

# focus

on university teaching and learning

## Innovations in Teaching

Every teacher has a "wish list" for his or her classes -

If only my students would participate more in class discussions and problem-solving sessions!

I wish I could get my students to write more!

There must be a better way to grade all these papers!

If only I could capture my students' attention and keep them engaged for the semester!

And wouldn't it be great if I could keep them excited about learning for the rest of their lives!

These issues were addressed at the Eleventh Annual Conference of the Society for Teaching and Learning in Higher Education, hosted by Dalhousie's Office of Instructional Development and Technology in June, 1991. Presenters from Canada and the United States demonstrated ways to enhance students' motivation, engagement, and performance by using some simple but very innovative techniques in the classroom. These techniques have all been field-tested by the presenters, and may be just the thing to invigorate your teaching in the new year.

Eileen M. Herteis

### Preparing students for successful learning experiences—with flair. . .

You want to teach your first and second year students more than the material: you want to prepare them for a lifetime of learning by showing them how to motivate *themselves* to learn. How should you do it? Have you considered wearing a six gun and lurching into class to the theme from "The Good, The Bad, and The Ugly"?

Dale Retallack, an Engineering professor at Dalhousie University, has developed an approach which combines humour, drama, music, and anecdotes to relate his industrial and personal experiences to the course content and the students' learning objectives.

Using whimsical, poignant, and pithy material, he catches his students' attention and establishes connections among the course content, the "real world," and the practice of engineering beyond the university.

On the first day of class, for example, he may walk in wearing a tuxedo, and to the strains of a Mahler symphony, talk to his students about the objectives of the course and of a university education in general.



Less subtly, perhaps, as "The Gambler" he reminds his students about an upcoming exam.

Complete with sou' wester and slicker and using a broom handle as a rudder, he embarks on a seafaring tale which explores the meaning of motivation, tenacity, experience and learning.

Feedback from his students suggests to Dale that this process really helps them adjust to university, succeed, enjoy themselves, and maintain their motivation to complete their studies.

*continued on page 2*

cont'd from page 1

Should more professors use this type of approach? Dale says, "This must depend upon each professor's personality and background, and probably upon the nature of the subject matter of any particular class."

However, many professors will be able to incorporate this approach into their classes, to show the students how the discipline fits into the bigger picture of education, learning, and life.

Maybe you could try something a bit different in *your* next class — become Dr. Freud for your lecture on the id; play the theme from "Star Trek" and treat your Botany class to a 24th Century perspective on what we're doing to the flora on our planet. You might rejuvenate your teaching and have a lot of fun in the process!

## An approach to teaching problem-solving. . .

"Relax," you tell your students. "Have fun with the problem. You don't have to be right the first time."

However, you can see that they're worried, frustrated, and ready to give up. What can you do? Are there strategies you can use or tips you can give to improve your students' problem-solving skills?

According to Trev Dickinson of the University of Guelph, there are a number of common misconceptions about problem-solving which "make it almost impossible for the problem solver to pick up a pencil and begin working on a problem." You might recognize some of these tell-tale symptoms from your own students:

"You have to be good at math to solve problems and if you are, you don't have to spend time thinking about it."

"You can't write anything down until you've solved the problem in your head."

"There's no room for trial and error."

---

*"Thinking aloud is a major part of problem-solving."*

---

"There's only one right way to do a problem."

Sound familiar?

Dickinson says the various factors which underlie difficulties in problem-solving are interrelated. These include inaccuracy in both reading and thinking; inactiveness (or lack of such proactive strategies as consulting a dictionary, using understood parts to help figure out difficult ones, or constructing a representation of the material which often facilitates understanding); a lack of perseverance.

Dickinson suggests that students' problem-solving skills can be enhanced by using the pair problem-solving technique devised by Whimbey. Here one partner reads the problem and thinks

aloud while the other listens - constantly checking for accuracy and demanding constant vocalization from the problem-solver. This activity demands that the listener work along with the problem-solver not independently of him or her, understanding each step, and asking for clarification when needed. If the problem-solver makes an error, the listener should point it out but not correct it.

The constant vocalization required in this technique is very important because thinking aloud is a major part of problem-solving. It helps to slow the process down a little, while at the same time showing the partners that there are many routes to the solution. Thus, the students become more aware of the different problem-solving strategies others use - and learn that they're acceptable, too.

Another benefit of this technique is its adaptability to both large and small classes. Dickinson says it can be used in tutorials or in classes of 100. One of his colleagues successfully uses it in a class of 250 as a break, having the students do pair problem-solving with their neighbour as a way of tapping into the concepts being discussed in class. Furthermore, Dickinson says that pairs problem-solving promotes "listening" to yourself when you are trying to solve a problem alone, helping you to evolve a more focussed approach.

