



## Moving Toward Project-Based Learning in Your CTE Classroom

WIFI

attwifi\_meeting

PREM2018

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# What is Project-Based Learning?

# What is Project-Based Learning?

A type of learning where students are immersed in authentic learning experiences. Students experiment, address authentic issues, and work collaboratively with classmates and community members to pursue knowledge.



# Projects vs Project-Based Learning

- May all be the same
- Each project has the same end goal
- Little resemblance to work done in the real world
- Student choice is evident
- Graded with a rubric
- Requires team collaboration
- Closely resembles work in the workforce
- Always requires teacher guidance
- Is aligned to state standards
- Is relevant to the future lives of students
- Is presented to an audience outside of the classroom

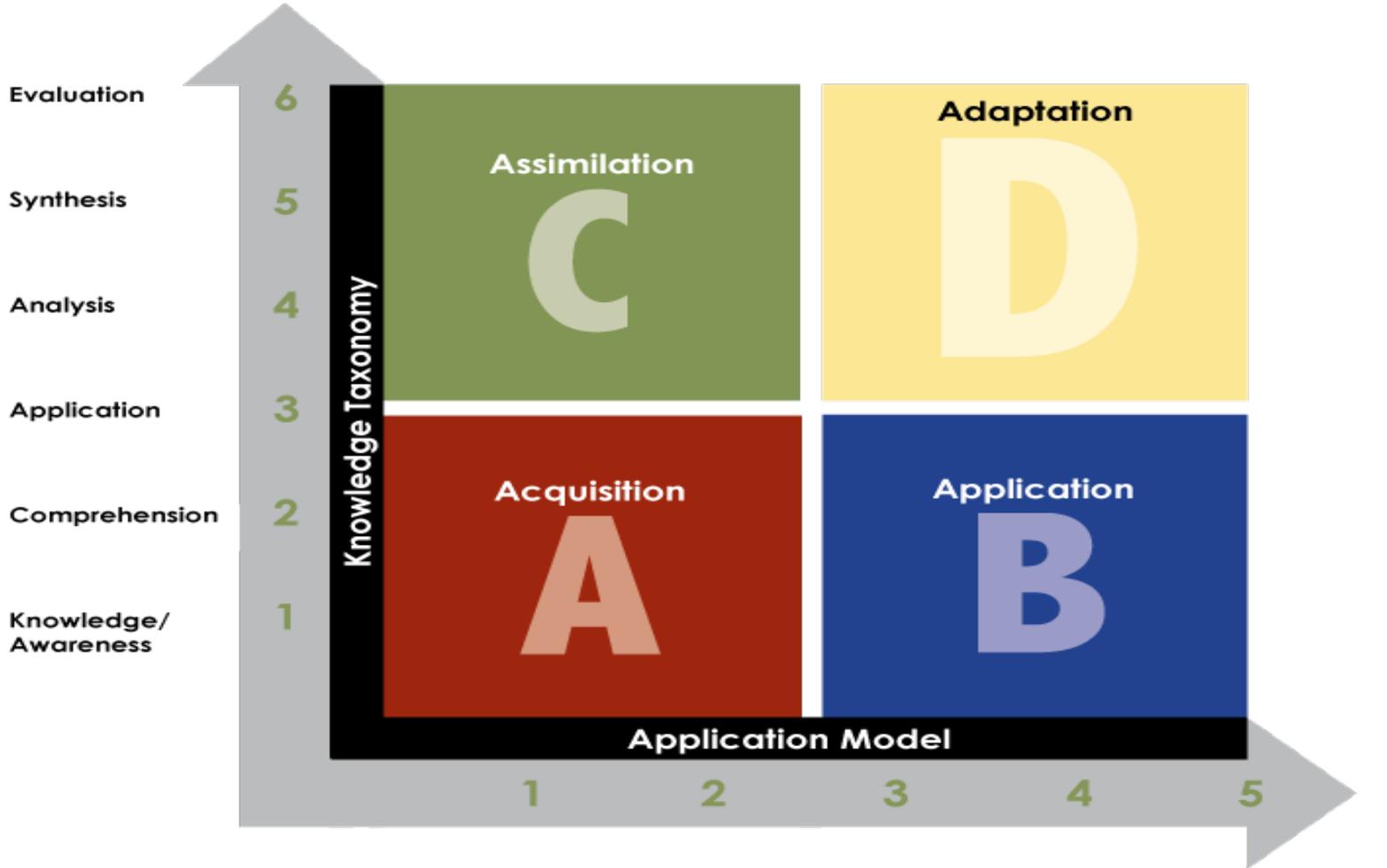


# Why is Project-Based Learning Important?

Focus on teaching  
students **how to**  
**learn** versus what to  
learn.



# Rigor/Relevance Framework<sup>®</sup>



**CTE**

Technical Assistance Center of NY

A Division of the Successful Practices Network

Knowledge in one discipline

Apply in discipline

Apply across disciplines

Apply to real-world predictable situations

Apply to real-world unpredictable situations

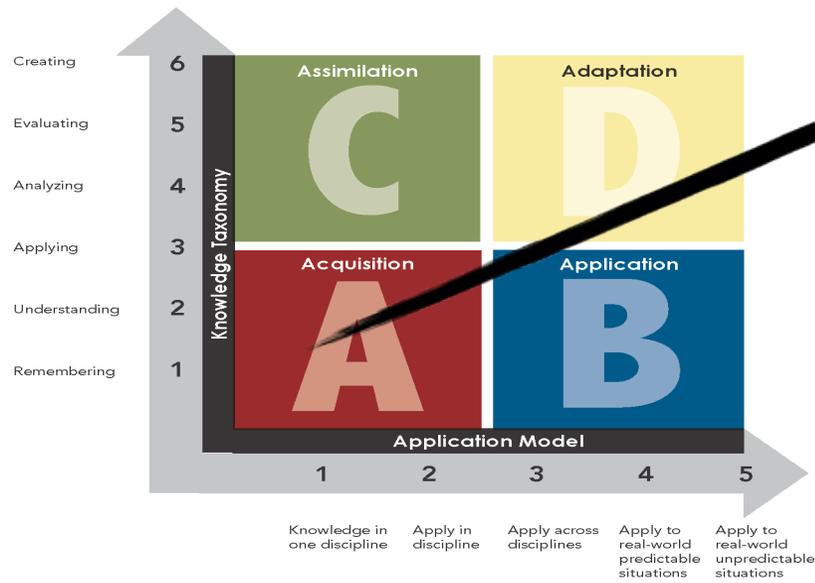
# Quadrant A - Acquisition

lower levels of thinking

Gathering and storing bits of information in order to understand and remember

Example: Recall definitions of various science terms.

