Many faculty members and administrators now look to the annual National Survey of Student Engagement (NSSE) for information about students’ activities and experiences. NSSE measures five areas: level of academic challenge, active and collaborative learning, interaction among students and faculty members, enriching educational experiences, and supportive campus environment. The survey’s organizers define “engagement” as how involved students are in the material they study and in the learning process itself (“Half of seniors,” 2005).

The 2005 survey covered 237,000 freshmen and seniors at 528 four-year colleges and universities. Specific results from specific institutions are not shown, but the report does provide general information about students’ academic expectations and habits.

The survey report lists several findings regarding students’ efforts outside the classroom:

- Less than one-fifth of first-year students expect to spend more than 25 hours per week studying, the approximate amount of time faculty say is needed to do well in college.
- Eighteen percent of first-year students frequently came to class without completing readings or assignments.
- Three of ten first-year students reported doing just enough academic work to get by.
- Entering students’ expectations about time for relaxing and socializing their first year of college was surprisingly accurate, with 25% expecting to relax and socialize more than 15 hours per week and 27% doing so.

Academic efforts of some students were more positive. The 2005 survey included experimental questions about academic efforts, given to 92,000 students at 309 colleges and universities. Older students, seniors and those with higher grades were willing to spend more time studying. Almost half (46%) of seniors and 29% of first-year students reported doing more than was expected of them.

Several articles in this issue of Teaching Matters address ways to capture more of students’ time outside of class, a key factor in increasing student learning. —JE

Resources:
Capturing students’ time outside of class

Dan Bernstein, CTE

Many factors contribute to students’ learning. Understanding is improved by use of appropriate reading materials, dynamic classroom activities, and a carefully structured progression of knowledge and conceptual organization. But even with carefully planned teaching techniques, students will not learn unless they spend time engaged with course materials and activities. Time devoted to course work is not sufficient to assure learning, but it certainly is necessary for success in developing knowledge and intellectual skill.

It comes as no surprise to anyone in daily contact with higher education that a significant percentage of students spend only a modest amount of time on course work. National surveys and local assessments confirm that only a third of students spend more than six hours a week on preparation outside of class. The best estimate is that on average students devote less than an hour of preparation for each hour of class.

There may have been a time when students in general did assigned reading as a matter of course, but that is not a realistic presumption for college teachers in 2006. Students lead busy lives filled with many activities, including school, work, organized and social activities. A teacher is competing for students’ time with many other options, and an effective instructional design simply must address that issue head on.

Probably the single most important thing a teacher can do to capture more student time on task is to make clear use of that preparation during class time. Students need to see on a regular basis that their participation in class is connected to their preparation for it. Students frequently state that it does not matter if they do any reading; they come to class and the teacher talks the whole time without regard to their preparation. In one frame of mind, this is getting away with low preparation; in another frame, this is missing the opportunity to show students why it was important and useful to be prepared.

In thinking about each class period, you need to carefully align your plan for students’ time with your plan for their preparation. If you expect them to read an article before class, then somewhere during class there should be a period when each individual can discuss with someone the implications or uses of that knowledge. In a small class, this could be with the group as a whole; in larger classes this may be in pairs or small groups. Even if discussions are relatively brief and sometimes imperfect, they set the expectation that class time is informed by preparation and will be incomplete without it. The forms of such activities will vary with field and class size, but they are essential in creating students’ habits of being prepared.

Once you have prompted students to devote time outside class to preparation, the second key strategy is to hold students accountable for preparation on a regular basis. That means that out of class activities need to create some product or trace that is available to the teacher. In a small class this could be an open-ended writing assignment for each day that is collected and read, or in a larger class there are numerous online systems that capture students’ reactions to or understanding of readings or exercises.

Even faculty members who are willing to create and manage all those small bits of work sometimes balk at giving much course credit for their completion. In the competition for your students’ time, you need to communicate clearly with words and credit that regular, formal participation is very important to successful completion of the course. Individual feedback on the quality of the work and tangible acknowledgement of its completion are essential to diverting student time away from something else that is preferred and into your course.

