Unlike their college-level counterparts, those who teach students from kindergarten through high school (K-12) spend a significant portion of their education studying the “how” of teaching. What they learn can be invaluable to college professors who enter classrooms with vast content knowledge but little (or no) background in teaching and learning. Regrettably, college teachers often misunderstand what their K-12 colleagues do and know. As those who teach these teachers, we’d like to showcase some of what college professors can learn from those who teach younger students.

1) Multiple Intelligences. Howard Gardner’s groundbreaking book on multiple intelligences (MI) changed education by documenting that people learn in different ways. By introducing concepts like visual spatial and bodily kinesthetic learning, MI made clear that only with a variety of teaching methods can instructors reach all learners. Whether Gardner’s model leads college faculty to explore new ways of teaching or whether it simply informs conversations with students struggling to grasp certain concepts, the book is a must-read for all educators. See Gardner, H. Multiple Intelligences (1993) and Intelligences Reframed (1999), as well as www.howardgardner.com.

2) Assessment. College professors know that they must assess learning, a process they tend to loosely associate with exams or papers that test knowledge. Yet assessment and testing are not synonyms. Testing is but one strategy in a teacher’s assessment portfolio. K-12 teachers are taught to use three different kinds of assessment: 1) Early assessment—the informal information about students gathered through observation early in the semester, which provides practical knowledge about students and helps with course planning; 2) Instructional assessment—the circular process whereby teachers plan instruction, assess their teaching (based in part on student work, responses, attitudes, etc.), and use that feedback to revise instruction; and 3) Official assessment—the traditional process of giving exams; assigning papers; and, ultimately, grading student work.

3) Lesson Plans. K-12 teachers prepare formal lesson plans as a developmental tool. Whether a formal document or notes scratched on a napkin, successful lesson plans have five components: goals, which answer “Why am I teaching this lesson?”; objectives, which answer “What should students know or be able to do after this lesson?”; materials, which answer “What supplies, media, and other equipment do I need to teach the lesson?”; teaching activities, which answer in detail “What will take place during today’s instruction?”; and assessment, which answers “How will I know that students have met these goals and learned the material?” An effective lesson plan provides a framework for student learning and a road map for getting there. See Airasian, P. Classroom Assessment, 2005.

4) Special Needs. Each year, beginning students arrive on campus with a history of diagnosed (and undiagnosed) learning challenges. Most college professors have little, if any, experience working with special needs students and can be quick to judge a weak student as failing rather than struggling to learn. K-12 teachers are trained to recognize, diagnose, and support a wide range of learning disabilities. They are also versed in the theories of cognition, memory, and differentiated instruction, which emphasize that, for students with ADD/ADHD, auditory processing disability, and/or language-based learning disabilities, key concepts become fragmented and disconnected when presented in content-intense formats. They are not easily committed to memory or retrieved for application. Faculty can take steps to support these students without sacrificing standards. See Levine, M. A Mind at a Time (2002).

5) Essential Questions. College professors often approach course design by

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asking what content the course needs to cover and how many weeks they have to cover it. K-12 teachers distinguish between courses that are activity focused, coverage focused, or understanding focused. The most challenging college-level courses are designed for understanding and require that faculty ask themselves: “What do I want my students to remember from this course in five years?” Considering essential questions helps a professor look at his or her course with the end—the understandings—in mind and work backward, attending to the skills and content that students will need to gain during the semester if they are to answer the course’s essential questions. See Wiggins, G., & McTighe, J. Understanding by Design, (2005).

6) Brain-Based Research. Well-versed in their respective fields, college professors develop rigorous syllabi that expose students to important topics. Concerned about coverage, instructors often deliver content-packed lectures every class period. However, brain-research suggests that students to retain new information will be greater if lectures are interspersed with short breaks that give students time to process new information. During such breaks, instructors can ask students to think about personal experiences related to the topic or challenge them to apply the material to their everyday lives. See www.jensenlearning.com.

7) Student Ownership. Students often ask college professors, “What do you want me to do in this assignment?” Although it is easiest to just answer, thereby maintaining complete control over course content and assignments, educational research has found that when students participate in the design of course assignments, they are more accountable in their work and more committed to learning course content. The choice can be small, but having the opportunity to choose can make a big difference in how engaged students become in their work. See Allen, R. H. Impact Teaching (2002).