lower levels of application



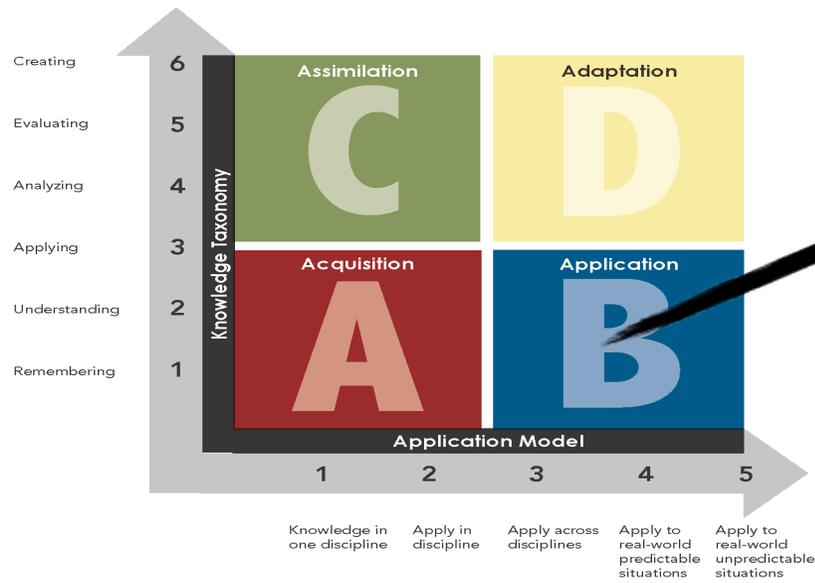
# Quadrant B - Application

lower levels of thinking

Using knowledge to solve problems and complete work.

Example: Follow written directions to conduct an experiment

higher levels of application



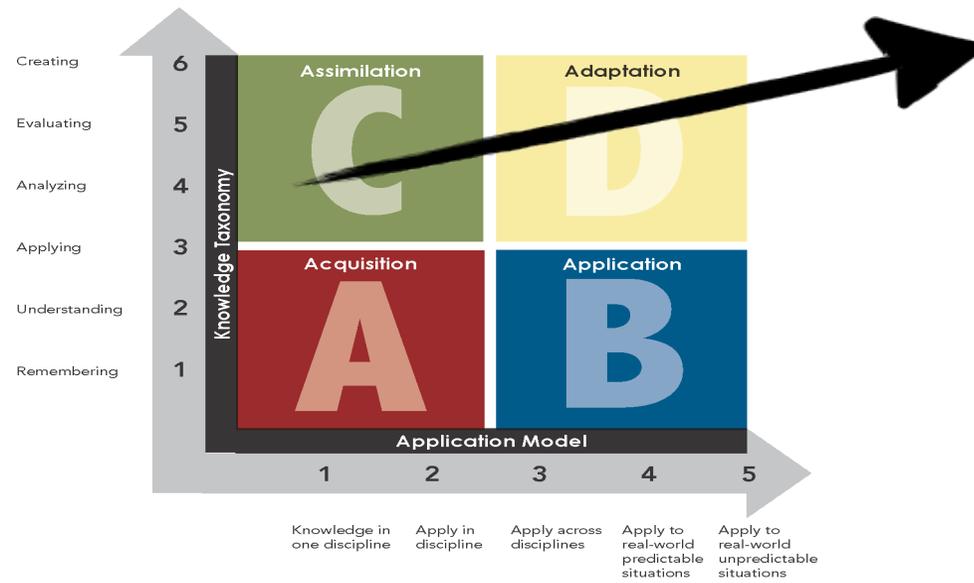
# Quadrant C - Assimilation

high levels of thinking

Using high levels of knowledge to analyze problems and create solutions

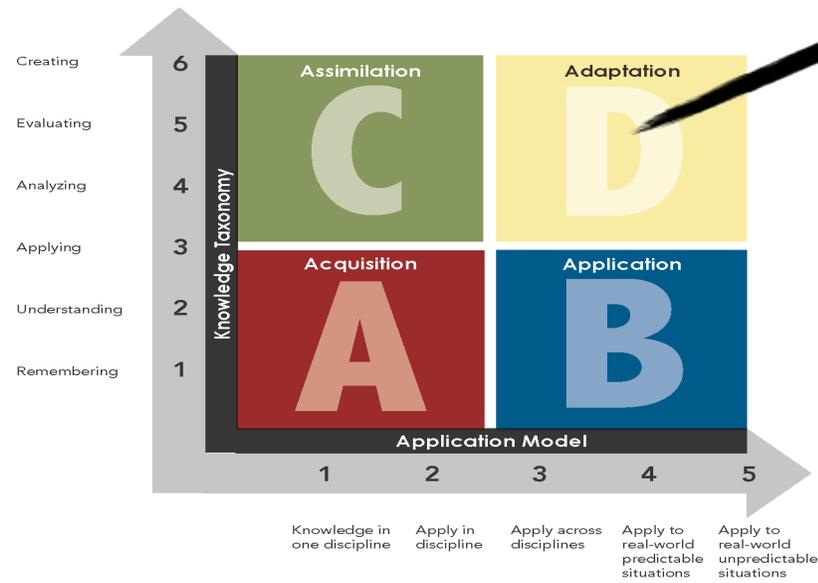
Example: Analyze data to prove or disprove a theory

