HELPING STUDENTS THINK LIKE A SCHOLAR IN YOUR FIELD

Using your discipline as a framework for learning engages students and enables them to develop practical and cognitive skills integral to your field. To provide a disciplinary context for learning, first identify concepts, perspectives and problem-solving skills necessary for success in the field. Because these may be skills and thought processes that you’ve long since internalized, you may find it useful to observe the approach beginning students take toward material and compare it to your own expert approach to identify the skills new students lack. Next, develop lessons and assignments that engage students in the practice of the discipline. Finally, plan assessments to measure students’ thinking processes and approaches to problem-solving within the field, as opposed to focusing on course content alone.

Additional considerations when planning your course:

Model the ways scholars work by posing questions at the beginning of lecture, allowing students to pose possible answers, then using lecture material to discriminate among correct and incorrect answers.

Challenge students to apply the ways of thinking you are teaching to other aspects of their lives; this will close the gap between students’ lived experience and academic disciplines.

Pay attention to learning as a developmental process as you plan lessons. What differences exist between the kind of thinking we might expect of students who are just beginning study in your discipline versus those who are ready to graduate?

Design your course to help students think in their disciplines, but also challenge them to question those ways of thinking.

COGNITIVE APPRENTICESHIP

Brown, Collins, and Duguid (1989) explain that knowledge of any kind can never be separated from the activity in which it is deployed, and, as such, learning is always situated within authentic activity (activities that are the ordinary practices of a culture). Classroom instruction, then, should be a process of enculturation, by which students learn the tools they need for a certain activity within a context that allows them to see how members of that community—that is, scholars in the field—use those tools. Learn-
ing in the classroom should not be the imparting of abstract concepts devoid of context from the instructor to the students, who then apply those concepts to artificially created situations. Rather, learning should always be situated, so that students can use the environment, the context, and knowledge they already have to solve problems and make generalizations.

Group learning is particularly important for any sort of situated learning, as group work is necessary for enculturation to take place. In fact, most work outside of school takes place collaboratively, not in the isolated situations often created within the classroom setting. Students benefit from group work by finding multiple solutions to problems, discovering the many roles needed to solve certain problems, and confronting ineffective strategies and misconceptions (See Using Group Work, pages 21-22).

MENTORING STUDENTS AND ADVISING INDEPENDENT WORK

Mentors are more than academic advisers or teachers. Johnson (1989) defines mentoring as an ongoing one-to-one relationship in which a more experienced individual offers advice, counsel, or guidance to someone less experienced. Jacobi (1991) identifies three components of mentoring: direct assistance with career and professional development, emotional and psychological support, and role modeling.

Most successful mentoring experiences happen when groups meet regularly, set clear goals, and balance friendly discussion with talk about academic matters. The best relationships are built on foundations of shared interests and mutual respect. The mentor/mentee relationship should be mutually beneficial, with each person gaining new perspectives and ideas from the other.

Faculty members new to KU would do well to consider suggestions from Ann Cudd, philosophy and women’s studies:

“One-on-one work with students is some of the most intellectually and personally rewarding work we do; it’s also the most time-consuming. Students need to be mentored and advised if they are to learn the standards of good work in your discipline and how to create that work. Depending on whether they’re undergraduate, beginning graduate or advanced graduate students, they’ll need more or less intervention from you.

There are many course names for the credits students take to do independent work: independent study, directed readings, thesis, dissertation. The most important thing to do is to set the terms of the interaction from the beginning. First, I insist that the student come up with the topic area and describe it...
in some detail—独立的工作应该由学生以某种想法开始学习。接下来，我们同意在会面时我们有多少面对面的互动，以及我们将做什么。然后，我们同意阅读材料和一个时间表，以供我评估工作。

我一直有两份表格，一份是为独立学习和指导阅读的学生而设计的，另一份是为跟踪写论文或论文的学生成立的（见附录A）。我将第一份表格交给他们，解释我希望从他们那里得到什么，以及他们可以从我这里得到什么。第二份表格是为我设计的，我记录学生的主题，会议日期，上交的工作，以及委员会成员，日期和结果。我发现第二份表格对我来说是必不可少的，因为我不应该忘记谁在和谁一起工作，我对自己承诺了什么。

最后，有两条警告。对于新的教员来说，关于指导和建议独立工作方面，第一，不要以正式的方式在第一年（或更多）中承担太多。开发您的课程，并观察您部门中的其他人是如何进行指导工作的。如果您确实要深入，那么要向有经验的教员寻求建议。第二，不要重做您部门正在教授的课程，即使学生希望您教。您不应该考虑自己是一个溢出的教学资源，也不应该自行提供课程给不能或者不愿意在提供课程时上课程的学生。