Attracting more time on the course by students will inevitably involve some additional time from instructors. The amount of that additional work can be minimized, however, by judicious use of technology. There are many options that generate student continued page 6
Spring schedule includes workshops on peer review

This semester, CTE will offer three workshops on peer review. The workshops will assist faculty members who are interested in obtaining or providing peer perspectives on teaching, for personal and professional growth or as part of the promotion and tenure process.

CTE will host several other sessions this spring, as well. All will be held in 135 Budig. Registration is not required. For more information, contact CTE at 864.4100 or cte@ku.edu, or check our website at www.ku.edu/~cte.

Peer Review Workshops
February 13, 12–1 PM: “Overview of Peer Review.” Susan Twombly, teaching and leadership; Dan Bernstein, CTE/psychology. Theoretical basis of peer review.
February 28, 12–1 PM: “What to Expect From a Peer Review.” Bob Goldstein, geology, and Dan Bernstein. For faculty members who are being reviewed by peers.
March 29, 3–4 PM: “How to Complete a Peer Review.” Chris Haufler, EEB, and Dan Bernstein. For faculty members reviewing a colleague’s teaching.

Essential Teaching Practices workshops: 12–1 PM
February 2: “Motivating Students.” Dan Bernstein. What does and doesn’t facilitate motivation.
February 24: “Talking With Your Class.” Joann Keyton, communication studies. Practical ideas for communicating with your students.

Lunch & Conversation: 12–1 PM

Sherry Linkon to present session on critical reading and inquiry

On Thursday, March 2, Sherry Linkon from Youngstown State University will present a workshop on “Teaching Critical Reading and Inquiry in Upper-Division Courses” from 3:45 to 5 PM in 4051 Wescoe.

During the workshop, Linkon will focus on interdisciplinary learning, critical reading, and the tension between structure and open-endedness.

Linkon’s campus visit is co-sponsored by CTE, the Graduate School, and the Department of American Studies.

To register for the workshop, or for more information about Linkon’s visit, contact CTE at 864.4199 or cte@ku.edu, or check www.ku.edu/~cte.
Using EDU for background reviewing outside of class

Estela Gavosto and Milena Stanislavova, Mathematics

One of the biggest problems that we face as teachers is how to engage students’ time outside of the classroom. We think that in mathematics, like in all other disciplines, there is a direct correlation between the amount of time that the students spend with instructional resources and the resulting learning. It is important to guide students in judging the relevance of the material or skills needed for their future studies.

A current trend in college mathematics is that more students are taking calculus in high school than ever before. Nationwide, it is expected (see Bressoud) that in 2005-06 more students will take the AP calculus exam than the number who took Calculus I in the fall of 2005 at all four-year and two-year institutions together. According to the College Board AP Central, 240,407 high school students took the AP calculus exam in 2005. Given this trend, it is important to determine how prepared these students are to study advanced mathematics and other subjects that require calculus as a prerequisite.

In addition to students who take AP calculus, we have to consider students who transfer from community colleges and other institutions. The number of high school students receiving credit from a community college for calculus is also increasing rapidly. The preparation of the teachers who teach these courses and the culture of the environment where the courses are taught are issues that affect the transition of these students to an institution like KU. Increases in college tuition and financial benefits for school districts with students taking calculus for college credit are powerful economic forces interplaying with the educational issues.

During Fall 2004 we followed closely the background and performance of a group of students in a pilot version of a new course, Math 220 Applied Differential Equations. This course has a prerequisite of ten hours of calculus. In the evaluation of the pilot, it became evident that students’ background played a huge part in their success. It was also clear that there was no time in class to review previous material. A natural solution was to find a way for students to review necessary background material before each class.