Trev Dickinson also has a number of tips for would-be problem-solvers:

- Become actively involved in the problem
- Approach the problem constructively, reading it slowly, looking for relationships and conditions, and identifying the unknown value in the problem.
- Work on the problem systematically, looking for relationships between what you've identified and what is still unknown, using your math skills to simplify the equations, and using trial and error to find the right sequence of steps toward a solution.

## focus

on university teaching and learning

### Focus on university teaching and learning

is the bulletin of the Office of Instructional Development and Technology of Dalhousie University. The following people contributed to this issue: Eileen Herteis, the five STLHE Conference presenters, and Martin Willison. Special thanks to Dalhousie Graphics for design and word processing,

Issue No. 5 February 1992



Alan Wright, Ph.D., *Editor*  
Office of Instructional Development  
and Technology  
Dalhousie University  
Halifax, Nova Scotia  
CANADA, B3H 3J5  
Tel: (902) 494-1622  
Fax: (902) 494-2319  
E-Mail: WAWRIGHT@AC DAL CA

•Learn to recognize the correct solution when you find it - it may be in disguise - and don't forget to check your answer.

•Finally, don't become frustrated or flustered under pressure; if you're stuck, get unstuck by retracing your steps, trying the problem with easier values, discussing the problem with someone else, or just taking a break. Get as much down on paper as you can, and stay confident.

## Introducing more writing and group work. . .

Can writing help you to boost your students' critical thinking skills and involve them actively in the class? Can group work help students "discover" content more traditionally (if less engagingly) presented in a lecture format?

Nancy Horan, Potsdam College, State University of New York, believes in jump-starting each of her classes with five minutes of expressive writing in response to a problem she poses. Her technique, based on the book *TEACHING WITH WRITING* by Toby Fulwiler (Director of the Vermont Writing Project), could be used by most instructors, regardless of discipline.

Horan says that the five minutes of writing have many advantages for the student and for the classroom environment:

Critical thinking skills are improved because the question she poses is carefully designed to enable the students to discover the content.

Students get into the habit of writing and see how writing is a problem-solving tool.

Structure is established in the classroom: students expect to begin each class with writing, they are immediately involved in the class, focussed, and have something to add to the discussion.

Nancy Horan adds that one of the main benefits of this format is that you will now have 30 minds considering the question and searching for the answer.

She often asks students to compare their own responses with another student's, then asks those pairs to link up with another pair for a group discussion of the problem. In the larger group, one student is assigned the role of secretary and records and summarizes the group response for the class - often writing the summary on an overhead transparency for presentation in that way.

Here's an example of how Nancy incorporates writing, pair, and group work in a typical class.

When she assigns research papers, she encourages students to go beyond library research and make the problem "real"; they often conduct interviews. So rather than present her students with a checklist of interview do's and don't's, she poses an appropriate question at the beginning of class. After 5 minutes, she asks for their responses, and at the end will add important items which they have not discovered.

Then, in groups of three, students will assume the roles of interviewer, interviewee, and observer. After 10 minutes, the students will write for five minutes about interviewing, then regroup and discuss the whole exercise in class.

You'll notice the 5- and 10-minute time limits on these activities. Nancy believes that the imposition of time limits

helps the students focus on the task without being waylaid by tangential material. Furthermore, she says that the teacher must use the results of the students' writing and group work in class if the technique is to be successful; thus, the students will feel that their contributions are significant.

Could you use questions to generate student writing and collaboration? The better the question, the more engaging the task and the discussion, of course. But Nancy Horan says that the technique is limited only by the instructor's imagination to generate questions.

Nor do you have to limit this technique to the first few minutes of class. Use it to refocus discussion in the middle of class; to redirect discussion; to check students' understanding; or at the end to summarize the day's class.

Among the bonuses of this system of integrated writing and group work, Nancy lists increased confidence and independence in her students based on their ability to discover for themselves.

---

*"This simple technique addresses many of the items on every teaching professor's wish list"*

---

Rapport in the class is also enhanced because students are not learning in isolation but are validating their own ideas as they compare them with those of others. She has also found that more reticent students are willing to vocalize their thoughts when they have had the chance to write them down first.

Clearly this simple technique addresses many of the items on every teaching professor's "wish list."

## Interests, Concerns, and Free Associations. . .

It's the first day of class. Some students have concerns about the requirements listed on the course outline; others have preconceived notions about the discipline or the particular class; all have slightly different reasons for taking your class.

Donald Brodeur, a Psychology professor at Sacred Heart University in Connecticut, has developed a quick and easy way to respond to these student concerns, give a meaningful overview of the course, get to know something about his students and encourage them to interact with one another - all on the first day of class!