MAXIMIZING MULTIMEDIA AND TECHNOLOGY

MULTIMEDIA OPTIONS

多媒体可以增强您的教学体验和学生的学习，课堂多媒体可以包括Powerpoint，Camtasia屏幕和音频录制，数字录音，动画，学生投票机，文档投影系统，幻灯片，白板。

数字多媒体可以存储在Blackboard中，一个学生/教师基于Web的界面，用于电子邮件，异步讨论组，数字白板，文件交换和存储，分数和成绩，博客，以及安全考试的在线测试。

CLICKERS

课堂响应系统（CRS；也称为“点击器”）可以是有效的教学工具，特别是在大班中。点击器是个人的，手的单位，使用红外线或无线电波。
frequencies to transmit responses to a receiver. After an instructor poses a question, students use clickers to answer it. Computer software then generates a histogram for displaying the responses to the class. A CRS primarily improves learning outcomes by increasing active participation via individual student responses or peer interaction, by allowing students to answer anonymous questions that help jumpstart discussions on difficult topics, by providing feedback to teachers about how much material students are retaining so that lectures and class activities can be adjusted, and by giving students an idea of how their understanding of the material compares to their classmates. Teachers can also use clickers for mid-semester evaluations of the class as a whole.

However, technology alone doesn’t enhance learning: Instructors need to: plan how a CRS can help meet learning goals, create carefully worded questions, and have flexible teaching plans so student feedback can influence a lecture’s rate and direction.

When used wisely and creatively, a CRS provides many benefits to instructors and students, including engaging students, catalyzing class discussion, monitoring attendance, evaluating student mastery of concepts, adapting lectures in response to student understanding, increasing peer interaction and instruction, assessing student learning from assigned homework, and test preparation. Common challenges are these: Students may resist paying for their individual clickers; instructors must manage technical difficulties; guidelines for lost, broken or forgotten clickers must be established; both students and instructors will experience a steep learning curve for using clicker software; instructors must help students change expectations (they’re no longer anonymous in a large class!); less material will be covered in class; and clicker efficacy depends on the quality of questions instructors ask. Most challenges can be minimized by planning ahead. If you plan to use a CRS, contact IT (864-8080). Another great resource for information and advice on using clickers can be found in the “Clicker Resource Guide,” which can be found at the following address: http://cwsei.ubc.ca/resources/instructor_guidance.htm.

TEACHING ONLINE

In many ways, teaching online courses requires the same sort of preparation as teaching face-to-face courses, but this increasingly popular method for students to fulfill degree requirements can also pose great challenges for students and instructors who are not used to a learning environment that can come across as impersonal and overwhelming.

According to Dr. Judith V. Boettcher, faculty who are new to teaching online courses may find these ten best practices helpful:

---

Modern professors juggle service and research with their teaching responsibilities. Teaching can become quite demanding, especially in larger classrooms. Using multimedia maximizes class experiences and, after an initial expenditure of time, can reduce preparation time.

Multimedia should be coupled with precise learning objectives. For example, you have a class of 150 students and you wish to help them prepare for a discussion. It’s important that students prepare prior to coming to class! Using the testing functions in Blackboard, you can have students take a quiz before coming to class that covers basic vocabulary. You can ask them to have an online discussion in the discussion groups and assign points for their participation. On the day of the discussion, you can download an animation outline for presentation and outline a discussion on PowerPoint. While you lead the discussion, you can digitally record your discussion for student viewing later. After class, have students review the recording online and post observations on the discussion board.

Contact CTE or IT for help on how to design your class experiences to reduce your overall teaching time and enhance students’ learning experience.

—David Pendergrass
Best Practice 1: Be present at the course site

Liberally using communication tools such as announcements, discussion board postings, and forums communicates to students that the faculty member cares about who they are, cares about their questions and concerns, and is generally “present” to teach. The best online faculty, according to students, are faculty who show their presence multiple times a week, and at best, daily. Setting clear expectations, as to when you will be present and when you will not, at the beginning of a course is very helpful, and it can reduce the need for daily presence if that is not your particular style. Setting regular times when you can meet in a virtual classroom or be available by email or texting, and thus be available—almost in real time similar to office hours, can be invaluable.

Best Practice 2: Create a supportive online course community

To develop a supportive online community, design the course with a balanced set of dialogues. This means designing a course so that the three dialogues of faculty to student, student to student and student to resource are about equal. In most online courses, the dialogue of faculty to student is provided with mini-lectures in text or video or audio podcasts, weekly coaching and reminder announcements, and explanations/interactions with students.

Best Practice 3: Be clear about how you will communicate and how much time students should be working on the course each week

This best practice cannot be overemphasized. Include on your course site a set of expectations for how students communicate and dialogue online and how they communicate with you. For example, many faculty tell students that they can expect a response within 24 hours during the week. Often before a major test or assignment, faculty will agree to hold special office hours by computer, being available either by chat/live classroom or email, or phone. In the interests of time and community, it is best to use a tool where responses and content can be shared with everyone and archived for flexibility in access and review.