lower levels of application



# Quadrant D - Adaptation

high levels of thinking

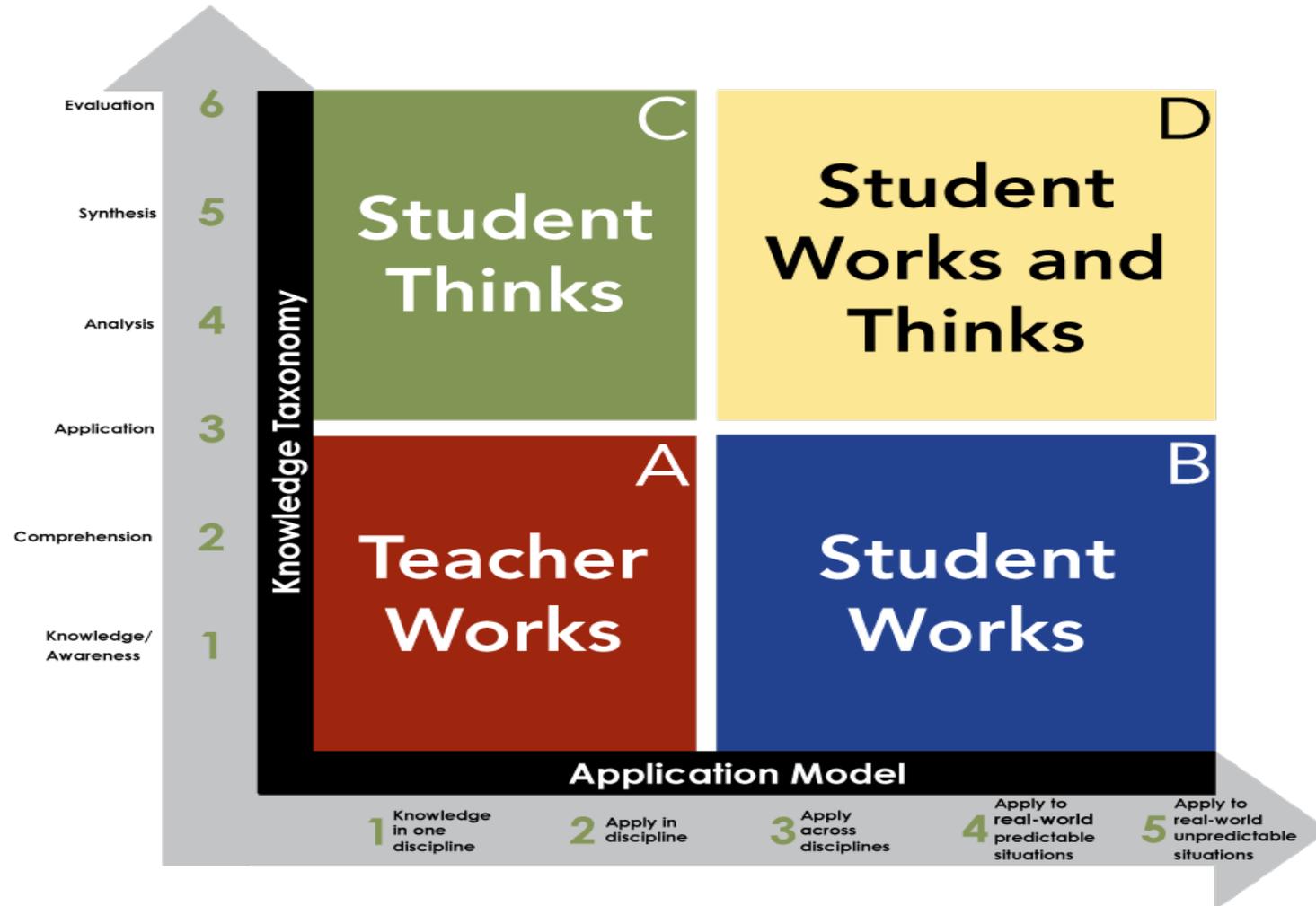


Thinking in complex ways and applying thinking to find solutions to unpredictable problems

Example: Design your own experiment to collect data to solve a real-world problem

high levels of application

# Rigor/Relevance Framework®



# Revised Bloom's Taxonomy – Question Starters

## Remembering- Knowledge

*Recall or recognize information, and ideas*

The teacher should:

- Present information about the subject to the student
- Ask questions that require the student to recall the information presented
- Provide verbal or written texts about the subject that can be answered by recalling the information the student has learned

### Question prompts

What do you remember about \_\_\_\_\_?

How would you define \_\_\_\_\_?

How would you identify \_\_\_\_\_?

How would you recognize \_\_\_\_\_?

What would you choose \_\_\_\_\_?

Describe what happens when \_\_\_\_\_?

How is (are) \_\_\_\_\_?

Where is (are) \_\_\_\_\_?

Which one \_\_\_\_\_?

Who was \_\_\_\_\_?

Why did \_\_\_\_\_?





TOOL 5D

# HESS COGNITIVE RIGOR MATRIX | Career & Technical Education (CTE CRM) :

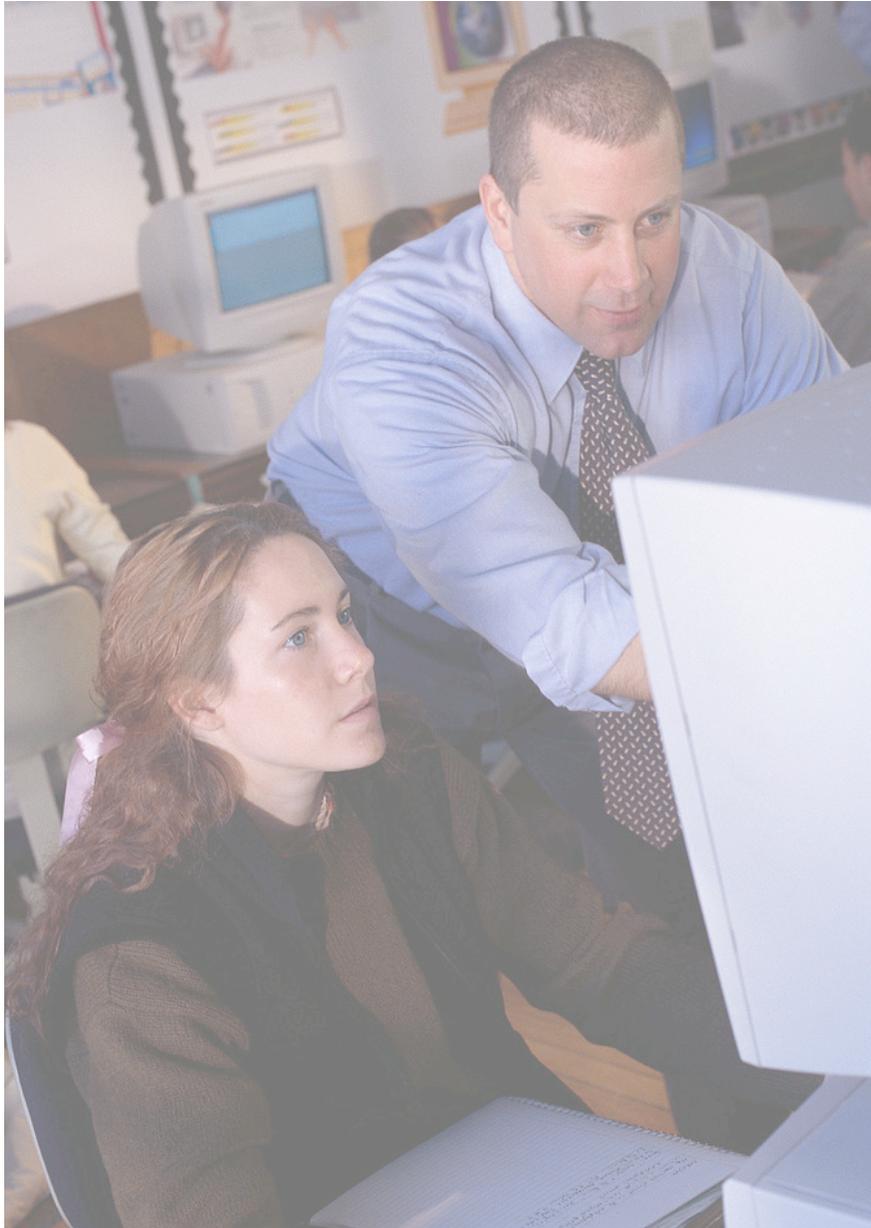
Hess' Interpretation Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions



