

POD —IDEA Center Notes

J U L Y 2 0 0 4

Michael Theall, Youngstown State University, Series Editor

IDEA Item #14: “Involved students in ‘hands-on’ projects such as research, case studies, or ‘real life’ activities”

Virginia S. Lee

Background

According to a number of contemporary theories of learning that are bundled under the umbrella term “constructivism,” learners don’t acquire new knowledge simply by being exposed to it. Rather, they put new information into existing mental frameworks or “schema.” Thus, learning does not necessarily take place through processes like delivery, transmission, or osmosis: a kind of one-way flow from teacher to student that is assumed by traditional teaching practices such as the lecture. Instead learners construct new ideas and concepts through an active process of engagement. Further, *knowledge is highly context dependent, acquired through experience and involvement in real-world situations* (1).

In many schools serving professions such as law, business, engineering, and medicine, teaching practices such as the case study method and problem-based learning are becoming increasingly common, replacing traditional teaching methods. Over time experts in these fields have found that novices often struggle to translate knowledge acquired through lectures and memorization into the useable forms required by practice. Research in medicine, for example, has found that experienced doctors store their clinical knowledge in the form of specific cases with accompanying scripts about the relevant illness (2). More and more undergraduate instructors, regardless of discipline, are catching on and using similar methods with their students (3), and students in turn are reporting that they enjoy these experiences and learn from them (4). Finally as more and more institutions aspire to higher-level learning outcomes such as critical thinking and problem-solving, engaging students in hands-on projects becomes increasingly important.

Well-designed activities and assignments not only require students to possess foundational knowledge, they also ask students to think like professionals. For example, students must ask questions like: What does the particular context require? Who is my audience, and what can I assume about it? What form of presentation is most appropriate for this situation? What is the best solution to this problem, and why? (5). Most students like learning this way, and learn more as a result, and because the level of discourse is higher, it’s also more challenging for instructors, often rekindling their excitement about teaching.

Helpful Hints

Designing effective hands-on projects takes time and practice, and preparing students to succeed with these assignments requires a different kind of teaching, but most instructors find that the rewards are worth it. The following suggestions may ease the transition from more traditional practices to the hands-on activities and assignments described here:

Start small. Don’t think that you have to completely transform your teaching: one day nothing but the lecture, the next problem-based learning all the way. If you’re like most instructors, you’re juggling many responsibilities and don’t have time to do a full-scale overhaul all at once. So start small: for example, get your feet wet with a small case study that students read and discuss in small groups during class time. Then build from there.

Persist. If your first attempt doesn’t work exactly as you had planned, try to figure out why, tweak it, and try again. It will take both you and your students a while to get used to this way of teaching.

Explain. Tell students why you're using hands-on projects and solicit their feedback. Some students may be resistant at first: they may never have done projects like these and are not sure what you expect. Explain the project thoroughly and encourage students to ask questions. Monitor students' progress throughout and try to catch misunderstandings early.

Get advice. Ask a colleague or a consultant from a teaching and learning center to read your assignment of a hands-on project before you give it to students. What may be perfectly clear to you may not be clear to someone else. Clarifying assignment requirements at this stage will reduce student confusion and insure that more students have the kind of learning experience you intend through the assignment.

Revise. Adapt hands-on projects for larger classes. Even in large classes, hands-on projects are possible, if you divide students into groups of four or five students for in-class activities or out-of-class assignments. If out-of-class assignments seem too ambitious, try them as an option for some students.

Use technology. Appropriate use of technology can make hands-on assignments easier. Cases or short examples might be in video or other formats that can be available via a course website or through a course management system. WWW resources are always available and students can either be directed to them or be required to search for them. Technology can also facilitate student meetings or communications with you or other students.

Assessment Issues

Depending upon whether you're using hands-on projects such as in-class activities or out-of-class assignments, the assessment requirements will differ. If you're concerned about issues related to in-class activities including their design and management, then asking an experienced colleague and/or a staff member from a teaching and learning center to review your activity plan or observe your classroom when you run the activity, may be the best course. Soliciting feedback from students is also a good idea. Questions like, "Were your directions clear?", "Did they enjoy the activity?", "Did they believe they learned something from it?", and "What changes could have improved the activity and its impact on their learning?" are all helpful. On the other hand, if you're using a hands-on project as an assignment, in addition to having a colleague review the assignment beforehand, you might

also wish to assess the impact of the assignment and related class activities on student learning. Here designing a rubric or scoring guide to accompany the assignment will be helpful (6). A rubric will help you pinpoint your expectations for the assignment, communicate them to your students, and clarify indicators of different levels of performance on the assignment. In addition to facilitating better feedback to students, rubrics also allow you to identify aspects of the assignment that most students seem to understand and those aspects that give students difficulty. Identifying areas that give students difficulty will also help you target aspects of your teaching that need attention and fine-tuning.

References and Resources

- (1) See <http://www.cudenver.edu/~mryder/itc/constructivism.html> Retrieved August 4, 2004.
- (2) Irby, D. M. (1994). What clinical teachers in medicine need to know. *Academic Medicine*, 69(5), 333-342.
- (3) See, for example, <http://ublib.buffalo.edu/libraries/projects/cases/case.html> and <http://www.udel.edu/pbl> Retrieved August 4, 2004.
- (4) Light, R. J. (2001). *Making the most of college: Students speak their minds*. Cambridge, MA: Harvard University Press.
- (5) Huba, M. E., & Freed J. E. (2000). *Learner-centered assessment on college campuses: Shifting the focus from teaching to learning*. Boston: Allyn and Bacon. See chapter 7.
- (6) Walvoord, B. E., & Anderson, V. J. (1998). *Effective grading: A tool for learning and assessment*. San Francisco: Jossey-Bass Publishers. See chapter 5.

IDEA Paper No. 34: [Focusing On Active, Meaningful Learning](#), Stalheim-Smith

IDEA Paper No. 38: [Enhancing Learning-and More! - Through Cooperative Learning](#), Millis