Best Practice 4: Use a variety of large group, small group, and individual work experiences

A community works well when there are various activities and experiences. Online courses can be more enjoyable and effective when students have the opportunity to brainstorm and work through concepts and assignments with either one or two or more fellow students. At the same time some students work and learn best on their own. So, building in options and opportunities for students to work together and individually is recommended.
Best Practice 5: Use both synchronous and asynchronous activities

When online courses were first introduced, they were almost totally asynchronous—an updated version of correspondence courses. Now we have tools that make it possible to do almost everything we do in campus classrooms. Plus we can often engage learners in collaborative activities, and what happens is recorded and archived and there for review and occasionally revision.

Sometimes there is nothing better than a real-time interactive discussion; other times the requirement to think, plan, write, and summarize is what makes learning most effective for an individual. The variety of activities that are now possible online makes it possible to create many types of effective learning environments.

Best Practice 6: Early in the term (about week 3), ask for informal feedback on “How is the course going?” and “Do you have any suggestions?”

Course evaluations have been called “post mortem” evaluations as they are done after the fact, and nothing can be changed to increase satisfaction or facilitate learning. Early feedback surveys or informal discussions ask students to provide feedback on what is working well in a course and what might help them have a better experience. This early feedback is done early in the course so corrections and modifications can be made. It is an easy opening for students who might have comments or suggestions or questions.

Best Practice 7: Prepare discussion posts that invite questions, discussions, reflections, and responses

Discussions in an online course are the equivalent of class discussions in a face-to-face class. A key difference, of course, is that these discussions are asynchronous, providing time for thought and reflection and requiring written and or audio responses that become part of a course archive.

Best Practice 8: Focus on content resources and applications and links to current events and examples that are easily accessed

Students want to learn anywhere, anytime, and often while they are doing other things. Carrying around large, heavy textbooks and even laptops sometimes feels like an anachronism. Many students welcome content that is mobile and can be accessed via smartphones, iPads, or iPods. For many courses and disciplines, however, textbooks are not yet available in digital form, so this best practice applies mostly to supplementary material and library resources. A reference document with detailed instructions on accessing library resources is included in most courses. Additionally, a key member of the instructional team is the library reference person assigned to supporting online learners.

---

ONLINE DISCUSSION BOARDS

From looking other people’s rubrics and my experience in using discussion boards, I learned to be very clear about my expectations of how I wanted students to use discussion boards. I used discussion posts to count for participation, check for understanding, and encourage peer learning. I would design several open-ended questions about the topic we were studying that week and would assign students to answer one of the questions by Friday night at midnight. This gave them time to read the material before answering. I gave very specific instructions on their answer. They had to make a strong argument for their answer and had to back it up with references to resources they used for their argument. I then expected them to respond to a classmate’s post. Again they had to back up their response with resources. The response had to be completed by Sunday night. I checked daily for their discussion (you can also set up Blackboard to e-mail you when there is a new post).

I also set up a discussion board for Q&A, so that when a student had a question he or she could post it and everyone could benefit from the answer. It is good to subscribe all students to this discussion board so that they automatically get an e-mail note when something is posted.

—Kim Glover
Best Practice 9: Combine core concept learning with customized and personalized learning

This best practice combines a number of basic learning principles. Very briefly, it means that faculty identify the core concepts to be learned in a course—the performance goals—and then mentor learners through a set of increasingly complex and even customized projects applying these core concepts. Many online learners within professional certificate programs are working professionals. Supporting learners with their professional goals that are closely linked to the performance goals of a course and even beyond the course parameters is a win-win for the learners individually and as a class. How does one do this? Building in options and choices in assignments and special projects is a way to do this.

Best Practice 10: Plan a good closing and wrap activity for the course

As courses conclude, it is easy to forget the value of a good closing experience. By the end of a semester, students are likely to be harried and not take time to do the planning that can reduce stress. In Getting Things Done, David Allen notes that making a list helps us clear the “psychic ram” of our brains, and we feel more relaxed and in control. Once we make a list and schedule, we don’t have to continually remind ourselves of what needs to be done and when. Consider providing a wrap-up list for your online students.

