask</i></p> <ul style="list-style-type: none"> • <i>What step are you on?</i> • <i>What are you doing at this step?</i> • <i>Why are you doing this step?</i> • <i>Is this step easy/hard? Why?</i>
2. Explore the skill itself at a conceptual level.	<ul style="list-style-type: none"> • <i>How is this skill different than ...?</i> • <i>How is this skill similar to ... ?</i> • <i>Explore the concepts within the steps (eg. What would happen if you changed your criteria to ... What does that tell us about using criteria?)</i> • <i>What is easy about this skill? Difficult?</i> • <i>For Comparing and Contrasting: What is the connection between Comparing and Contrasting, Criteria, and Conclusion?</i>
3. Provide opportunities for guided practice with increasingly complex/unfamiliar contexts.	<ul style="list-style-type: none"> • <i>How is this skill different than ...?</i> • <i>How is this skill similar to ... ?</i> • <i>Explore the concepts within the steps (eg. What would happen if you changed your criteria to ... What does that tell us about using criteria?)</i> • <i>What are instances when we use this skill?</i>

Transfer	Example:
<ol style="list-style-type: none"> 1. Give students tasks without saying which skill/procedure would work best. 2. Provide increasingly novel /complicated contexts for learners to apply the skill. 	<ul style="list-style-type: none"> • Which of the following cars that we made in class is the most different (compare and contrast)? How can it be modified (problem solve) to make it the best one (evaluate)?

References

Beyer, Barry K. (1984). Improving thinking skills: Practical approaches. *The Phi Delta Kappan*. 65 (8), 556-560.

Erickson, L. H., Lanning, L. A., French, R. (2017). *Concept-Based Curriculum and Instruction for the Thinking Classroom*. Thousand Oaks, CA: Corwin.

Hattie, J., Stern, J., Fisher, D., Frey, N. (2020). *Visible Learning for Social Studies*. Thousand Oaks, CA: Corwin.

Krathwhol, David R. (2002). A revision of Bloom's taxonomy: An overview. *Theory Into Practice*. 41 (4), 212-218.

Stern, J., Ferraro, K., Duncan, K., Aleo, T. (2021). *Learning That Transfers: Designing Curriculum for a Changing World*. Thousand Oaks, CA: Corwin.