

## Polishing the Education Stone

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By Joanne Jacobs

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*Don't know much about geography.  
 Don't know much trigonometry.  
 Don't know much about algebra.  
 Don't know what a slide rule is for.  
 What I do know: one and one is two . . .*

Sam Cook's "Wonderful World" lyrics are dated. The would-be lover has heard of a slide rule, even if he doesn't know what to do with it. And he can add one and one without a calculator. Another difference is less obvious: The person who doesn't know much is supposed to be a student, not a teacher.

In many U.S. math classrooms, it's the teacher who could be singing "don't know much trigonometry." Thirty-five percent of secondary math teachers lack a major or minor in math or a related subject, says Education Trust in a report titled "[All Talk, No Action](#)."

Across the board, one third of U.S. middle and high school teachers lack a college major in at least one subject they're assigned to teach; one quarter are teaching without a major or minor. In high-poverty schools, the problem is worse.

Under No Child Left Behind, every teacher is supposed to be "highly qualified." And I shall be queen of the May, tra la.

New teachers, who are still learning how to manage a classroom and organize lessons, are the most likely to be teaching "out of field." Some will quit in frustration after a year or two, requiring the school to hire another inexperienced teacher.

At Generic High, smart math students try to get into Vince Veteran's classes. He knows trigonometry, and he's known for his well-organized, creative lessons.

But they may be stuck with Nancy Newby, a psychology major who applied for a job teaching social studies. She only agreed to try math because she thought she'd be teaching basic algebra, which she sort of knows.

Over in social studies, Tim Tyro was stuck teaching economics, because nobody else wants to do it, and he's got no seniority. He has two years of experience working in a copy shop, a major in Peace Studies and no idea how to structure an econ course.

Obviously, Nancy should ask Vince for his advice and lesson plans. Tim should go online and look for Econ 1 lesson plans done by someone who's taught economics successfully. Increasingly, that's what teachers are doing. They're going online to share their ideas and to borrow ideas from other teachers. And some school districts that can't hire "highly qualified" teachers, as required by No Child Left Behind, are buying courses developed by experienced, successful teachers.

The U.S. Education Department's education resources data base, known as [ERIC](#), is being redesigned and will be open for business by the start of the school year. It includes [links to lesson plans](#) and other curriculum resources.

State education departments also offer links to lesson plans that meet state standards. For example, Georgia's site is collecting [teacher-written lesson plans](#) and worksheets.

Thousands of privately run sites, such as [Best of the Web for Teachers](#) provide links to teaching resources. [LessonPlans.com](#), which offers more than 2,000 free lessons, estimates there are 300,000 lesson plans posted on 10,000 sites.

But, really, it's impossible to know how much is out there.

That's part of the problem. There are so many lessons out there, it's hard to find the really good ones. I found a lesson that suggested students draw a map of the Mississippi River to learn about the Mississippi River. Duh. I also found an ambitious six-week unit on the

Renaissance aimed at very bright eighth graders.

Since most free lessons cover only a day or, at most, a few weeks, an inexperienced teacher can spend a lot of time looking for ideas, and then find the borrowed lessons don't make a coherent whole.

Most of the online lessons are "mediocre" and it takes too much time to find the good ones, says Rob Lucas, who's starting his second year as a sixth grade social studies teacher in North Carolina. A Harvard grad, Lucas volunteered for Teach for America and found himself giving up sleep to write lessons. As he wrote on his blog, Teachers Lounge, "Perhaps most enervating was the realization that thousands of other teachers across the country were having the same 'reinventing the wheel' experience. And thousands more had done so the year before, and the year before that. Of course, we could learn some from our more experienced colleagues, but there was no systematic, large-scale way for us to learn from our predecessors' trial and error."

So Lucas created a "wiki," which is a collaborative web site that lets registered users post their lesson plans and links -- and change other participants' lessons. It's a high-tech version of the Japanese practice of continually improving lessons, known as "polishing the stone," Lucas says.

Of course, some prefer a stone that's already polished.

For teachers who need more than ideas, a Florida-based company called Teaching Point sells soup-to-nuts courses developed by experienced teachers with a syllabus, daily lesson plans, pacing guide, teacher's guide, activities and labs, notes for overheads or Power Point slides, workbooks and tests. Teacher-authors, who are available by e-mail to answer questions, get 20 percent royalties.

Courses range from Second Grade Reading and Middle School Civics to Latin Grammar, Marine Biology, TV Production, Advanced Chemistry and World Literature. The company offers 60 courses now, with 60 more in the works; by 2005-06, there could be 200.

Materials are aligned to standards in four big states -- California, New York, Florida and Texas -- and to standards written by national groups such as the National Council of Teachers of English.

Many of the teacher-authors were sharing lesson plans, labs and worksheets on their own web sites. Charles Zaremba has drawn more than a million visitors since starting his Mr. Biology site in 1995. He's now selling his expertise through Teaching Point.

So is Dianne Smith, a veteran teacher at a Houston high school, who started For Journalism Teachers Only. English teachers with no journalism experience often are dragooned into teaching journalism or advising the school newspaper or yearbook. Smith's site, augmented by ideas from other journalism teachers, draws heavy traffic. Smith spent nine months turning her lessons into a course that would work for teachers in other states.

After earning a master's in organic chemistry, Chad Husting jumped into teaching -- with no training but a great mentor. Now a 13-year veteran of Catholic and public schools, he teaches chemistry in Cincinnati. "This is a starting guide for teachers to get them through the first year," he says of his chemistry course. By mid-year, the course is less prescriptive, encouraging teachers to develop their own style based on what works with their students.

Many inexperienced teachers simply follow the teacher's guide and support materials that come with the textbook. But committee-assembled texts are stuffed with every possible topic to please every state's book selection committee. "If you try to do a pacing guide, you'll see it takes 288 days to teach all the stuff in the book," Husting says. He's paced his course to the 180-day school year, and designed it to be usable without a separate textbook.

Year-long courses cost \$699 including preprinted workbooks, \$299 if the school does its own printing from a CD. Districts sometimes use teacher training funds or textbook money, says Doug Matthews, CEO of Teaching Point.

"Our materials assume you know nothing about the subject," says Matthews.

That's a mite depressing. But, apparently, realistic.

*Joanne Jacobs is a TCS contributor. Find more of her writing [here](#).*