

A short take on: teaching strategies for workplace skills

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THE AMERICAN workplace needs a workforce competent in a trade area and proficient in communication skills, group interaction skills, computer skills, and critical thinking skills. Many may argue that it is not possible to teach a technician all these skills in just two years—hence the need for new teaching strategies.

Trade skills

As inclusion of general education courses increases, the time allocated for learning trade skills is being reduced. With new technology entering the workplace, trade teachers feel they have to teach more subject matter content in a shorter span of time.

Education in trades requires allocating at least half of the time for practical lab/shop work. Yet many teachers are decreasing lab time in order to cover the increased theory material. Taking away from lab/shop time is not in the interest of quality vocational education. Instead, we have to find more efficient ways of covering theory. One technique I use is to have students pre-read theory material that is to be covered in class the next day. Motivating technical or community college students to pre-read theory can be difficult. A simple five-minute quiz over material to be discussed that day each time the class meets may be the only way most teachers can prompt students to pre-read material. The class discussion following the quiz can then become a dialog rather than the usual teacher monolog. The students will have questions on the material leading to deeper, more significant learning (Tootoonchi and Lyons, 2002). Faculty can also use Classroom Assessment Techniques (CAT) at the end of the class to stimulate learning. CAT includes two questions: What are 2 or-3 of the most important things you learned in class today? and What questions still remain uppermost in your mind? (Steadman, 1998).

Responses can be used to gauge student understanding of the material and guide review in the next class for what they did not understand.

Later assessment can include allowing students to retake tests and thus restudy material they were unsuccessful mastering earlier. In one college that allows retesting, students can retake the test only once; the maximum score they receive the second time they take a test is seventy percent, even if they score higher than that. Improving student learning is, after all, our ultimate goal. Helping promote retention of marginal students by giving them a second opportunity to improve their grade can stimulate learning.

Communication and group interaction skills

Recognizing in vocational education the need for better communication skills in today's information society has led to additional time allocated for general education courses. Frequently, courses have been added to programs in response to employer requests (Tucker and McCarthy, 2001). The technical student generally sees the courses as a waste of time. Some trade teachers sympathize with the students because they feel the courses take time away from trade instruction. To convince students and skeptical trade teachers of the value added by general education courses, they must be made more useful and interesting.

For example, an English class might have an electronics student

write a paper on basic electronics and the automotive student write a paper on basic car maintenance. The class could then facilitate group interaction so that the automotive technician knows more about electronics which are integral parts of automobiles, and the electronics technician knows more about basic maintenance of the car he/she drives to school every day.

A second example is to have students interview a veteran of World War II, the Vietnam War, or the Gulf Wars and present the key elements of a comprehensive interview in a three- to five-page report. Not only does the student gain contact with a person who took part in an historical event, but he also gains experience interviewing and presenting an interview—in short, development of good communication skills.

Another suggestion is to have students write a family history paper. Students can talk to their parents and grandparents and develop a perspective of their family background. The outcome can help young students who are beginning their lives develop a sense of heritage and/or belonging. It can also help older students reassess and reflect on their own lives.

Thinking skills

While most training today is equipment specific, we need to teach thinking skills generically so that technical expertise can be applied broadly in the future. When we give students test problems that are variations of those done in class,

many students cannot successfully complete them. They need to practice analyzing challenging problems for their personal and professional growth whether in math, business, or technical classes.

A math class has to teach an agriculture-tech student skills he/she can use on the farm. The student must be able to figure out how much fertilizer he/she will need on a thousand-acre farm and the amount it will cost, given that a twenty-five pound bag costs x dollars and will be sufficient for y square feet. The student must be able to convert from square feet to acres. Such examples can give students reasons for taking interest in a math class.

The small business management class should teach technicians how to fill out forms on the small business association website (www.sba.gov/starting/busplan.txt), to see if they can accomplish necessary steps in starting their own small business. The students must also learn skills to fill out necessary paperwork from a local bank to get a loan for starting a business.

In the trades, troubleshooting equipment involves logical analysis of circuits. Students have a difficult time with troubleshooting procedures because they do not follow the logical process of searching for a malfunctioning component. The most challenging assessment questions will ask students to draw conclusions from what they know (Norman & Schmidt, 1992). Such questions can only be answered correctly if the students understand what they have studied.

Computer skills

Every student needs to develop basic skills in using a computer. Most will use word-processing, spreadsheet, and power-point skills, and some may need database and /or programming skills. Students must first be taught word-processing skills so that they can complete their writing assignments. Use of the spell-check feature will teach students to spell words correctly. The word-processor will also help them to easily edit their documents in order to improve their writing skills. Furthermore, it can help them with writing cover letters and resumes for job searches.

The spreadsheet will help them organize data and project various budget or financial scenarios, skills helpful in their small business assignments. A database can help students who have to organize data and create mailing lists. For technical courses that require some knowledge of programming, a thorough grounding in a common language such as Visual Basic® will fulfill most needs. Other technical courses will require specialized programming skills such as ladder logic programming for programming logic controllers.

Conclusion

With innovative and useful techniques we can make the general education component of technical education more interesting to students.

References

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