

## Helping Students Learn

### Dilemma #1

A student comes to every class, listens attentively, and takes notes but fails the exams. During office hours, he shows you his textbook with entire pages highlighted.

Principle:

What can you do as the TA to improve the situation and help students learn?

### Dilemma #2

Students created impressive digital presentations but completely missed the point about the content of their assignments, even with rubrics and explicit instructions.

Principle:

What can you do as the TA to improve the situation and help students learn?

Dilemma #3

Half the class failed the first exam even though most of the material should have been covered in previous classes.

Principle:

What can you do as the TA to improve the situation and help students learn?

Dilemma #4

Students were told many would likely fail because the course was challenging. Yet, instead of working harder, they skipped class, failed exams, and never came to office hours.

Principle:

What can you do as the TA to improve the situation and help students learn?

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Additional Resources: <http://www.learningenvironment.ctl.gatech.edu/>

Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). How learning works: Seven research-based principles for smart teaching. San Francisco, CA: John Wiley & Sons, Inc.

## Effective Instructional Practices

### #1 – Connect to Students' Prior Knowledge (Chapter 1)

- A. Assess prior learning
  - Use a pre-test at the beginning of the semester
  - Have students draw a concept map for a topic
  - Ask students to assess themselves by generating a list of topics and skills they have had in previous classes and then rate themselves on a scale for comfort/familiarity for each item
  - Facilitate a brainstorming session or a class discussion and ask them questions about the material from previous classes, beginning with simple definitions to more difficult application questions (e.g. "What methodologies would you use to \_\_\_?")
  - Look for trends or patterns of incorrect answers in student work
- B. Activate accurate prior knowledge
  - Explicitly describe the connection between new and previous course material from the current course and from past courses
  - Use concrete, real-world examples or analogies
- C. Directly address insufficient prior knowledge
  - Identify the prior knowledge you expect students to use
  - Determine whether students' lack of knowledge should be addressed individually (e.g. during office hours, etc.) or with the entire class
  - Adjust the lectures/assignments/assessments according to address the lacking prior knowledge if the majority of the class needs to review previous topics
- D. Help students recognize inaccurate prior knowledge
  - Highlight the conditions when certain knowledge is applicable and when it is not
  - Provide rules of thumb
  - Explicitly identify discipline-specific conventions
  - Explain when there are exceptions to any rules
- E. Correct inaccurate prior knowledge
  - Ask students to make and test predictions
  - Have students justify their reasoning and decisions
  - Provide multiple opportunities for students to apply and use accurate knowledge
  - Allow sufficient time to practice and minimize distractions during these practice sessions

#2 – Motivate Students to Learn (Chapter 3)

A. Establish the value of the lesson

- Connect the material to students' interests
- Incorporate activities that are as realistic and authentic as real-world tasks when possible
- Demonstrate relevance to current academic lives and to future professional lives
- Identify and reward what you, as an expert and instructor, value through feedback and modeling
- Show your own passion and enthusiasm for the subject

B. Help students build positive expectancies

- Align learning objectives, instructional strategies, and assessments so that students can gain a coherent understanding of the course
- Identify an appropriate level of challenge for the course content and assignments based on students' prior knowledge, experiences, and interests
- Allow opportunities for early success to build students' confidence and sense of self efficacy
- Clearly define course goals
- Use rubrics that explicitly articulate expectations for performance on assignments
- Give targeted, timely feedback on assignments and assessments
- Be fair and objective
- Help students appropriately attribute successes and failures to controllable external variables, such as time management and effective study skills
- Include opportunities for flexibility and control, such as allowing students to select research topics for projects
- Provide opportunities for students to reflect on their motivations and the value gained from assignments

#3 – Offer opportunities for practice and provide feedback (Chapter 5)

A. Create goal-directed practice exercises

- Assess prior knowledge to determine appropriate level of challenge for practice
- Explicitly state goals for practice in your course materials (e.g. syllabus)
- Use a rubric to explicitly state performance criteria
- Have multiple opportunities to practice
- Scaffold the practice assignments – start with simpler tasks with prompts and other instructional support included and gradually increase difficulty and complexity while decreasing the amount of instructional support
- Set expectations about practicing, such as the amount of time necessary to complete tasks or the amount and type of practice required to achieve mastery
- Give examples or models of ideal or target practices, along with examples of what not to do
- Continue to check the need to adapt or change performance goals and criteria based on how students progress

B. Provide targeted feedback

- Look for patterns of errors in students' work and summarize these errors
- Prioritize the most important and time-sensitive feedback
- Balance strengths and weaknesses in your feedback
- Create opportunities for giving feedback by including plenty of opportunities for practice through assignments and assessments
- Give real-time feedback at the group or class level in addition to individual feedback
- Allow students to share peer feedback
- Require students to explain how they used feedback in their subsequent work

#4 – Encourage development of metacognitive skills (the ability to plan, monitor, and assess one’s understanding and performance) that help students become self-directed learners (Chapter 7)

- A. Guide students in assessing and understanding a task
  - Be more explicit than you think is necessary when assigning a task to students and describe the intended goals of the exercise, why those goals are important, what you do NOT want students to do, and what the performance criteria are
  - Check students’ understanding of the task
- B. Assist students in evaluating their strengths and weaknesses
  - Give early performance-based assessments
  - Provide opportunities for self-assessments, such as practice quizzes and tests
- C. Help students plan an appropriate approach for the task
  - Have students implement a plan, such as a timeline for a project or steps in executing an experiment, that is provided
  - As students advance, require them to create their own plan that demonstrate that they understand the various stages of work that are required to complete the task
  - Make planning the central goal of an assignment
- D. Ask students to apply strategies and monitor their own performance
  - Provide students with simple discipline-specific heuristics or rules of thumb for assessing their own work
  - Guide students through self-assessment exercises
  - As a component of an assignment, require students to reflect on and annotate their own work with explanations about what they did and why, how they responded to various challenges, etc.
  - Ask students to review each other’s work
- E. Prompt students to reflect and adjust one’s approach
  - Include as a component of projects and assignments a formal requirement that students reflect on and analyze their own performance, such as what they learned, what skills they need to work on, what they would do differently based on feedback they received, etc.
  - Ask students to reflect on the effectiveness of their study skills and preparation for major exams and assignments
  - Present multiple strategies for conceptualizing and solving a task or problem
  - Design assigns that focus on strategizing rather than implementing
- F. Shape students’ beliefs about intelligence and learning
  - Address student beliefs directly and help them set realistic expectations
  - Broaden students’ understanding of learning
- G. Model your own metacognitive processes
- H. Provide more guidance with metacognitive tasks at early stages and gradually provide less