8) Instructional Technology. With the prevalence of mediated classrooms, electronic presentations, and Internet access, college professors have many options for presenting course information. Doing so effectively can be a challenge, however. K-12 teachers focus on how to incorporate technology into pedagogy so that technology assists student learning rather than replacing effective teaching. Instructional technology in the classroom does not guarantee student comprehension. What technology can do is help teachers reach students in a medium that is familiar and comfortable to students. See Bates, A.W., & Poole, G. Effective Teaching with Technology in Higher Education: Foundations for Success (2003).

9) Student Aspirations. K-12 educators have researched and documented that teaching and learning thrive when the conditions are in place that support student aspirations. When student-faculty relationships are strong, and curriculum is rigorous and relevant, students are more engaged, retain more information, and transfer what they learn to other areas of life. Education takes on a purpose that increases student confidence and achievement. See www.qisa.org and www.daggett.com.
Reminders for Improving Classroom Discussion

Use short, ungraded writing to deepen thinking (and to let people prepare before speaking up):

• Have students write for five minutes, then have them read their writing aloud, or list their main ideas on the board.
• For homework, have students write the questions they have about the reading.
  o “What are you wondering about? What does this make you think of?”
• Use helpers to free yourself up to notice more discussion dynamics.
  o Have a volunteer note questions on the board or flip chart (number them for reference).
• Model the life attitude of vulnerably asking questions by wondering aloud, not knowing.
  o Put on the board or in a PowerPoint document a question for which you don’t have the answer.

Slow the flow, probe deeper:

• Use groups and assign each a different question, problem, or section of reading to report on.
• Probe for more meaning by 1) extending wait time,* 2) repeating the question, and 3) asking for more:
  o “What did you say, Melanie? Hmm, interesting—why do you think that?”
  o “Good. Can you say what your reasoning is?”
• Ask people to “say back” the opposing view to the other’s satisfaction before they disagree.
• Transfer responsibility away from you to class:
  o “Mmm—hmm. What is John getting at?”
  o “If you can’t hear someone, what can you do?”
  o “ Others, what does that mean to you?”

*FYI: Most teachers wait less than one second after asking a question. Increasing the wait to three to five seconds yields more and fuller responses, as well as more spontaneous speaking up, use of evidence, and student questions.

Balance students’ voices:

• “Others we’ve heard from less?”
• “If it’s already been said, how would you say it?”
• “Whose opinion on this topic would you like to hear?”
• Regularly remind students: “No question is stupid.” (Say it so much that you as teacher sound stupid.)

Track themes to bring discussion back on track or reframe it:

• Nudge a group to move on: “Why don’t we look at the fourth question you put on the board now?”
• Prompt for links: “Wait, what was the connection between this and Jack’s question?”
• Use evidence to support or challenge ideas: “Do these lines answer Kanisha’s question?”
• Offer your own dawning discoveries to encourage reframing:
  o “Oh, I just realized! Maybe Hector is the real hero of the poem.”
  o “What if we solved the problem this way?”

Comment explicitly on group dynamics:

• “Please, folks, I can’t hear her.” “Let her finish.” “One at a time.”
• “How could we make this discussion better?”
• “What can we do to encourage those reluctant to contribute to share their thoughts?”
• At midterm, email individuals, “I’d really like to hear from you more in class.

As your writing shows, others could gain from the greater diversity you’d bring. Participation counts too . . .”

Summarize what was learned (while valuing uncertainty, depending on the content):

• “Did you learn anything, or are you left thinking about anything?”
• “What struck you?” “What do you want to remember?”
• In general, use open questions (“what” and “why”) over closed questions (“Is this clear?” or “Does that make sense?”) to give practice at putting complex ideas into language.
• At end of class, give a “minute paper” or ask for the “muddiest point” and begin the next discussion by reviewing what students wrote about the previous one.

Further Reading


The Teaching Professor November 2006
Course Portfolios: The Next Generation

First it was teaching portfolios, modeled on the way artists showcase a collection of work. The idea was to assemble a series of artifacts and reflections that captured the details and essence of one's teaching.

Teaching portfolios continue to be used as an alternative way of documenting and describing the often-private work that occurs in the classroom. They have been followed by something even more specific, the course portfolio, which allows faculty to delve deeply into the details of a single course.

A new book, Making Teaching and Learning Visible, takes course portfolios to a new level.

The authors propose two kinds of course portfolios: the benchmark course portfolio and the inquiry course portfolio.