A list of references and more helpful information is available on Boettcher’s website, Designing for Learning, which can be found at: http://www.designingforlearning.info/

WORKING WITH GTAS

Graduate Teaching Assistants (GTAs) play a large role in the undergraduate teaching experience, with responsibilities varying from grading assignments and taking attendance to holding office hours, designing and presenting lectures, and writing exams. Given the many obligations that both professors and GTAs must fulfill, positive interactions between them can help all class members have a successful experience. Poor interactions, on the other hand, can negatively impact the effectiveness of the teaching team. Therefore, concerted efforts should be made to ensure that these interactions are positive for everyone involved. Supervising professors should remember that they are responsible for a GTA’s performance. As David Perlmutter discusses in his article “Supervising Your Graduate Assistants,” faculty members need to prepare, motivate, and manage GTAs. Supervisors must find a balance between maintaining rigorous standards for GTA work and remembering that GTAs are students as well, requiring occasional leeway. The key, Perlmutter believes, is to “make a plan, write it out, agree on it, and faithfully and diligently execute it.”
The TA Experience (1993) suggests that an essential starting point is making sure roles and expectations are discussed at the start of a course. When roles aren’t clearly stated, GTAs must infer what their responsibilities are, which can affect their level of confidence and their commitment to their tasks. See the box at left for steps to ensure that GTA time and skills are allocated effectively.

To allocate GTA time and skills:

1. Calculate the total GTA hours you have for the term.
2. Identify the range of tasks the GTA is capable of doing.
3. Rank the order of those functions as activities that enhance student understanding.
4. Distribute the hours accordingly.

To maximize benefits for you, the GTA, and your students:

Make teaching a team project. Before the semester starts, meet with GTAs and review the course structure and goals. Review the course organization and syllabus, or consider writing the syllabus together. Sharing with GTAs why you made decisions will expose them to the course development process, as well as make it easier for them to address student questions.

During the semester, involve GTAs in class on a daily basis. Require them to attend lecture; this will make them visible to students, provide you assistance with logistics, and keep them abreast of material you’re teaching. To further involve GTAs, ask for their input on your lectures, have them give a lecture of their own, and write/grade exams as a team.

Ask your GTA to be an information source about student learning. Provide GTAs with a grading rubric to ensure quality and consistency of assessment. Meet with GTAs weekly to discuss challenges they have encountered; have them summarize questions they are getting from students that reflect levels of student understanding of course material. Or, ask the GTA to provide you with representative lab write-ups, essays or assignments from their class; this way, you can record benefits and pitfalls of assignments and gauge student progress.

Provide feedback on their work. While GTAs should have autonomy in their classes, most require guidance. Offer to observe classes (as support, not as a check-up), then specify their accomplishments and offer teaching advice. During the semester, meet weekly to discuss issues from previous classes and help them prepare for future lessons. To maximize their development, meet with GTAs individually at the end of the semester. Finally, direct GTAs to resources outside the department that may help them enhance their teaching (e.g., the KU GTA Resource Book at www.cte.ku.edu/resources/index.shtml).
TEACHING LARGE CLASSES

Paul Atchley (see right) asks an important question regarding teaching a large class: How does a teacher offer meaningful instruction in a large lecture class? Faculty members who teach large classes face other issues, as well, such as:

Are there ways to reduce student anonymity?

How can I make a large class interactive, so that it’s more than just lecture?

How can I encourage student writing in large classes?

What types of tests are feasible in large classes?

Instructors of large classes have found ways to meet some of the challenges this particular teaching situation presents.

Val Smith, KU ecology and evolutionary biology/environmental studies, offers these ideas:

“Large classes present a special teaching challenge. Making consistent eye contact while lecturing is much more difficult, except with students in the first few rows, and the likelihood of students using their laptops for instant messaging and Web surfing (rather than taking notes) is greatly enhanced. How do you keep a large classroom audience engaged and actively interested in material? My solution to this dilemma in Biology 152 reflects two key goals derived from my own early classroom experiences with Clark Bricker, who for decades excelled at teaching large sections of introductory Chemistry at KU.

My first and most important goal is to personalize the lecture delivery: I learn the names of several key students, try to learn something about them, and then actively refer to them periodically in class. In Spring 2007, I team taught a course with Chris Haufler. I consistently sat in the same seat throughout most of the first half of the course, which was taught by my colleague. I struck up pre-class dialogs with students on either side of me and got to know them. Later, when I began my portion of the course, I often walked up to and called them by name during my lectures. For example, ‘Mike is sitting just in front of me right now taking notes. Is he thinking about breathing while he is writing? No! He doesn’t need to, because his central nervous system takes care of that automatically.’ In doing so, I tried to make the students feel like they were in a smaller, more intimate classroom setting; that each of them was not an anonymous, faceless member of a large crowd; and that I cared about them as individuals.

Sometimes you have to teach a big class, even if the class should be much smaller.

When I arrived at KU, there was no Research Methods in Psychology course. A methods course is typically taught as a lecture course with lab sections. The size of the lecture course varies depending upon the institutional resources, but the lab sections are usually in the 20-30 student range.

