“Our shared vision for teaching and learning is truly transformative.”

—Paul LeBel

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**CONSTRUCTING SPACE FOR INNOVATIVE TEACHING**

Paul LeBel, Provost and Vice President for Academic Affairs

Enriching the student learning experience is the first of the strategic priorities in our campus community’s Exceptional UND vision for the future, and a number of exciting initiatives are underway to meet this priority. This spring semester will complete the initial year of piloting a new type of seminar as part of the first-year experience. A working group will soon begin exploring options for an honors experience that builds on the 50-year history of our Honors Program. Internationalization of the campus will be the focus of another working group. Collaborative efforts to promote and spotlight undergraduate research as a mode of student engagement are underway. The educational dimension of a learning commons will be the subject of a fifth initiative. Our shared vision for teaching and learning is truly transformative.

Engagement of students in an active learning process is one of the keys to enrichment of the student experience. We are fortunate to have colleagues who are deeply committed to employing the best pedagogical practices. As a university, we have an obligation to provide instructional spaces that support innovative pedagogy. By the beginning of the fall semester, our learning environment will be enhanced by a state-of-the-art Student-Centered Active Learning Environment (SCALE-UP) classroom that has been a goal of many UND colleagues for some time (see Anne Kelsch’s piece below for a history of the project’s development).

A SCALE-UP classroom is intentional-

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**A BRIEF HISTORY OF SCALE-UP DEVELOPMENT AT UND**

Anne Kelsch, Director of Instructional Development

Campus conversations concerning the development of a large scale innovative teaching space began during the summer of 2008. Then Dean of Arts and Sciences, Martha Putvin, originated a request to the State Board of Higher Education (SBHE) for a STEM initiative which would include the construction of a SCALE-UP Classroom. Ike Schlosser, chair of Biology, took an active role in initiating and supporting that request and O’Kelly 61 was identified as an appropriate space. Although the SBHE recommended the legislature support the building project, disappointingly funding was cut from the state budget in the spring of 2009. The next step was an internal proposal to Facilities to move forward with renovation of the O’Kelly space that summer with the hope that additional funding would eventually emerge for the remainder of the project. This proposal was championed by both Dean Putvin and Provost Paul LeBel, who prioritized the renovation in their respective units, and also helped to secure funding for the necessary technology and furniture.

As progress was being made on the physical space, OID began efforts to pre-

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ly designed to promote inquiry-based collaborative and active learning. Based on extensive evidence about how faculty teach and students learn most effectively, SCALE-UP classrooms facilitate interactive, team-based activities that revolve around creative problem solving. They transform what normally would be large, lecture-based courses into small, discussion-based experiences. Students are at the center of instruction and learning, and faculty facilitate learning by designing activities that are outcome-based. The two keys to making this approach happen are the space itself—in which collaborative work stations replace rows of seats—and the faculty who embrace the new pedagogy. In creating the physical conditions under which this learning can flourish, we also contribute to the quality of life for faculty who can introduce new and innovative methods into their pedagogical repertoire—thereby furthering another Exceptional UND strategic priority.

Constructing a SCALE-UP classroom has received the enthusiastic support of the Arts & Sciences Dean’s office and the VPAA office. Anne Kelsch was an early proponent of this initiative, and has worked closely with faculty to design an OID program which provides instruction in how best to use the features of this new type of classroom. Alice Brekke of Finance & Operations has been a supportive partner with our office in patching together the funding for the construction of the classroom.

In its inaugural semester, the classroom will be piloted by Biology. The focus on one department will facilitate course development for large introductory courses leading into upper-level offerings in the same discipline. Furthering the focus on evidence-based best practices in teaching and learning, careful assessment of learning outcomes in this new environment will be built into the courses offered in that setting. Offering one department to explore the range of pedagogy in the classroom also creates a cohort of experienced faculty whose experience can be shared with others across campus.