“A benchmark portfolio presents a snapshot of your students’ learning that occurs in one of your courses” (p. 12). On the other hand, an inquiry course portfolio “is useful for documenting improvement in teaching your course over time and for assessing the long-term impact of teaching changes, the success of teaching approaches, and the improvement in student learning.” (p. 12)

Benchmark portfolio

What’s included in each of these portfolios? The benchmark portfolio, as these authors propose it, includes a description of the course and its goals, a description of course activities, and something that documents and analyzes student learning.

In each case, the authors recommend that the material be assembled and presented in memo format. The process of writing focuses attention on instructional details often not considered closely.

The level of detail proposed for each of these areas of analysis illustrates why the process can be such an eye-opening experience for faculty.

For example, to document and analyze student learning, the authors propose that faculty “identify samples of student work that clearly represent high pass, medium pass, and low pass for a classroom activity.” (p. 34) This can be done for a homework assignment, a quiz, a book review, a lab report, a case study, or an oral report.

If quizzes are selected, the authors recommend assembling a representative example for each of the three pass categories. Then they propose looking at student performance across sets of quizzes and preparing a chart to show the statistics.

After this, consideration should be given to one set of quizzes in which students did well and to another in which they did not do well. All this data taken together will give faculty a complete understanding of how quizzes do or do not promote student learning.

Inquiry portfolio

The inquiry portfolio gets at improvement issues by focusing on “a specific question or issue regarding teaching practices, course structures, or student learning over time.” (p. 88)

The questions addressed in an inquiry portfolio often arise in the process of preparing the benchmark portfolio.

The three major parts of the inquiry portfolio are a memo that states the issue or problem to investigate, a memo that generates a hypothesis and develops data-collection strategy, and a final memo that analyzes and assesses the findings.

An art instructor whose inquiry portfolio is highlighted in the book writes about how this approach worked for her. “Although the methods I used seemed at first too scientific for a subjective area like art, the ‘Hypothesis, Data, Conclusion’ structure allowed me to be more objective about my teaching. It is all too easy to get caught up in the personalities of students or blind arrogance about the quality of my work in the classroom. The more scientific structure allowed me to consider my preconceived notions about what I hoped would happen, look at student work as raw data, and analyze the situation to come to an informed conclusion.” (p. 120)

The book contains multiple examples of sections and complete portfolios for both the benchmark and inquiry portfolios.

They show exactly how to do what’s being proposed, but more important they show the value of looking this closely at an individual course. Most faculty do not often track learning in a course. The process of doing so can affirm methods, or it can challenge faculty to consider alternatives.

What’s being proposed in the book is a labor-intensive, time-consuming process. With what most faculty already have to do, it’s easy to dismiss this careful analysis of how teaching promotes learning as just too much work (especially if there’s no institutional incentive). And yet, if we truly value teaching, if we want to make good on our claim to take our work in the classroom seriously, if we want in practice to apply the word scholarly to teaching, then this is the route we must take. You won’t spend much time in this book without seeing the tremendous value that accrues when a course is put under a microscope and closely examined.

Developing an Alternate Assessment Exercise for an Introductory Chemistry Course

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At the recent Teaching Professor Conference in Nashville, a session titled “163 Alternate Assessment Ideas” caught my eye. It was presented by Eileen Buckley from Western Michigan University. To be honest, the use of alternate assessment techniques is not something I completely embraced before attending this workshop. Although I have used group work and peer-led activities, they were for the purpose of helping students prepare for quizzes and exams. A theme in the workshop was that alternate assessment activities should be graded and used along with traditional testing methods to evaluate student learning in a course.

In recent years, my desire to teach students more than chemistry content has increased considerably. I now want my students (even those in nonmajor, introductory courses) to learn how chemistry connects to their daily lives. Learning the nomenclature rules for monosubstituted amides helps students in the introductory course on their content-based standards. I have had students write papers like this takes little advantage of student creativity.

With this in mind, I hoped the workshop would help to identify at least one alternate assessment activity I could adapt for use in this course. When the workshop began, we were placed into groups based on related disciplines and asked to choose and develop an alternate assessment that could be implemented in one of our courses. More than a few individuals in my group jokingly suggested that we could just give a test (it was on our list!).