At the same time, a web-based technology for doing this became available to us. During Spring 2005 we developed online review quizzes for Math 220 with the support of a CTE teaching grant. The background review was done through students successfully completing a quiz before a corresponding unit was taught in class. Students had many opportunities to pass a version of the quiz. The system provided feedback, emphasizing topics and background material they needed to know before discussing new concepts in class. Quizzes helped students organize efficiently study time outside of class. An added benefit for the instructor was that he/she could monitor students’ performance in the quizzes, and if many students had problems with a particular prerequisite topic, the instructor could address it in class.

On the technical side, we used an innovative online assessment system from Brownstone called EDU, originally developed at the University of Nebraska. There are many computer-based educational packages available. EDU is particularly suitable for mathematics, science and engineering, because it allows the creation of different types of questions, the writing of complicated mathematical formulas, and the use of graphs, parameters, etc. In addition, EDU has the capability to check for equivalent numerical and symbolic answers, allowing the instructor to pose questions that require an open answer rather than simple multiple choice questions where the students can just guess.

We worked in the project together with a graduate student, Nathan Carlson, and an undergraduate student, Lauran Smith, who helped us check the problems from a student point of view. Displaying mathematical formulas...
Another way to use EDU

Judy L. Postmus, Social Welfare

Social work is vastly different from mathematics; however, as academics, we all struggle with similar issues—namely how to engage students’ time outside of the classroom. Milena Stanislavova and Estela Gavosto presented how they used the EDU program.

I too developed online quizzes, using EDU, to help students read materials and critically evaluate readings. Students did not receive any grades but had to answer a specific number of questions correctly before moving on to the next section. Quizzes included objective and subjective questions with multiple choice, true/false, fill-in-the-blank, matching and essay questions.

With students learning on their own from the assigned readings, I was free to use class time in creative ways that encouraged greater student participation and discussion. For example, I varied the format in class to include guest speakers, large and small group discussions, student presentations, and “fish bowl” discussions wherein a smaller group of students debated a controversy while the other students watched from the outside and provided comments at the end of the debate. I also reviewed their responses to the quizzes prior to class, allowing me to adjust my class time to cover any challenges they encountered or to spend more time on a particularly difficult topic.

As part of each quiz, I asked students to evaluate these “mini” assignments. In the students’ words …

“This assignment helped me to better analyze the readings and look at them critically.”

“The questions helped me to better understand the readings because it forced me to dig into the readings to find the material and allowed me to think about my views on what I was reading.”

“The answers to most of these questions can’t be found with a cursory sweep across the chapters so I am forced to read information that is really very useful and necessary.”

The EDU program and online quizzes are excellent additions to an academic’s bag of tricks to encourage students to read, learn and comprehend outside of class—regardless of the subject.

Using EDU for background reviewing outside of class

has been a roadblock to integrating them in a web browser. EDU has built in different levels of displaying these formulas. A first level, enough for many applications, has a formula editor similar to Microsoft Word’s equation editor. For more mathematically precise display, it has the capability of using LaTeX (the most comprehensive program to typeset mathematical formulas, widely used by mathematical journals and research math departments).

Making use of many of the high-end features of EDU, we created a database of questions that instructors can use to prepare quizzes.

Several instructors have used the system, and they all found it very helpful. Quizzes aided students in preparing for class in their own time and, in turn, building understanding of new concepts. That made a huge difference in classroom dynamics and facilitated understanding between different background concepts and links to new material. We plan to get more instructors involved in using these quizzes. We will also make the background quizzes available online to students who are required to complete the course but are not sure if they have the necessary skills. Based on results of online tests, students can review missing concepts or take a lower level course. Another future improvement will be to incorporate diagnostic features in the quizzes, allowing personalized instruction. The possibilities for improving the system are endless.

BlackBoard facilitates student learning outside class

Susan Zvacek, IDS

Although many of us may be concerned with the time students spend on coursework outside of the classroom, I suspect that few would advocate indiscriminately assigning more “stuff” for students to do, simply to boost time-on-task. Instead, the tricky part of this equation is determining how students can best use time they have available to get the most out of learning activities they engage in outside of class.