The department quickly approved creation of a methods course when I proposed it, but there was a dilemma: There were not enough resources to use the model of a typical methods course with lecture and lab sections. Further, there were not enough instructors to offer multiple lecture sections per semester. This meant that the class was going to be a 200-person or more lecture section each semester.

How does one offer meaningful instruction on how to do research in a large lecture taught two days per week?

—Paul Atchley
My second goal is to demand active participation. Here’s an example: There’s a strong difference between the behavior of non-myelinated neurons (along which nerve impulses are conducted smoothly and without interruption, akin to an electrical current flowing through a strand of wire) versus myelinated neurons (in which nerve impulses hop from one node to another, more like a frog hopping along a rope). I first asked all the students on the ground floor of the classroom to start a continuous “wave,” beginning with students along the left-most aisle, sweeping across the classroom, and ending at the right-most aisle. I likened this smooth flow of movement to nerve impulses in non-myelinated neurons. Then, I requested that the students in the central section of the classroom remain unmoving, and requested that the students on the right-hand side of the auditorium begin their portion of the wave at the very instant that the left-hand section’s wave ended: The flow of movement jumped over the central section of students, just like a nerve impulse jumps and speeds past the sections of myelinated neurons that are covered by Schwann cells. No one leaving the classroom that day forgot the difference!”

Smith’s suggestion to personalize lecture delivery is a good starting point for reducing students’ feelings of anonymity in large classes. As McKeachie & Svinicki (2010) report, social psychological research has shown that people who are anonymous feel less personal responsibility, which damages morale and order. Also, the distance students feel from an instructor and a loss of interpersonal bonds with a teacher and with other students diminishes motivation for learning. To combat these, see the box at left.

Paul Atchley shares these ideas regarding attendance:

“If your class is a recapitulation of lectures, students will choose to stay in bed, rather than come to your class. While lectures are an effective way to distribute information, one might instead rely on students handling low levels of Bloom’s Taxonomy on their own (knowledge and comprehension) by using online resources such as Blackboard quizzes. Use class time to guide students through exercises to achieve higher levels of learning (application, analysis, synthesis, evaluation).

Emphasize the importance of attendance: if you don’t care, they won’t, either. If you feel you add something to students’ education, then they should be in class. Enforce attendance through whatever combination of carrots and sticks are appropriate for your course. In a large class, taking attendance is onerous, but in-class writing assignments or peer grading of assignments can serve as evidence of attendance. Avoid announcing when graded in-class activities will happen, because you will find that students will show up on due dates, and stay home when they think nothing is due.”
And Atchley shares these ideas re: personalization:

“Have students keep a blog or journal as a class activity. Reading a few of these each week and providing even simple comments can make a student feel that personal touch, and it can help you remember each student inside the classroom.

If you have the opportunity to personalize assignments, it can be a very effective way to motivate students and make the experience more meaningful for them. It is not always easy to do in a large class, but even one or two pass/fail assignments that students are allowed to personalize in some way can make the class more meaningful for a student.”

Mark Haug, KU School of Business, suggests:

Apply theory to real-life cases during class, which makes course material relevant to the student experience.

Have small groups of 2–3 students work on a problem during class; one of these for every 40 minutes of class time is ideal.

Other ways to involve students include in-class debates or interviews, or out-of-class study groups and online discussions.

Many faculty members hesitate to use writing assignments as part of a large lecture course. For formal papers, using rubrics is an effective way to ease the grading load; see Designing Writing Assignments, p. 7. Not all assignments must be formal, graded papers, however. Bean (2011) suggests that teachers shouldn’t feel “compelled to read everything students write, which is equivalent, I would argue, to a piano teacher who listens to tapes of students’ home practice sessions … The trick is to read some of it, not all of it” (p. 99). Using short, informal writing activities such as reading logs or journals or practice essay exams will benefit students. For other ideas, contact the KU Writing Center (864-2399).

In large classes, giving exams presents unique challenges. In a class of 30 students, it takes just a few minutes to hand out exam sheets. In a class of 1,000 students, passing out exams can reduce testing time by ten minutes or more. See the box at right for suggestions regarding exam logistics.

When you’re handing back graded papers, Lowman (1987) recommends asking GTAs (or student volunteers) to take stacks of alphabetized papers to different sections of the room. You can direct students to the section where their paper will be (e.g., last name A-F in the right front corner of the room).
TEACHING STUDIO OR ONE-ON-ONE CLASSES

Teaching individual students occurs in various settings: architecture, music, art, physical education, as well as independent study in any discipline. McKeachie & Svinicki (2010) note there’s relatively little research on one-on-one teaching, but several principles apply:

Allow students maximum freedom to experience successful completion of a task or part of a task, but give enough guidance so that they won’t get bogged down by errors. Learning experiences should move from simple to complex, with steps ordered so that each new problem can be solved.

