

Involved students in “hands-on” projects such as research, case studies, or real-life activities

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Why this Teaching Method Matters

According to a number of contemporary theories of learning bundled under the umbrella term “constructivism,” learners don’t acquire knowledge through a process of transmission or osmosis assumed by traditional teaching practices such as the lecture. Instead they 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. And 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). The same is true in education and other professions where expertise involves in-depth knowledge, a significant repertoire of experiences under a variety of conditions, and sets of strategies available as responses to this variety of situations (3, 4). More and more undergraduate instructors, regardless of discipline, are catching on and using similar methods with their students (5). Students

in turn are reporting that they enjoy these experiences and learn from them (6). 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 acquire foundational knowledge, they also ask students to think like professionals, asking questions such as: “What does the particular context require?”; “Who is my audience?”; “What can I assume about it?”; “What form of presentation is most appropriate for this situation?”; and “What is the best solution to this problem, and why?” (7).

Most students like learning this way and learn more as a result; it’s also more challenging for instructors, often rekindling an excitement in teaching. Motivational research (8, 9) has repeatedly demonstrated that establishing the relevance of class and outside work increases interest, persistence, and the deliberate expenditure of effort to achieve goals. Other investigation of assigned work supports this research, showing that if students value assigned work and understand its relevance to classroom instruction and its application to real-life situations, they not only invest time and effort in that work, they also recognize that their teachers are providing useful experiences. Improved student ratings are the result (10).

Applying this Teaching Method in the Classroom

Designing effective hands-on projects takes time and practice and preparing students to succeed on them 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 tradition-

al practices to the hands-on activities and assignments described here:

- 1. 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.

2. **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. Seek outside advice if you need it (e.g., from a teaching and learning center, via online resources, or from an experienced colleague).
3. **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.
4. **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.
5. **Adapt hands-on projects for larger classes.** Even in large classes, hands-on projects are possible, whether as in-class activities or out-of-class assignments, if you divide students into groups of four or five. If out-of-class assignments seem too ambitious, try them as an option for some students.

Applying this Teaching Method Online

The above hints apply to most online as well as to face-to-face situations. However, major differences may arise if/when students have problems understanding or carrying out projects or other assigned work. In the absence of in-person discussions and explanations, the closest substitute would be via Web-based videoconferencing technologies. Given that these mechanisms can accommodate individual or group discussions, they present a virtual analog to traditional teacher-student dialogue. In some cases, the technologies may even allow a kind of precision missing in ordinary conversation. For example, a face-to-face verbal description of a process can be

minimally adequate, but can be more successful when supplemented by simulations, animations, and other tools that are readily available online to provide modeling or demonstrations at micro levels. Consider also creating a FAQ (frequently asked question) list, adding answers to the FAQ as students ask questions about the projects. This way an answer shared with a single student is made available to all students.

How can one conduct a "hands-on" project in an online environment? Here are three possibilities: (a) ask students to conduct projects in simulated environments, such as discipline-specific online simulations or virtual environments like Second Life; (b) ask students to conduct "offline" hands-on projects and report their findings and conclusions online, perhaps through blog entries or slideshows; and (c) ask students to use online technologies to connect to authentic audiences, such as asking students in a language course to talk with native speakers on social networking sites.

Given the growing presence of technological support for instruction and the linking of this support to online and distance classes, the chances are greater that you will find out about and get support to incorporate these new tools in online courses than if you work alone to plan a face-to-face campus course. Find campus resources for instructional design, development, and technology support and build a team that will help you maximize the use and benefit of these new tools.

Assessing this Teaching Method

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, 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. Ask students if your directions were clear, if they enjoyed the activity, if they believe they learned something from it, or what changes could have improved the activity and its impact on their learning. 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 (see above), 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 (11). 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

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