The assessment activity that caught my eye was a news report. Many topics addressed in introductory chemistry, such as fats, hydrocarbons, and alcohols, are frequently discussed on TV and in the popular press. During the workshop, I put together a rough plan for having my students produce a short news report to demonstrate the application or integration of chemical principles discussed in class. After the workshop, I refined my plan and implemented it in my course this summer.

I had my students assume the role of reporters for Action 10 ChemNews and contribute to a series titled “Connecting You to Chemistry.” To produce the stories, students put together a PowerPoint presentation with the appropriate visuals and script for each slide. Students were encouraged to maximize their creativity and minimize the amount of text on the slides. To create the report, the “reporters” used my tablet PC running Camtasia, screen recording software with audio capabilities. Students read the script into a microphone while showing the appropriate slides on the screen. Camtasia recorded the audio and screen activities and was used to create a Windows Media File (.wmv) of the news report. The tablet PC makes it very easy to draw chemical structures and diagrams on the slides. The news reports this summer dealt with topics such as trans fat, low-toxicity antifreeze, birth control, and ozone depletion.

Students created the reports in my office, which gave me the opportunity to provide some editorial advice and technical assistance. Once produced, the news stories were played for the entire class and scored according to a rubric modeled after the one provided at the workshop. Some examples of the news reports have been placed online. Their educational value is best appreciated by viewing the clips. (See http://campus.murraystate.edu/academic/faculty/ricky.cox/106clips.html.) I decided to make the first-generation news reports short and gave students a great deal of flexibility in producing them. Although these news reports will serve as a valuable resource for future students, it will be easy to modify the format as needed.

Overall, I am quite pleased with my attempt to better connect my students to chemistry by using an alternate assessment activity. I strongly believe that a balanced approach to instructional and assessment methods will improve my course.

Office Hours

FROM PAGE 6

The professors conclude with this summary: “Although instructors will need to continue offering traditional office hours, alternative formats such as a course center can do as good or a better job of delivering help and of motivating students to seek that help.” (p. 257)

Office Hours in a Different Format

Faculty regularly face the problem of getting the students most in need of help to come to the office for help. Not only do a small number of students take advantage of office hours, typically those who show up are not those who most need to be there. In previous issues we have reported on research that offers some reasons why this happens. When students start getting feedback that they are doing poorly, some begin to doubt their abilities. They conclude that they just don’t have what it takes and so getting help isn’t going to make any difference. Other times, it’s the stress of having to face the professor with their failure. Some students are so lost, they don’t even know what to ask, and their confidence is so shaken, they have trouble processing helpful information when it’s delivered.

Two professors report on their experiences with a reformat ted kind of office hours: something they call “course centers.” They scheduled one- or two-hour time blocks in unoccupied classrooms. Students were invited to come individually or in groups, and they could work on whatever they wished during that time. The course instructor and/or TA were available during the time block. If students wanted help, they could ask for assistance. Otherwise the instructor just floated around the room, moving from group to group. Students were free to come and go as they wished during the session.

The professors of these two courses (an introductory physics course and an introductory symbolic logic course) wanted to create an environment in the course centers in which students felt like they were just spending time studying, rather than explicitly getting help; where students felt welcome getting together with other students for a study session; and where they felt no pressure to have a set of questions ready to ask the instructor.

Course centers, these instructors stress, did not replace traditional office hours—they supplemented them. In the physics course, the instructor still had two office hours a week and three to four course center sessions. In the logic course, there were four weekly office hours and one weekly two-hour course center session. Students were invited to get help at either: during traditional office hours or at one of the course center sessions.

The instructors surveyed the large student cohort involved in multiple sections of these courses during the three semesters course centers were used. The results indicate the effectiveness of the approach. Students were asked to list all the options they knew of for getting help in the class. Ninety-three percent listed the course center versus 68 percent who noted the traditional office hours. When asked if they had to choose between the instructor’s office hours and the course center for getting help which they would select, 54 percent said the course center versus 46 percent who said office hours. But the most telling response was to this question: “Did having a course center in the class make you more likely to get help?” Seventy-nine percent said yes.

In response to several open-ended queries, students identified those features of the course center they most appreciated. They listed convenience, although it was not clear how or why a course center was more convenient than traditional office hours. They also noted that they could get one-on-one help during the course center sessions. They could get that same kind of help during office hours too, so faculty found this response equally puzzling. Students further reported that they found the opportunity to work in groups useful during the course centers. Not only did they get help from other students, but sev-

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