Students need practice, followed by feedback.

Too much feedback may be more than the student can assimilate. Don’t try to correct everything on the first try.

Feedback can discourage students. Provide some encouragement, as well as identification of errors.

Feedback about mistakes won’t help if the learner doesn’t know what to do to avoid errors. Suggest what to try next.

High-level skills are developed through much practice. One successful performance doesn’t signify the automatization that’s necessary for consistent success.

Practice with varied examples is motivating and more likely to transfer to later performances than simple drill and repetition.

Students need opportunities for self-evaluation with feedback about the evaluation, as well as the work being evaluated.

Cynthia Colwell Dunn, KU music and dance, shares these observations about teaching one-on-one:

“Individualized instruction requires a special set of teaching skills, whether analyzing students’ work in studios, mentoring a graduate student through a research project, or evaluating behaviors in off-campus practica. There are a variety of issues to think about prior to, as well as during, one-on-one experiences that are different from the typical classroom experience.

When teaching one-on-one, it’s important to determine guidelines for availability, as well as setting boundaries for the relationship. In the area of availability, will you establish set office hours or be available by appointment or on a drop-in basis? What parameters will you set for contacting … at your
office, by email, or on your office, home or cell phone? In the area of setting boundaries, will students call you by your first name or your professional salutation? What kind of contact will you have with students outside the arranged time? Will you establish a personal relationship? Will this be impacted by gender or by age? How will you balance professional versus personal ‘sharing’ (i.e., teacher versus therapist role identification)? Both of these areas are impacted by your philosophy and the situation but are imperative to consider prior to and/or during the establishment of the teacher/student interaction.

Approaching your teaching preparation is markedly different in the one-on-one setting. When formatting a lesson, you have to determine what balance of teaching strategies and student engagement is going to be appropriate. Will you lecture or do more exploratory or seminar type teaching? How much will students be responsible for presenting content information? How will you provide feedback—oral, written or both? What types of prompts will you use to facilitate discussion when it is just the two of you? Will you create a learning agreement that functions much like a contract of what the student hopes to accomplish, how he or she will accomplish it, and by when, or will you create a syllabus with pre-established criteria?

Although there aren’t easy, right answers to these questions, thinking about them as you embark on one-on-one teaching can mark the difference between success and frustration.”

**TEACHING FOREIGN LANGUAGES**

Current best practices in foreign language teaching recognize the roles of input and interaction in the acquisition of a second language. Input can be defined as the language that a student hears (or reads) that contains a message to which she or he is expected to attend, and interaction can be described as any conversational (or written) exchange in which the student must communicate with one or more partners. Providing ample opportunities for exposure to input and encouraging student interaction in the target language are at the core of successful foreign language learning. Another consideration for the foreign language teacher is the mission statement of the College of Liberal Arts and Sciences, which states: “At the core of a liberal arts education are research and informed engagement with global issues, multiculturalism, and diverse experiences; these goals represent our greatest hope for a better understanding of differences in the human condition and the potential for enhanced tolerance.” The foreign language classroom is uniquely positioned to engage KU students in the endeavor to become informed citizens of our global community by fostering exploration of the cultural realities of the peoples who speak the language being studied and encouraging students to reflect on their own cultural experiences and practices.
Successful foreign language teaching can make use of a wide variety of practices while keeping these fundamental goals in focus. Based on the experience of foreign language faculty members, several factors can improve the experience for teachers and students:

1. Consider using the target language as much as possible, if not exclusively, during class time. Students have such limited contact with the language that maximizing every opportunity to provide input and foster interaction is crucial. A natural tendency is to switch back to English to take care of classroom and course management, but resisting this instinct will lead to authentic opportunities for communication. Students will attend to the message in the input and interact in order to indicate what they have not understood in the target language, especially when teachers talk about what will be on the next exam!

2. Encourage students to work in groups for a period of time during each class meeting to provide opportunities for interaction. When one instructor attempts to interact with each individual student, no matter how engaging the instructor and active the participation, the occasion for target language use by students will be necessarily limited. In contrast, when students are accustomed to communicating and working collaboratively with each other, the opportunities for negotiating meaning increase significantly.

3. Make use of the wide variety of resources available at KU. Blackboard provides a suite of tools that can be exploited, such as Wikis for collaborative writing and group projects, blogs for journal writing, and Wimba (a tool for synchronous and/or asynchronous verbal communication) for oral interaction outside of class or creating listening comprehension assignments or oral testing from personal computers. The Ermal Garinger Academic Resource Center, an invaluable resource, has a knowledgeable and accessible staff willing to collaborate on projects to foster cultural learning and help teachers with using technology in the classroom. Other resources on campus, such as the International Student Association, work collaboratively with foreign language teachers to facilitate interaction with native speakers at KU.