Technology can support three types of activities for out-of-class learning. The first, and most obvious, could be called information dissemination. Students gain access to content via online resources such as readings, audio or video clips, other web sites, etc. Although the traditional textbook isn’t going away soon, we now have a much wider array of resources available than ever before, and collecting those in one convenient location is one of the things BlackBoard is made for.

Additionally, by creating online quizzes that complement readings, you can nudge students to keep up with the course schedule while checking their understanding.

The BlackBoard environment can also facilitate out-of-class activities that require time for reflection. The online discussion area is useful for this, because students can respond to prompts after they’ve had an opportunity to consider their answers and at a time when it’s convenient for them. A similar BlackBoard tool, the online journal, provides an environment for students to post messages that are readable only by the instructor and themselves. As with the discussion forum, each student can post his or her reflections after thinking and at a time that fits his or her schedule.

The third type of out of class activity that can be facilitated with technology is group work. Although many students groan at the thought of working in groups, BlackBoard tools can alleviate many annoyances that traditional group work has engendered. For example, by using the Teams function, a group of students can create one document that any of them can edit. Each time the document is changed a new version of it is saved, so older versions are retained. For the instructor, the system provides information about who made which edits, so the problem of students slacking off in a group may be reduced. Groups within BlackBoard can also have their own discussion area, real-time chat room and online journal environment. Finally, BlackBoard has a new tool for creating groups and assigning students to groups that has streamlined this previously tedious process, including the capability of randomly assigning students to groups.

For more information, contact Instructional Development and Support at ids@ku.edu or call 4-2600 to set up a consultation.

Capturing students’ time outside of class

performances that computers can score with no instructor attention. Time the teacher does not spend responding to these performances can be devoted instead to giving valuable attention to more complex written work elsewhere in the course. These methods still hold students accountable for preparation and give meaningful feedback on how well they are prepared.

We must presume that our students are intelligent and rational in their allocation of time to the many options they have. As long as students tell us and each other that they can succeed in courses without regular preparation, then our campus culture will not shift toward a presumption that regular preparation is inherently part of taking a course. We need to compete for their time by asking explicitly for it and honoring their preparation. To do that, our class activities and measures of understanding need to be aligned with the nature of the preparatory activities that we require. If we as a community change the way students participate in our courses, then their values and expectations will eventually follow.
ProSems impact teaching and learning at KU

Three Professional Seminar (ProSem) groups are meeting at the Center for Teaching Excellence this academic year. Each group focuses on a particular facet of teaching and learning in higher education. Members explore various teaching questions and discover ways to increase student learning. The ProSem program was designed to support the intellectual work that faculty members do in their teaching.

The Large Class ProSem began most recently. It was formed in Fall 2005 and is led by Tracy Russo, communication studies. Last semester, faculty members in this group met to consider ways to make teaching a large class more interesting for faculty and students; to discuss strategies for making large classes interactive; and to define the most pressing challenges facing teachers of large classes and to begin to identify possible ways to address them.

This spring, the group will break into clusters and share ideas regarding the role of technology in large classes, assessment and testing issues, student preparation and student behaviors, and managing teaching assistants.

Meetings will be held from 12:30 to 1:30 PM on February 9, March 9, and April 20 at CTE in 135 Budig. The group plans to meet with Steve Pollock from the University of Colorado in early April, as well.

If you are interested in joining this group, or if you have questions about it, contact Tracy Russo at trusso@ku.edu or Judy Eddy at jeddy@ku.edu.

The Undergraduate Science ProSem has proven to be a prolific group. Steve Shawl, physics and astronomy, and Steve Hasiotis, geology, initiated this ProSem in Fall 2004. Deb Smith, ecology and evolutionary biology, joined the leadership in Spring 2005.

Last year, the group discussed various issues such as these: What are our goals as teachers of undergraduate science courses? What opportunities do students have to meet these goals? What evidence do we have that students are attaining the goals? How do our methods align with our goals? How can we make science classes more interactive? How should we sequence courses for student learning and student success?