Revised Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/Reasoning	Webb's DOK Level 4 Extended Thinking
<b>Remember</b> Memorize, recognize, recall, locate, identify	<ul style="list-style-type: none"> <li>o Recall or locate key facts, terms, details, procedures (e.g., explicit in a technical manual)</li> </ul>	<b>Use these Hess CRM curricular examples with most assignments, assessments, or inquiry activities for Career &amp; Technical Education</b>		
<b>Understand</b> Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, summarize, generalize, infer a logical conclusion, predict, observe, match like ideas, explain, construct models	<ul style="list-style-type: none"> <li>o Select correct terms/ graphics for intended meaning</li> <li>o Describe/explain who, what, where, when, or how</li> <li>o Define terms, principles, concepts</li> <li>o Represent relationships with words, diagrams, symbols</li> <li>o Solve routine problems</li> </ul>	<ul style="list-style-type: none"> <li>o Specify and explain relationships (e.g., non-examples/examples; cause-effect; if-then)</li> <li>o Summarize procedures, results, concepts, key ideas (paragraph)</li> <li>o Make and explain estimates, basic inferences, or predictions</li> <li>o Use models to explain concepts</li> <li>o Make and record observations</li> </ul>	<ul style="list-style-type: none"> <li>o Explain, generalize, or connect ideas using supporting evidence (quote, example, text reference, data);</li> <li>o Justify your interpretation when more than one is plausible</li> <li>o Explain how a concept can be used to solve a non-routine problem</li> <li>o Develop a multi-paragraph manual or infographic for specific purpose/focus</li> </ul>	<ul style="list-style-type: none"> <li>o Use multiple sources to outline varying perspectives on a problem or issue</li> <li>o Explain how a concept relates across content domains or to 'big ideas' (e.g., patterns in the human or designed world; structure-function)</li> <li>o Apply generalizations from one investigation to new problem-based situations, using evidence or data</li> </ul>
<b>Apply</b> Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (transfer) to an unfamiliar or non-routine task	<ul style="list-style-type: none"> <li>o Apply basic formulas, algorithms, conversion rules</li> <li>o Calculate; measure</li> <li>o Use reference materials and tools to gather information</li> <li>o Demo safe procedures</li> </ul>	<ul style="list-style-type: none"> <li>o Select and use appropriate tool or procedure for specified task</li> <li>o Use context to identify the meaning of terms/phrases</li> <li>o Interpret information using diagrams, data tables, etc.</li> </ul>	<ul style="list-style-type: none"> <li>o Build or revise a plan for investigation using (new) evidence/data</li> <li>o Use and show reasoning, planning, and evidence to support conclusions or to identify design flaws</li> <li>o Conduct a designed investigation</li> </ul>	<ul style="list-style-type: none"> <li>o Draw from source materials with intent to develop a complex or multimedia product with personal viewpoint</li> <li>o Conduct a project that specifies a problem, identifies solution paths, tests the solution, and reports results</li> </ul>
<b>Analyze</b> Break into constituent parts, determine how parts relate, compare-contrast, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for potential bias, point of view, technique/strategy used)	<ul style="list-style-type: none"> <li>o Identify trend, pattern, possible cause, or effect</li> <li>o Describe processes or tools used to research ideas</li> <li>o Identify ways symbols or metaphors are used to represent universal ideas</li> <li>o Retrieve data to answer a question (e.g., diagram, graph)</li> </ul>	<ul style="list-style-type: none"> <li>o Compare similarities/ differences or draw inferences about _____ due to influences of _____</li> <li>o Distinguish relevant-irrelevant information; fact/opinion; primary from a secondary source</li> <li>o Extend a pattern</li> <li>o Organize and represent data</li> <li>o Categorize materials, data, etc. based on characteristics</li> </ul>	<ul style="list-style-type: none"> <li>o Interpret information from a complex graph/model (e.g., interrelationships among variables, concepts)</li> <li>o Use reasoning, planning, and evidence to support or refute inferences or results stated</li> <li>o Use reasoning and evidence to generate criteria for making and supporting an argument</li> <li>o Generalize &amp; support a pattern/trend</li> </ul>	<ul style="list-style-type: none"> <li>o Analyze multiple sources of evidence (e.g., compare/contrast various plans, solution methods)</li> <li>o Analyze and compare diverse/complex/abstract perspectives, models, etc.</li> <li>o Gather, organize, and analyze information from multiple sources to answer a research question</li> </ul>
<b>Evaluate</b> Make judgments based on specified	*UG* - unsubstantiated generalizations = stating an opinion without providing any support for it!		<ul style="list-style-type: none"> <li>o Develop a logical argument for conjectures, citing evidence</li> <li>o Verify reasonableness of results, or</li> </ul>	<ul style="list-style-type: none"> <li>o Evaluate relevancy, accuracy, &amp; completeness of sources used</li> <li>o Apply understanding in a novel way</li> </ul>