TEACHING QUANTITATIVE COURSES

In a broad sense, a “quantitative course” is one in which mathematical or statistical analysis of quantitative data is a main component of the syllabus or the prerequisites for such a course. The three main issues are placement, technology and active learning.
PLACEMENT—STUDENT PREPARATION

When teaching such a course, it is essential to understand students’ preparation. High school students enroll at a public state university, like KU, with a wide range of quantitative backgrounds. The first step is to have clearly defined prerequisites for the course and enforce them. Even with enforced prerequisites, students will enter the course with a broad range of skills. The current teaching of mathematics in high schools varies from one school district to another and is different than what most instructors experienced (see NCTM standards reference in the sidebar at the right). It is not enough to require a passing grade in a high school college algebra course; scores on a national examination, e.g., math ACT, are a better determination of required skills. Students should be held accountable for skills required for the course. On-line supplementary material or handouts can be used to help students review the skills without consuming class time.

TECHNOLOGY

Technology should be integrated in a quantitative course. From graphing calculators to Google spreadsheets, there are endless possibilities for using technology. Students use technology daily in many sophisticated venues. Incorporating technology in the course makes the content real and applicable and extends exploration in and outside the classroom. Additional resources (technical support and release time to develop or implement new material) need to be considered in courses where technology has not been used before. If not carefully planned and tested, the technology component could result in a big loss of time and learning.

ACTIVE LEARNING

As with any other subject, students learn better when they are engaged. Learning a new concept or methodology can be developed as a creative process. Students will learn to appreciate the possibilities and constraints of a discipline. Solving problems in small groups is still one of the most effective methods. Different approaches to the same problem should be encouraged and motivated. Students must learn the logical foundations of the subject to insure that they understand the critical certainty of their solutions.

TEACHING IN SCIENCE LABORATORIES

Laboratories set science apart from many subjects. At their worst, labs are viewed as costly, time-consuming, “cookbook” approaches to experimentation. When taught well, however, laboratories can provide a unique experience for students to think like professional scientists, develop skills and techniques important to their discipline, and collaborate with peers.

FOUR LABORATORY INSTRUCTION STYLES

McKeachie (2002) outlines four different styles of conducting laboratory instruction.

Expository Instruction—Students verify preordained results, develop manipulation skills and follow exactly prescribed directions. This style is useful for larger classes as it requires little instructor engagement, though there is a possibility that almost no meaningful learning takes place.

Inquiry Instruction—Students mimic the process of constructing knowledge by formulating their own problem based on the information at hand. There are no preordained outcomes with this method, though concealing the details of the solution from students can be difficult.

Discovery Instruction—Also called “guided inquiry,” this style starts with a preordained outcome. The students are not told the outcome; rather, the instructor guides students toward the outcome through discussion and evaluation of proposed experimentation. Discovery instruction allows students to own their learning and often results in deeper understanding.

Problem-based Learning—Instructors craft a case study with selected evidence, and students uncover the lesson the instructor intends to teach. In this context, students learn to create their own questions with a strong foregrounding by the instructor.
During laboratories, instructors get to teach with concrete props. While props engage and involve students, they can also distract from the conceptual goals of the class. Clarify expectations early (e.g., “At the end of class the student should know how to set up and operate a …”) and provide adequate opportunities for students to practice using equipment. Ensuring that students possess necessary technical skills will better allow instructors and students to focus on learning the process of science.

Effective laboratories simulate the process of scientific inquiry. One way to achieve this goal is to allow students to design and conduct individual experimental investigations as part of the course. Students can then experience the excitement that often accompanies scientific discovery, as well as practice critical thinking skills necessary for planning, executing, analyzing and interpreting a scientific study. Prepare students to interpret unexpected results by coordinating practical exercises with material taught in the lecture. If students have a solid foundation in the scientific principles that drive the experimental questions, they’ll have a context in which to interpret results, thereby linking and reinforcing concepts covered in both lab and lecture.

Laboratories provide an opportunity for—and necessitate—teacher involvement. Effective supervision will facilitate inquiry, allow instructors to recognize students having difficulties with fundamental concepts, and provide students with crucial links between data and scientific concepts as they analyze their data.

Helen Alexander and Cathy Collins, KU ecology and evolutionary biology, suggest the following:

“Laboratory courses are typically designed to give students hands-on experience in science. Students often like the interaction and small group activities. However, they can get frustrated by long class periods and a sense of chaos if laboratory exercises are poorly designed. Teachers, in turn, enjoy the opportunity to get to know students and teach experientially, but find that planning the course, carrying out the exercises, and grading the reports take much more time than the typical lecture course. Based on our experience, several factors can improve the experience for teachers and students:

1. Clarify the link between laboratory exercises and big picture course concepts. During the planning phase, identifying links will help instructors choose exercises that truly accomplish learning goals; while teaching, such links provide students a context in which to connect isolated laboratory lessons to broader course topics.