"Interests, Concerns, and Free Associations," says Brodeur, "is a technique that I use on the first day of every class. [It] is simple, easy to learn, and applicable to any discipline."

He asks his students to read the course outline, then to introduce themselves to a colleague, stating their major field of study and

*continued on page 4*

## Marking made more pleasant. . . .

Do your students actually read and understand all those comments you so painstakingly inscribe on their essays? Do you think that more personalized attention and fewer generalized comments on the board as you return the papers would be more efficacious? Here's a technique that will interest you

Since September, 1990, Terry Pratt, an English professor at UPEI, has been using a new method of grading the 500-word papers passed in every other week in his Freshman Composition class. Instead of his usual practice of taking the papers home and spending about 20 minutes marking each one of them in what he calls "painful isolation," Terry gives his students an individual, 20-minute tutorial every other week during which he hears, marks and grades the essay. That's right, he *hears* the essay read to him by its author.

Terry's technique is very simple, and it takes the mystery out of grading for the student. The student reads the essay to the instructor who takes notes. Then both talk about the essay and the instructor's notes, and have the opportunity to discuss the paper in an immediate, congenial atmosphere. The instructor can, for example, indicate sections where there is a lack of clarity and can check grammatical and spelling components; the student may in the process of reading his or her paper aloud notice some flaws or may be more ready to defend his or her position to the instructor.

At the end of the 20-minute session, the paper has been given a grade: the student has witnessed the mysterious act and has come to understand the instructor's rationale for the grade received. An added benefit of these one-on-one sessions, mentioned by several students in their evaluation forms, is that this process increases the rapport between the student and the instructor: "It's important that you know your students, not just their names," said one student. It also encourages students to ask questions or raise points which they may not do in class.

Terry says his new grading method has given him renewed enthusiasm for a course he has taught almost every semester for 15 years. The 20-minute sessions - he does six in a row - leave him "refreshed and stimulated." Furthermore, the students enjoy this change of pace and have commented on it very favourably in their course evaluations.

If you are looking for an alternative method of grading student papers, and are dissatisfied with the usual post mortems on essays

which occur in your office, you may want to give this technique a try.

Terry Pratt will be presenting this workshop at Dalhousie on March 20th. Call the Office of Instructional Development and Technology for more information.

---

## Interests, Concerns, and Free Associations

*continued from page 3*

their interests in and concerns about the course. Then they present their partner's responses to the class.

Brodeur has two columns on the board labeled "Interests" and "Concerns." As the information is presented, he notes it and responds.

The benefits of this part of the procedure are evident: at the first class there has already been interaction among students and between students and the teacher; the teacher has discovered her or his students' reasons for taking the class and has allayed some of their concerns. Brodeur also suggests that students will be more likely to remember the goals and objectives of the class if they've been actively engaged in discussing them.

The professor has also demonstrated a responsiveness to student concerns and a willingness to disclose personal interests in the subject.

---

*" [It] is simple, easy to learn, and applicable to any discipline."*

---

The second part of the process involves students in free-associating with a key word in the title of the course. Students simply call out their associations, and the professor writes them on the board without comment.

Once the board is filled, the professor and students attempt to evaluate the words into positive, negative, or content-oriented categories. Then discussion follows on the meaning of the associations.

A technique like "Interests, Concerns, and Free Associations" helps establish rapport in the class while helping to clarify student attitudes to the subject.

## Teaching Tips

Thanks to Martin Willison from the Biology Department at Dalhousie University for these two teaching tips

**The Critique Exercise:** Give students a published, but flawed, scientific work. It is important that these flaws have not been identified in subsequent literature. Ask your students to criticize the work in a brief, logical report which uses corroborating evidence from other published work. This exercise has several benefits. First, it encourages students to use first-hand analysis rather than published criticism of the work; second, the exercise facilitates a more critical approach to the literature by showing that a lot of published scientific work is seriously flawed. (This technique is recommended for Senior or Master's students.)

**The Abstract Exercise:** This exercise improves students' writing and helps them identify the salient points in complex scientific works. From a journal that uses a numbering system in reference citations, photocopy a good 4- or 5- page paper. Now take your scissors and remove all identifying marks from the paper — title, author's name, abstract, reference list — anything which would help the students locate the source. Now reassemble, copy, and distribute the anonymous paper to your class and ask them to write an abstract for the paper in 200 - 250 words. Return their graded versions along with a copy of the original abstract so the students can compare their versions with the author's. (This technique is recommended for third-year students.)

If you have teaching tips you would like to share, please send them to Focus. Our address is on page two.