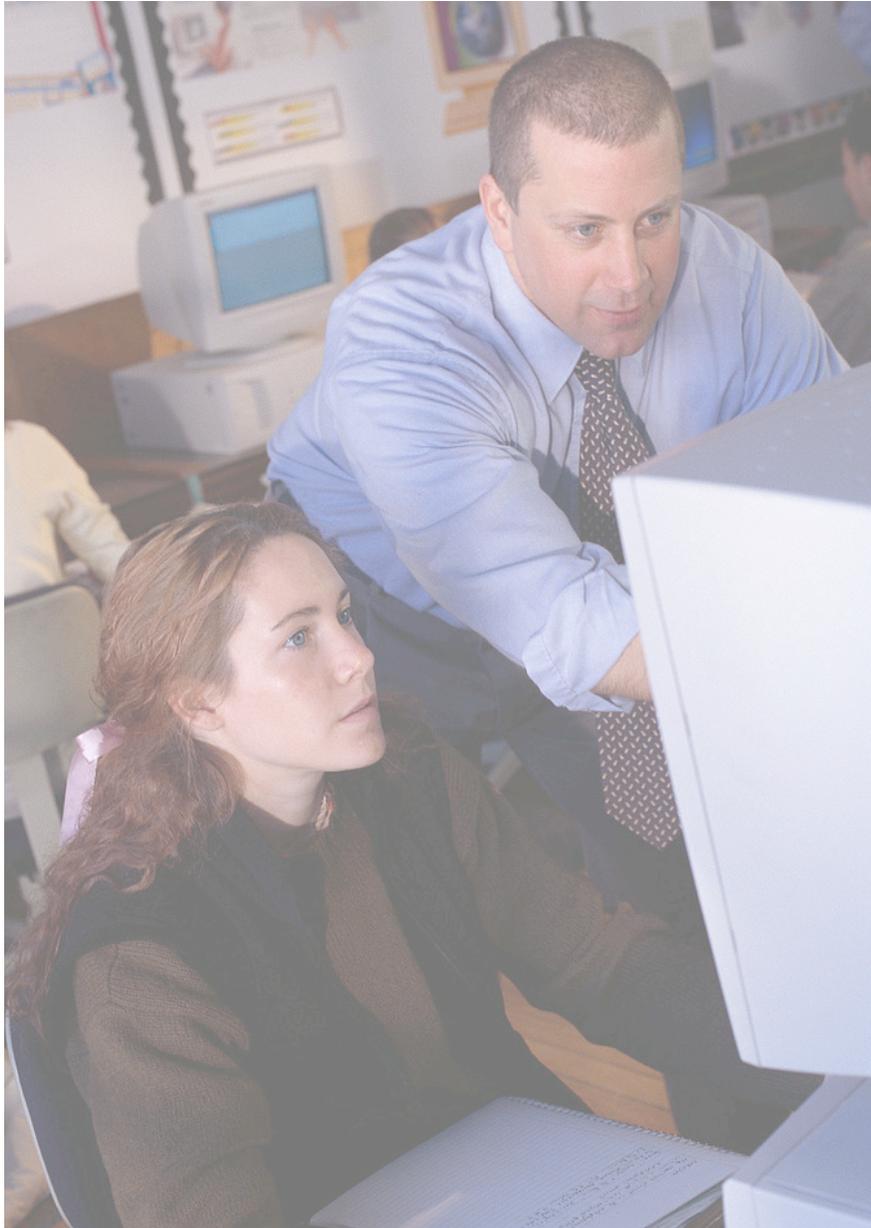


# Developing Meaningful PBL Experiences



## Step One

Begin with the end in mind: What standards, content and skills do you want students to master?