In addition, the group met with staff from the Freshman/Sophomore Advising Center to explore ways to help students better understand faculty members’ expectations of students in introductory science courses. That interaction has led to the creation of special advising sheets that can be used by FSAC staff to help students see what prerequisite knowledge and skills are necessary in various introductory science courses and to help students determine which courses best match their interests and abilities.

Advising sheets for physics courses have been completed; sheets for courses in other science departments are slated to be finished by the end of the spring term.

This ProSem will meet this semester from 2 to 3 PM on February 7, March 7, and April 4 at CTE. Members will continue to consider preparation for science courses, retaining learning, and developing students’ problem-solving skills.

To join the group, or for questions about it, contact Steve Hasiotis at hasiotis@ku.edu, Deb Smith at debsmith@ku.edu, or Judy Eddy at jeddy@ku.edu.

The Service-Learning ProSem was the first group to meet under the program. Three faculty members—Frank Farmer, English; Cheryl Lester, English/American studies; and Glen White, applied behavioral sciences—were instrumental in its development in Spring 2004.

During the 2004–05 school year, this ProSem met to share models of service-learning for various disciplines. Examples of successful KU courses that featured service-learning led to two Service-Learning Institutes, held January 2005 and August 2005. These institutes helped faculty who were interested in service-learning know how to implement it in their courses. Kim Warren, history, and Fiona Yap, political science, led SLI sessions with Dan Bernstein, CTE.

With the Fall 2005 opening of the Office of Service-Learning, that program became centralized in the OS-L. CTE will assist with scheduling Service-Learning ProSem meetings this spring. For more information, contact Judy Eddy at jeddy@ku.edu.
### Twenty strategies to address students’ reading problems

One of the reasons students may not complete reading assignments is because they don’t know how skilled readers actually go about reading difficult texts. John C. Bean (2001) suggests the following strategies:

<table>
<thead>
<tr>
<th>Students’ Problem</th>
<th>Helping Strategies</th>
</tr>
</thead>
</table>
| Poor reading process | • Give tests or writing assignments on readings that you don’t cover in class.  
• Have students write in response to texts (reading logs, summary notebooks).  
• Require students to write and turn in for credit marginal notes on readings. |
| Failure to reconstruct arguments as they read | • Assign summaries of readings.  
• Have students make outlines, flowcharts, or diagrams of articles.  
• Help students write “gist statements” on main points as reading progresses.  
• Go through a sample text with students, writing “what it says” and “what it does” statements for each paragraph. |
| Failure to assimilate the unfamiliar; resistance to uncomfortable or disorienting views | • Explain this phenomenon to students so that they can watch out for it; draw analogies to other times when students have had to assimilate unfamiliar views.  
• Contrast ordinary ways of looking at a subject and the author’s surprising way.  
• Teach students to play the “believing and doubting game,” so they can see a reader’s double role of being simultaneously open to texts and skeptical of them. |
| Limited understanding of rhetorical context | • Create reading guides that include information about the author and context.  
• In lectures or reading guides, set the stage for readings, especially primary materials.  
• Train students to ask: Who is this author? Whom is he or she writing to? What occasion prompted this writing? What is the author’s purpose? |
| Failure to interact with the text | • Use a response strategy—reading log, summary notebook, guided journal, marginal notes, reading guide. |
| Unfamiliarity with cultural codes | • Create reading guides explaining cultural codes, allusions, historical events, etc.  
• Show students the function of cultural codes by discussing background knowledge needed to understand cartoons or jokes. |
| Unfamiliar vocabulary | • Create reading guides defining technical terms or words used in unusual ways. |
| Difficulty with complex syntax | • Have students “translate” complex passages into their own words; also have students practice rewriting particularly long sentences into several shorter ones. |
| Failure to adapt to different kinds of discourse | • Explain your own reading process: when you skim, when you read carefully.  
• Explain how your reading process varies with different genres of text: how to read a textbook versus a primary source; how to read a scientific paper or poem, etc. |