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Better Teaching®

Classroom Ideas to Improve Student Achievement

Secondary EDITION

Wilderness Trail Educational Cooperative

Getty Images

Science

Liquid rainbow teaches about density

This science experiment will help students learn about the density of liquids. You'll need:

- **Five large containers** (pitchers or gallon milk jugs, for example).
- **Four colors of food coloring.**
- **Transparent drinking straws.**
- **Five cups of pickling salt.**

Before class, mix up five containers of colored water as follows (students should *not* see how much salt you add to any container):

#1: 1 gal. water + 0 cups of salt + 1 bottle yellow food coloring.
#2: 1 gal. water + 1/2 cup of salt + 1 bottle green coloring.
#3: 1 gal. water + 1 cup of salt + 0 food coloring (clear liquid).
#4: 1 gal. water + 1 1/2 cups of salt + 1 bottle red food coloring.
#5: 1 gal. water + 2 cups of salt + 1 bottle blue food coloring.

Use a full bottle of food coloring for each container so the colors are true. Stir until the salt is dissolved. The pickling salt will dissolve clear and not change the color of the liquid.

Distribute samples of each solution to each group. (Use test tubes or vials.) Let students practice using a straw to "pick up" some liquid. Have them:

1. **Dip the straw** into the liquid.
2. **Place a finger over the top** of the straw.
3. **Pick up a sampling** of the liquid.

Then have students:

- **Draw up two colors** into a straw, one after the other. If the first solution floats on top of the second, the first solution is less dense. If the first solution mixes or falls through, it is more dense.
- **Repeat until they can rank** the density of the five liquids.
- **Try to create a rainbow** of colors in their straws, from least dense to most dense.

Source: Mid-Continent Research for Education and Learning, "Whelmer #64: Liquid Rainbow," www.mcrel.org/whelmers/whelm64.asp.

Maintaining High Expectations

Are your mid-year expectations still high?

The research is clear. The key to student success is the belief that all students can learn. Researchers have discovered that, whatever the demographics, teacher expectations have a significant impact on student achievement.

If your students aren't meeting your expectations, consider the following:

- **Have you communicated** your expectations clearly? Be specific when giving assignments. Be clear about rules for classroom behavior.
- **Do parents know** your standards for social interaction, respecting others, using appropriate language, being on time and managing conflicts? They may differ from expectations set by parents at home.
- **Are your expectations similar** to those of other teachers? Are expectations the same for your department? Some students may have difficulty accommodating different expectations from each teacher.
- **Are you consistent** in how you reinforce positive behavior and impose consequences for negative behavior?
- **Do your students know that** you believe *everyone* in your class is capable of learning and achieving?

To get the best from your students, expect nothing less.

Source: Kathleen L. Lane et. al., "Teacher Expectations of Students' Classroom Behavior Across the Grade Span: Which Social Skills Are Necessary for Success?" *Exceptional Children*, Winter 2006 (Council for Exceptional Children, 1-888-232-7733, www.cec.sped.org).

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Connecting With Students

Give students more than just a grade

Research shows that the "most powerful single modification that enhances achievement is feedback." Consider how you use feedback in your classroom.

Is your feedback:

- **Effective?** Students need more than just the "right answer." Do you explain *why* a response is correct or incorrect?
- **Timely?** Delaying feedback reduces achievement. How long do your students wait to get corrected assignments, quizzes and tests?
- **Specific?** How detailed is your feedback? Do you suggest remedial steps? Or do students receive an assignment or test with only a grade at the top?
- **Positive?** Do you tell students what they do well?
- **Conducted by students?** Secondary students actually benefit from being involved in the process. Teaching them how to provide feedback promotes independent learning.

Source: Robert J. Marzano et al., "Research and Theory on Providing Feedback" in *Classroom Instruction that Works*, ISBN: 0-87120-504-1 (Association for Supervision and Curriculum Development, 1-800-933-2723, www.ascd.org).

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Technology: Part Four of a Four-Part Series

Teens check YouTube for cheating tips—do you?

While your students are preparing for your next big test, some may be using technology in a new way: to learn how to cheat. A recent search found more than 2,300 different YouTube videos on the subject. Some even come with a guarantee!

If you think students are still writing test answers on the brims of their ball caps, think again. Today's high-tech cheaters make use of all their computing skills to come up with cheating methods that could go unnoticed by most teachers.

For instance, you can see videos on:

- **How to transform a soda bottle** label into a crib sheet using photo-altering software. It results in a perfect match for a Coke label—but with physics formulas where the nutrition information used to be.
- **How to cheat using iPods®**, pens and even Band-aids.