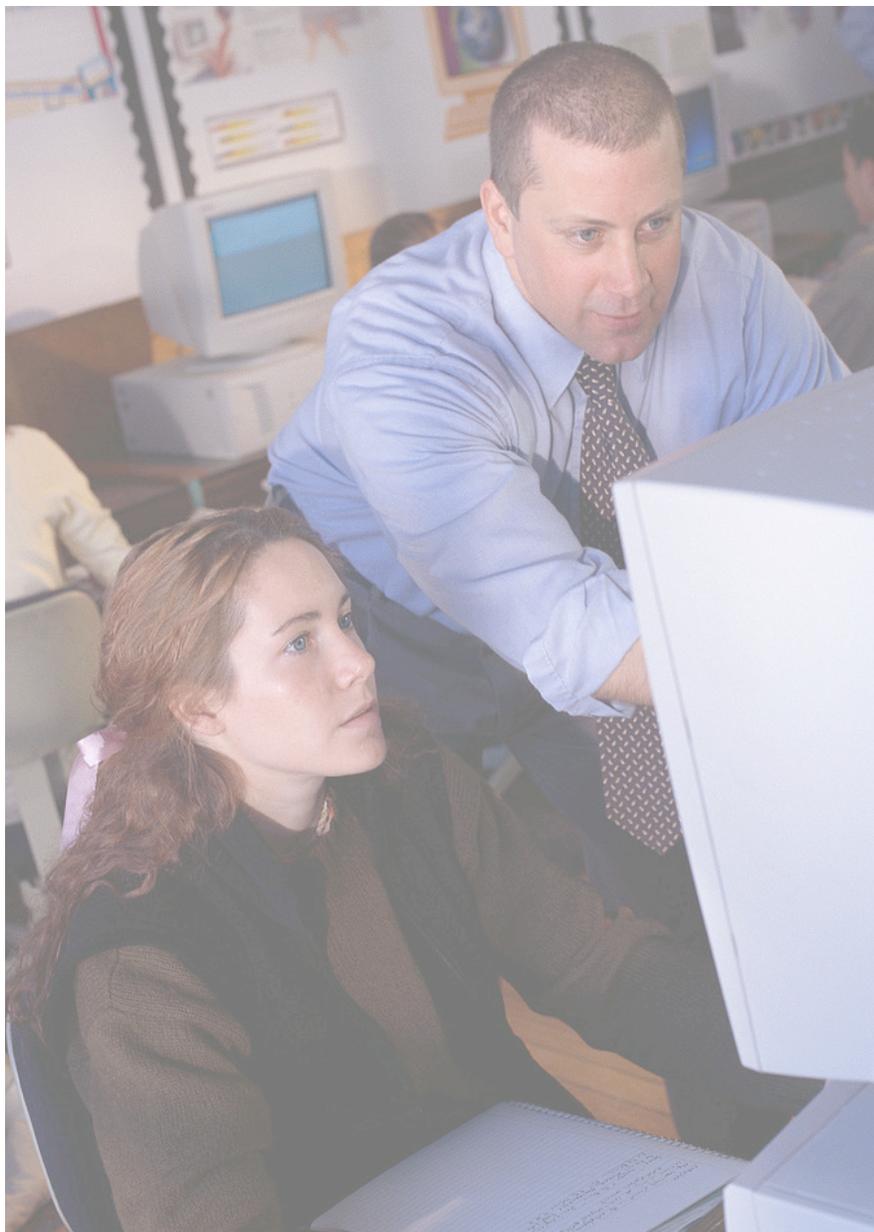
## Step Two

Design a scenario to get students engaged



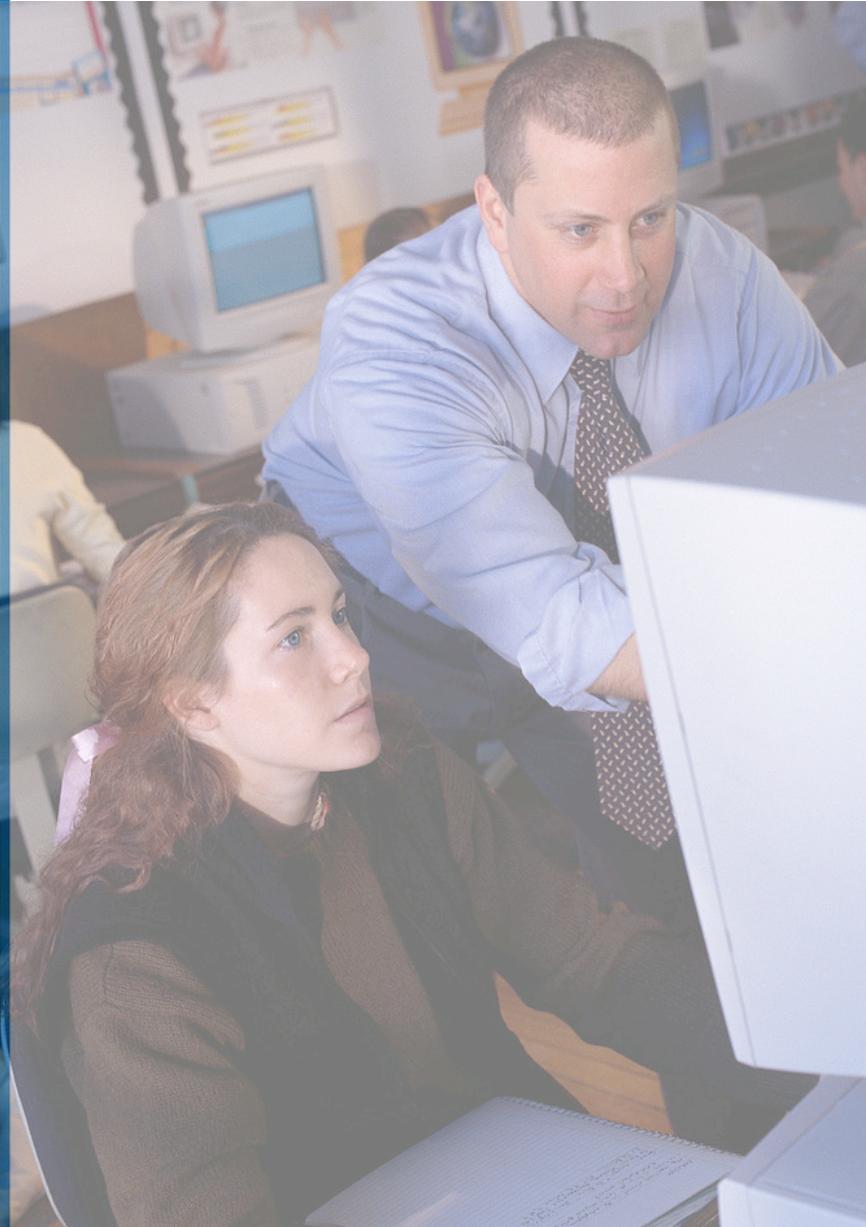
## Step Three

Help students understand the need-to-know information



## Step Four

Define collaborative learning with students

