Scenario

Sara is taking a course called Recession Economics, and the syllabus says the class will incorporate something called challenge-based learning. The first day, discussion opens with talk of recession and what it means—what Professor Knoller calls a "big idea." The discourse soon narrows to college students, and Sara points out that many students take out substantial loans, and repaying them in a volatile job market could be difficult. Another student, Lauren, mentions a friend who dropped out of college for financial reasons. Knoller helps them roll their ideas into an "essential question": "How does the recession impact the lives of college students?" Lauren finds a campus web page that indicates student costs are up 11% this year. Sara discovers that Pell Grants once funded 72% of a public college education but now cover only 34%. The students post their links to the class website.

The next week the class focuses on finding a specific challenge to address, raising questions like "Why are college costs rising?" and "What could we do as a class to help make college more affordable?" Knoller writes these "guiding questions" on the board. The students decide to investigate textbook costs. They invite the manager of the campus bookstore to class and learn that he is already investigating new textbook offerings. Working with the bookstore manager, the students define their challenge as "How can the college bookstore offer more-affordable textbook options?" Study groups agree to research alternatives: e-books, used texts, open courseware, rentals, and print-on-demand. A video library burgeons on the class site as students capture and post video of conferences and interviews with textbook publishers, open courseware site managers, print-on-demand specialists, and bookstore managers from cutting-edge programs. Students also post reflective videos, discussing the pros and cons of various options.

Because the class is creating a mock e-commerce site for the bookstore, Sara's team canvasses students to ask what online services they would like to see; responses are recorded in a survey app on their smartphones. Many believe the bookstore is too expensive, prompting Sara to suggest building an online comparison chart that shows where prices are cheapest for each text alternative. This week, Sara's team is helping the bookstore manager set up the new print-on-demand unit. She finds she really likes working on a project that has a tangible impact beyond the classroom.

1 What is it?

Challenge-based learning (CBL) is an initiative introduced by Apple originally for use in K–12 education but now used in higher education as well. It is a structured model for course content with a foundation in earlier strategies, such as collaborative problem-based learning. But instead of presenting students with a problem to solve, **CBL offers general concepts from which the students derive the challenges they will address**. In addition, CBL encourages the use of web and mobile technologies, such as collaborative tools and wikis, that are available to students but not often used in coursework. This model is frequently interdisciplinary in its approach and encourages projects that involve the wider community. The combination of allowing students to choose their challenge and tying these challenges to community interaction raises student investment in a productive outcome.

2 How does it work?

Challenge-based learning begins with a "big idea," which is a broad issue that has an impact on school or community, such as course registration, unemployment, energy consumption, or immigration. The big idea is usually introduced by the instructor, but students discuss and evaluate it, trying to determine its component parts or "essential questions." **Through a process of discussion and research, students identify a selection of questions that might be workable for their project.** The point of this exercise is to derive the challenge or problem the students will address, generally a challenge that involves action at the community level. When they have identified the challenge, they conduct interviews and research solutions, documenting their work with commonly accessible technology, such as web cams, camera phones, digital cameras, blogs, and wikis. Student work with any of these tools may be presented for evaluation by the instructor to ensure students are on track with their work. Once students are satisfied they have what they need from their research, they work out a solution and outline a plan of action, documenting as they go. Recorded images, audio, and video from the previous phases of the project provide raw material for the final step: web publication of a student video with observations and reflections on the successes and failures of the project.

3 Who's doing it?

Challenge-based learning has had considerable success at the K–12 level, hailed by the New Media Consortium as early as 2009 as one solution to the problem of a troubled public education system. But **CBL is increasingly being used in higher education in projects** such as Full Sail University's work in the foster-care community and Ball State University's efforts to initiate community engagement in ethanol fuel production. YouTube has become a popular venue for publishing student findings from CBL projects

from places like Kansas State University, where CBL is widely used in a Technology for Teaching and Learning course. The video topics range from the impact of poverty on learning to the challenges of recycling to a pitch for people in the United States to learn languages other than English.

In Riverside, California, students at La Sierra University have joined in challenge-based competitions that involve entrepreneurship, marketing, and customer relations in local community settings, sometimes with cash prizes as incentives. Competitions have centered on marketing plans for a community developer looking to attract tenants to a local shopping plaza, essays on how to improve education in a school or business, and creation of the best business plan for a startup venture.

4 Why is it significant?

In a practical sense, CBL activities offer many of the benefits of project-based learning, as they engage students in real-world problems and make them responsible for developing solutions. Additionally, students have the satisfaction that comes from figuring out both the issue to be tackled and the solution they develop. Because these projects are generally community based, individual students might reap the rewards of social and professional interaction, while their institutions might benefit from enhanced community-campus relations. As participants determine where a problem lies, how a solution might be effected, and how technology can be leveraged to accomplish a workable result, they learn the value of critical thinking and reflection. The payoff in student engagement and satisfaction can be high. In Apple's 2008 study of CBL, findings showed student engagement among participating ninth and tenth graders was rated at 97% or higher and that student involvement peaked where they perceived the solutions they worked on to be of real value.

5 What are the downsides?

For both students and instructors, CBL requires a heavier time commitment than more traditional academic activities. The model requires faculty to guide students in classroom discussion while giving up part of their usual control, sometimes allowing students to make errors that they can uncover for themselves later. There may be concerns, too, that students will select topics about which the instructor knows little or that students might choose to use technologies that go beyond the instructor's expertise. It can also be tricky to integrate core competencies of a course into the content of the chosen project. Add to these difficulties the need to shepherd students successfully through interaction with community members, and demands on an instructor can be substantial. Moreover, traditional methods of assessment might prove inappropriate for measuring what students learn in a challenge-based project.

6 Where is it going?

The restriction that limits these projects to a single quarter or semester may seem artificial in the light of what students can learn and accomplish and the benefits they might potentially offer the community. Many of the colleges and universities that employ CBL have already made these activities cross-disciplinary; institutions might similarly decide to stretch CBL programs across terms as well. One particularly valuable aspect of these projects is that they encourage students to think about solutions and guide them from concept through instantiation. Students who are curious about what the next logical step might be after project completion may find themselves drawn to graduate efforts in the same fields. Then, too, as students see that the actions they take affect the society they live in, some might be encouraged to develop community activities they will work on beyond the classroom.

7 What are the implications for teaching and learning?

One of the key elements of CBL is its use of technology to implement solutions and to publish results, obliging students to present their findings and reflections not just to their class but also to their community. This broader audience improves engagement and allows students wider avenues for success. In addition to whatever is learned about the chosen topic, students gain meaningful skills through these projects, including how to share work, collaborate, organize, and express themselves more effectively; in fact, they garner these valuable takeaways even if the project itself is not successful. The challenge-based approach may thus serve as a confluence point for changes in teaching and learning, bringing in aspects of experiential learning, multimedia technology, social interaction, and a willingness to look beyond the walls of the classroom for educational opportunities.

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