How can you combat this new use of technology? Here are some tips:

- **Visit video-sharing sites** like YouTube. Search for "How to Cheat on a Test." Then spend a little time watching a few of the videos.
- **Check your class policy** on cheating. Be sure it's in line with school and district policies. Before the next big test, remind students of the consequences of cheating. If cheating does occur, make sure you enforce consequences!
- **Don't let students bring** cell phones or other personal electronic devices, bottled water or sodas into your classroom on testing day!

Source: Icess Fernandez, "Kids spread cheating methods on YouTube," *Chicago Sun Times*, September 30, 2008, www.suntimes.com.

Keeping Students on Task

Reverse a student's 'learned helplessness'

Emma couldn't concentrate in class. But why bother? She knew she was learning disabled. She was overwhelmed by long-range projects. She didn't fit in socially. And worrying about everything had caused loss of sleep and feelings of hopeless—all signs of depression.

Emma was experiencing "learned helplessness"—a feeling, after many failures, that nothing she could do would help her succeed. She listened to inner messages to herself that she was a failure—and it was easier not to try than to fail. No wonder she didn't pay attention in class.

You can outline some steps the student can take to reverse the cycle of learned helplessness.

Help the student:

1. **Identify a *specific* problem.** For example, the student may have failed a weekly vocabulary quiz.
2. **Set a goal** related to the problem. Passing the next vocabulary quiz would be the specific goal.
3. **Determine a strategy.** The student can make some flash cards, study the flash cards independently and with a study buddy—every day for the entire week.
4. **Tell herself she *can* take control.** "I can pass this quiz if I review my vocabulary cards every day." Not "I am not smart enough to pass the vocabulary quiz."

Source: Robert and Myrna Gordon, "Learned Helplessness and School Failure," The Turned Off Child, www.turned-offchild.com.

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Teaching Thinking Skills

Move literature students from LOTS to HOTS

Most students are comfortable identifying and feeding back essential facts about a text. But now it's time to move them from LOTS (Lower Order Thinking Skills) to HOTS (Higher Order Thinking Skills).

How can you do this?

- **Expect students to identify** literary devices and terms when discussing or writing about a selection. Ask them why a device was effective in conveying the author's message, mood or tone.
- **Ask students to compare** and contrast a selection with another text that has similar components. You can provide the alternate selections or you can expect your students to find them.
- **Teach students to create** a semantic map—a visual diagram that shows the relationships in a selection. They might draw a circle in the center of the page containing the theme of the text. From that they will draw lines to other circles to show relationships. Let students create and explain their maps.
- **Ask students to relate** how they think ideas and values in a selection were influenced by the life and times of the author.
- **Have students discuss** and defend their personal reactions to the theme of a text.

Source: Maida Nechushtan and Judy Henn, "Thinking Through Literature: Learning HOTS and Enjoying Literature," English Teachers Network, www.etni.org.il/etai/handouts/M_D_Thinking_Through_Literature_presentation_color.ppt.

Differentiated Instruction

Use KUD to plan differentiated lessons

"If you don't know where you're going," Yogi Berra used to say, "you might not get there." That's true when planning lessons or units as well.

One strategy used by teachers planning differentiated lessons is to determine what students should **K**now, **U**nderstand and (Be Able to) **D**o at the end. This is sometimes called the KUD method. It works like this:

- **Know.** Decide on the facts that students will need to *know*. What vocabulary words will they need to understand? What math formulas? What geographic places? List these.
- **Understand.** Beyond factual knowledge, your lesson or unit may require your students to *understand* some broader principles. For example, you might say, "I want students to understand that throughout history, people have used myths to explain the unexplainable."
- **Do.** At the end of your instruction, students should be able to *do* certain things—write a five-paragraph essay, multiply two fractions, use the imperfect subjunctive form of common Spanish verbs, etc.

Typically, your KUD goals will be tied to your district or state standards for instruction. This method will help you decide how to develop differentiated lessons.

Source: Carol Ann Tomlinson et al., *The Differentiated School: Making Revolutionary Changes in Teaching and Learning*, ISBN: 9781-4166-0678-9 (Association for Supervision and Curriculum Development, 1-800-933-2723, www.ascd.org/books).

Resources

Use the valentine theme to turn your students' attention to the human heart. Cardiovascular diseases are our nation's No. 1 killer. The American Heart Association provides helpful teacher resources at *www.americanheart.org/presenter.jhtml?identifier=3003310*. Or have students take the interactive quiz on the Heart Health Center page on the Discovery Health website at *http://health.discovery.com/centers/heart/heart.html*.