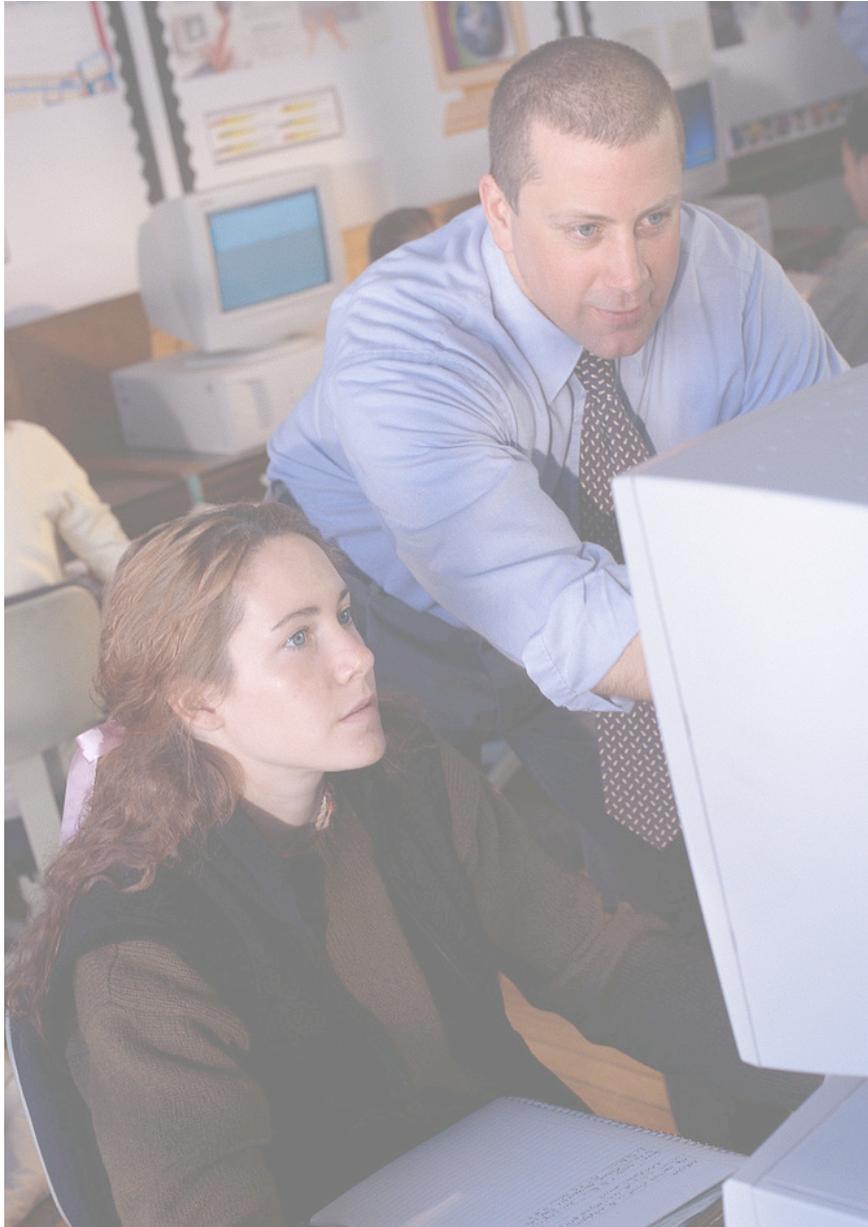


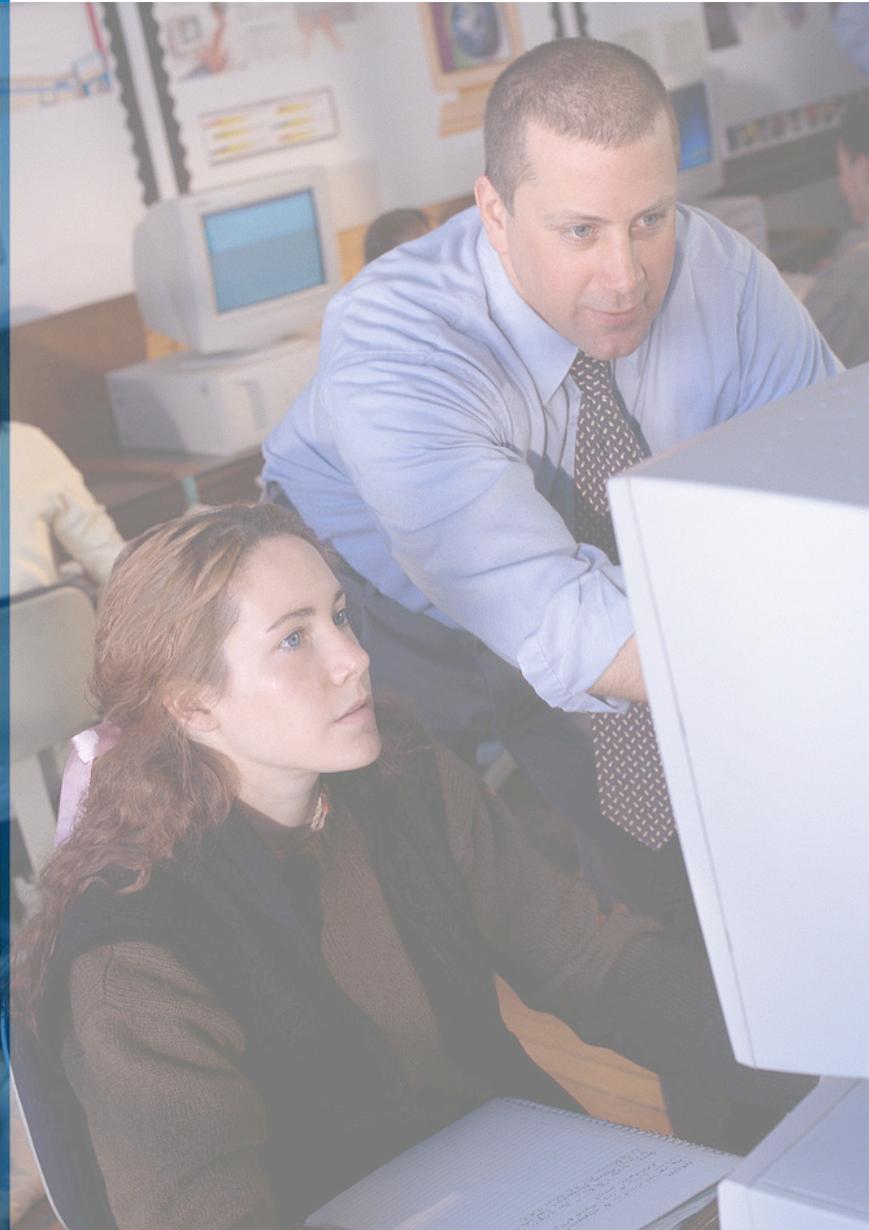
## Step Five

Help students commit to a timeline for the project. This may include a work contract.

## Step Six

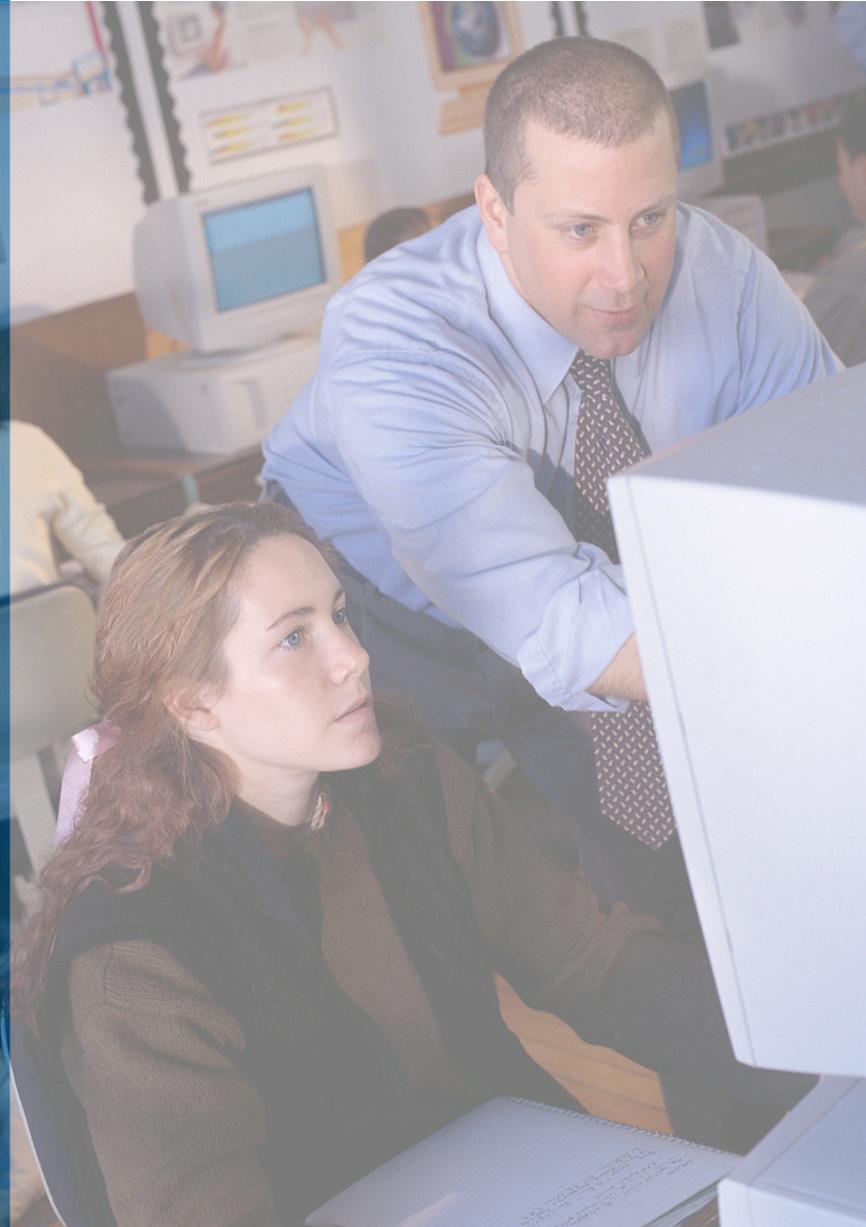
Help students understand how to conduct research and create a plan