2. Time spent on logistics and advance planning are key to successful laboratory exercises. Laboratory classes can be
Specialized Practices  67

derailed if procedures or equipment don’t work or supplies are missing. Because students will often have different backgrounds in the course content and other skills (e.g. use of statistics software, microcentrifuge, etc.), preparation of ‘how to’ handouts saves time for students and reduces frustration.

3. Ideally, laboratory classes should teach students to think like scientists by allowing them to pose questions, formulate hypotheses, and design and conduct studies that address their hypotheses. Too often students look for a correct answer because laboratories are structured to obtain specific results. Allow for some portion of the lab course to be devoted to studies that are not cookbook in nature, then take advantage of the small group format to facilitate discussion of unexpected results.

4. Students need rapid feedback, both in terms of answers to questions on laboratory procedures and on laboratory write-ups. Teachers, however, can be overwhelmed by the workload of reading many papers. We can reduce frustration on both sides by breaking assignments into parts that are due on different dates and providing examples of the type of products we expect.”

TEACHING GRADUATE STUDENTS

Based on her research on teaching graduate students, as well as her experience as a graduate student at KU, Ann Volin (2003) suggests that what makes graduate seminars successful includes clear goals, adequate preparation and follow-up. Often professors begin seminar preparation with their experience as a student as the sole blueprint. Augmenting that experience with the following ideas can streamline benefits and increase student learning:

Model your professional leadership. You are undoubtedly an expert about the seminar topic; thus, your presentation of the seminar material should model relevant skills for teaching, learning and presenting in your profession. A seminar offers the chance for you to relay to graduate students the professional expectations of your discipline. It’s best not to assume that students know what these are—make them explicit.

Set clear course objectives. Articulate not only what you plan to achieve for the semester, but also what each session will accomplish so you can judge whether your plan will achieve its intended benefits.

Make behavioral intentions clear. What are your expectations for student learning? Do students know what behaviors, at-

As a new faculty member, the prospect of teaching graduate students filled me with excitement and trepidation. I was excited because I hoped the level of discourse would be higher and the worry about grades would be lower. I was anxious because graduate students would be less satisfied with some of the oversimplified answers we might provide an undergraduate, and the necessity of intellectual backpedalling might seem to indicate I didn’t know the “right answer.”

Teaching junior colleagues is just as rewarding and difficult as I imagined. I now view the act of teaching graduate students as an act of cognitive apprenticeship. I ask students to look at their own reasoning about research and compare it to my own. I can say we have all learned a few things.

—Paul Atchley
attitudes and ideas you hope to address through this seminar? These fundamentals can be taken for granted in a seminar that assumes advanced students, but again, make even these overt.

Structure each class meeting. Allowing classes to “go with the flow,” which may sound like an idealized intellectual process, leads away from course goals. You have limited time for intense learning in a seminar.

Plan student-led discussions. Students can—and should—lead discussions based on papers they have written or topics they have researched. Teachers can coordinate, facilitate and comment on presentations. An interactive format is crucial; there must be a reason for students to attend class instead of reading material on their own. Watch out for sessions that center on a presenter and fail to draw out the group’s expertise.

Encourage students to help each other. No doubt many students are in class because of their deep interest in a subject. By joining their peers, they own material in a way that professors cannot create on their own. Let seminar interactions build upon skills that each student brings to the seminar. Through these interactions, graduate students become each other’s professional colleagues.

Have an obligatory follow-up. Not only do graduate students need the opportunity to practice and demonstrate skills, but they also need feedback. If that feedback exists in a vacuum—for instance, at the end of the semester when there will be no opportunity to correct and modify skills—it’s less than optimal. Figure in a realistic revision that will demonstrate the application of the feedback.

In his course portfolio titled “Re-envisioning Teaching Graduate Seminars,” Anton Rosenthal describes how he implemented backward design (see Aligning Goals, Assignments and Practices, p. 3) in a graduate course, “The Global City.” Rather than beginning with a set of readings and expecting students to fit into a “one size fits all” approach, Rosenthal first identified goals he wanted students to achieve by the end of the course.

Since one goal was to prepare graduate students for their professional lives, Rosenthal developed assignments that reflected that goal. Students didn’t write a long research paper; instead, they wrote multiple short papers (five–six pages) that employed methods, theories and sources. For their cumulative work, students developed a teaching unit.

Rosenthal observed students’ improvement in several areas, such as writing, research analysis, understanding journal articles, and performing comparative analysis.

For more about Rosenthal’s work, see his portfolio in the CTE gallery: www.cte.ku.edu/gallery.