■■■

With the current economic crisis, all eyes are turned to the daily stock market report. But how many of your students understand what all those tables of figures and letters mean? Help them sort it out with resources posted on MoneyInstructor.com (*www.moneyinstructor.com*). You'll find grade-level appropriate lesson plans, worksheets and guides to curriculum standards.

■■■

If you want to help parents tackle the tricky subject of underage drinking, look no further than iTunesU. A Utah group called Parents Empowered has produced a series of lighthearted ads and videos that help parents speak to their kids about drinking. The campaign tells parents to set clear rules and keep track of what their kids are doing. On iTunesU, search for ParentsEmpowered.org. Then download the free content.

Share an Idea!

Do you have an idea to improve student learning that should be in this newsletter?

Send your ideas to ***Better Teaching***, Editorial Dept., P.O. Box 397, Fairfax Station, VA 22039, fax to 1-800-216-3667 or go to *www.teacher-institute.com/ideas*.

Full credit will be given with each article published. Materials sent cannot be returned.

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Focus On: Reading Skills

Research

You *do* need to teach reading

You may not think you need to focus on teaching reading. After all, you teach seventh graders. You aren't an English teacher—you teach math.

But new research from ACT testing reveals that students who can't read at grade level also can't learn content. The ACT looked at students whose scores on the ACT Reading test indicated they were ready to do college-level reading.

Of students who met the reading benchmark:

- **94 percent** also met the ACT English benchmark.
- **63 percent** also met the ACT Math benchmark.
- **47 percent** met the ACT Science benchmark.

However, of the students who *did not* meet the Reading benchmark, only:

- **41 percent** met the ACT English benchmark.
- **16 percent** met the ACT Math benchmark.
- **5 percent** met the ACT Science benchmark.

In other words, students who don't do well on reading tests can't master other subjects. So you need to incorporate teaching students reading so they can understand how to read content in your subject.

Source: ACT, "Reading Between the Lines: What the ACT Reveals About College Readiness in Reading," www.act.org/research/policymakers/pdf/reading_report.pdf.

Using Prior Knowledge

Activate students' prior knowledge

a.____
b.____
c.____

Older students may think they don't need to activate prior knowledge before they read new challenging content. But every study of reading comprehension shows that this is one of the best ways to improve students' understanding. The more students bring what they know to the conscious level, the more they can absorb related new information.

So make it a game. Instead of saying, "Let's review Latin verbs," create a new challenge. List the letters of the alphabet on the board and see if students can think of a verb they know starting with each of those letters.

Or write a phrase on the board. On the day of a big game, you could ask students to think of verbs starting with the letters in Tigers Beat Cougars.

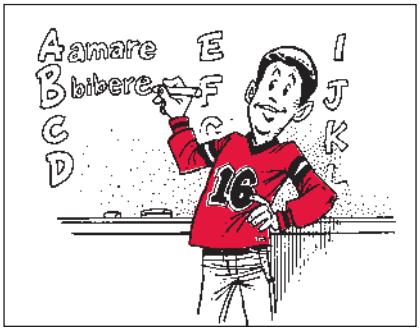

Illustration by Bob George

Use this activity in any subject area. Whether the topic is technology, music or Latin verbs, it's a good way to prepare students for reading.

Source: Amy Benjamin, *But I'm Not a Reading Teacher: Strategies for Literacy Instruction in the Content Areas*, ISBN: 9781-5966-7049-5 (Eye on Education, 1-888-299-5350, www.eyeoneducation.com).

Reading Comprehension

Boost comprehension with a jigsaw activity

Jigsaw is a strategy that engages students and boosts comprehension through a collaborative activity. Here's how you can use it:

1. **Select text** (a chapter, an article, etc.) for a class discussion.
2. **Divide the class** into equal "home groups" (for example, five students each).
3. **Assign a number** to each student in a group (for example, from one to five).
4. **Divide the text** by the number of students in each group.
5. **Have students read** the sections of the text that correspond to their numbers. For example, student one reads section one (pages 75–77), student two reads section two (pages 78–80), etc.
6. **Have all students** with the same number meet in "expert groups" ("expert group one," "expert group two," etc.).
7. **Have "experts" determine** how to teach information in their text to their "home groups."
8. **Have "experts" return** to their "home groups" and present their sections of the text.
9. **Have "home groups" fill in** a chart with the most important information from each section.

Source: "Jigsaw," AdLit.org, www.adlit.org/strategies/22371.