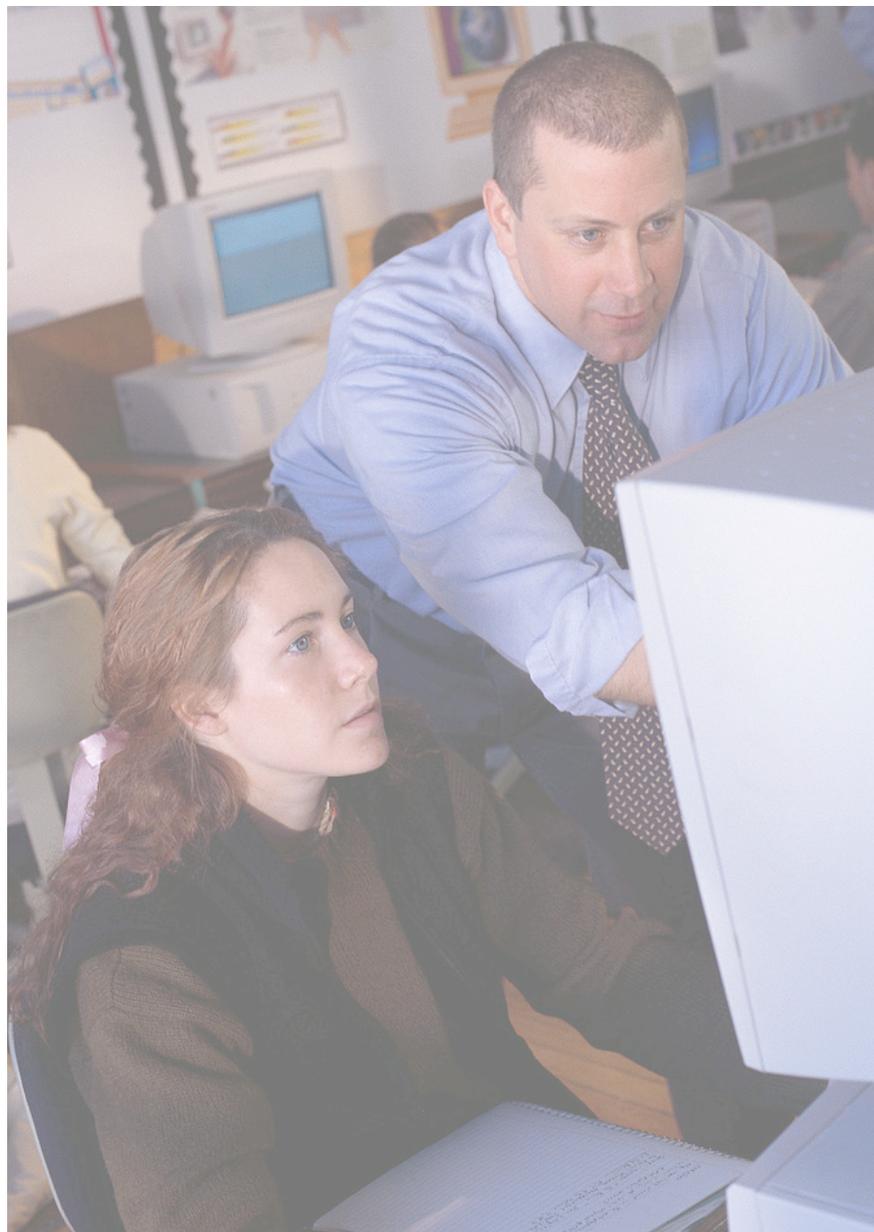
## Step Seven

Help students start their project



## Step Eight

Constantly provide feedback and allow opportunities for students to adjust their plans

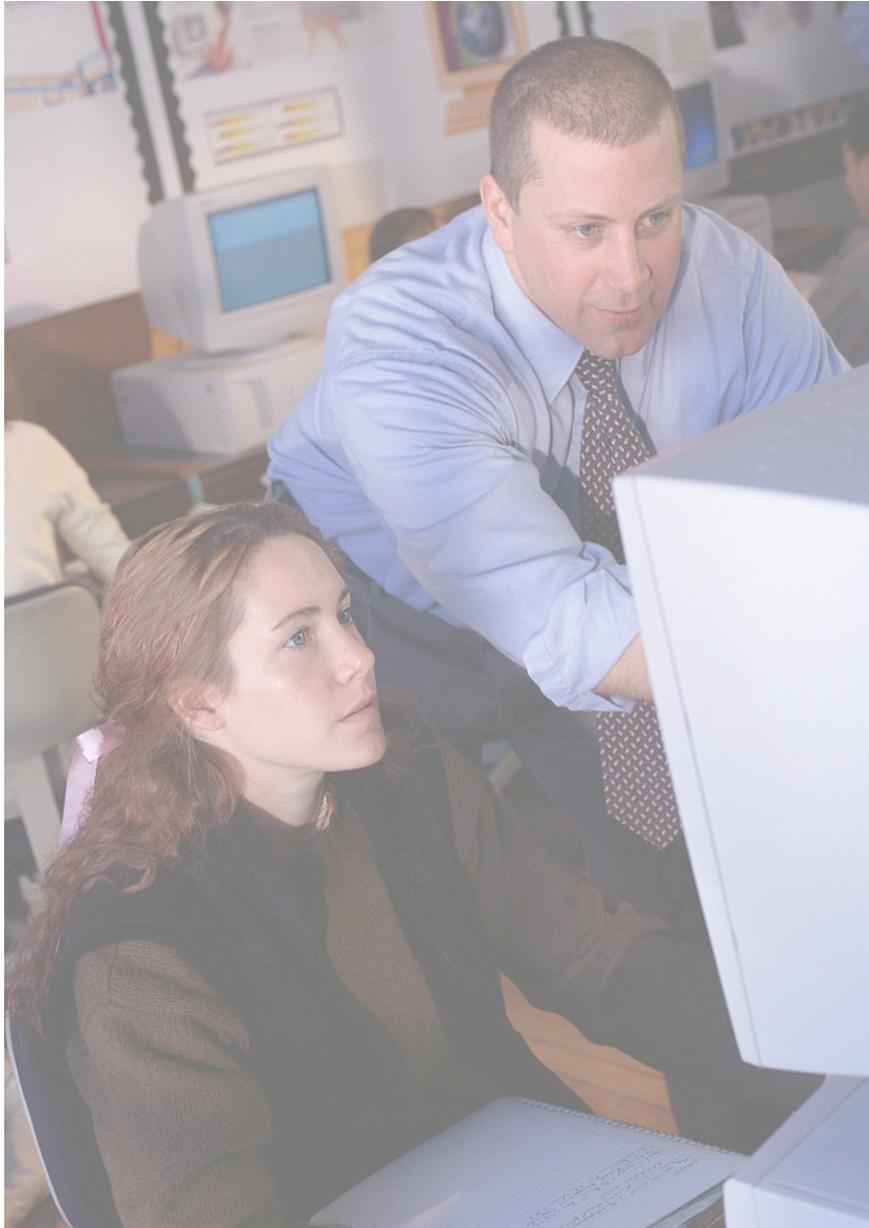


## Step Nine

Provide opportunities for students to have a public audience

# Step Ten

Assess final project



# Assessment Components

Assess using the clearly defined rubric previously presented to students

Should not be a surprise to students



# QUESTIONS

Thank you

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