This spring OID will be soliciting proposals for use of the SCALE-UP classroom by other departments, to begin instruction in spring 2013. My hope is that the benefits of the kind of teaching space created by a SCALE-UP classroom will result in our investment in additional rooms of this type and a continued search for ideas about facilities to foster the most cutting-edge pedagogical methods. We have the talented and dedicated colleagues to work at that cutting-edge. The SCALE-UP classroom is an important step toward providing the physical environment in which those methods can be successful.

O’Kelly 61 before renovation for the SCALE-UP classroom. Keep posted for the after picture!
pare faculty for the pedagogical innovation required to teach in the SCALE-UP room. Proper use of the room and its technology entails embracing both collaborative and inquiry-based learning on a large scale. Dr. Robert Beichner, Director of the STEM Education Initiative & Alumni Distinguished Undergraduate Professor of Physics at North Carolina State University, visited in the spring of 2010 to present on SCALE-UP assessment results and to consult on the construction and equipping of UND’s room. The unique nature of this learning environment necessitates a sophisticated layout involving twenty specially designed tables which each seat nine students and the coordination of 60 student computers and microphones, projection units, plasma screens and wireless capacity. As well, heating, ventilation and access had to be modified to accommodate 180 students engaged in active learning. By November 2011, we had received a guarantee that the space and all of its complexities will be operational by July 1, 2012. This long term collaborative effort has included—at various times—representatives from the Provost’s Office, Facilities, Finance, Instructional Development, the Registrar's Office, CILT, and the College of Arts & Sciences (see list below).

OID will carry out a special faculty development initiative, funded by the Provost’s Office, to ensure that teachers entering the space are well equipped to maximize student learning. Given the complications of scheduling (the room is best utilized in time blocks that exceed 50 minutes) and the need to work through any glitches with the new technology, Biology will serve as the “guinea pig” in the initial move into O’Kelly 61 next fall. A tremendous amount of work also goes into developing all of the active learning exercises needed for a large enrollment class to take place in an environment that is not suited to lecture. The cohort of Biology faculty who attended the Northstar Summer Institute on Undergraduate Education in Biology, sponsored by the Howard Hughes Medical Institute and the National Academies, have made significant progress towards converting large enrollment courses to a SCALE-UP environment. They will also serve as a resource for others as the campus moves forward with O’Kelly 61, and hopefully the construction of additional innovative learning spaces in the future.

An open call, which will be made available on the OID website over the next few weeks, will provide faculty from all departments the opportunity to develop a SCALE-UP class which would be offered in the spring of 2013.

(Kelsch, continued from page 1)

Dr. Robin Wright, University of Minnesota

“TEACHING MORE BY TALKING LESS: USING ACTIVE LEARNING SPACES TO INCREASE STUDENT LEARNING”

Tuesday, February 14
12-1pm in the River Valley Room

Dr. Robin Wright, Professor of Genetics, Cell Biology and Development & Associate Dean of the College of Biological Sciences at the University of Minnesota, is a nationally recognized teacher and researcher and has published numerous papers in national and international research journals on both her scientific and pedagogical research. Over the years she has “transformed her teaching from the traditional teacher-centered model of lecture-and-test to a cooperative learning approach that builds life-long skills.” She has recently overseen the development and implementation of a SCALE-UP classroom at the U of M, where she uses inquiry/group-based teaching to instruct large (150 students) introductory classes.

In this seminar Dr. Wright will present data on and model active learning approaches that enhance student learning. She will also conduct a workshop the afternoon of February 14 from 2-4 on curriculum development for SCALE-UP spaces. The noon seminar is open but registration is required for the workshop. To register, contact Anne Kelsch (at anne.kelsch@email.und.edu or 7-4233).
In July 2011 four members of the Biology Department (myself, Bob Newman, Becky Simmons and Kathryn Yurkonis) had the opportunity to represent UND at the Northstar Institute at the University of Minnesota. This Institute was one of five National Academies Summer Institutes on Undergraduate Education in Biology, a joint program offered by the National Academies and the Howard Hughes Medical Institute which aims at improving undergraduate science education. The Institutes focus on Biology and large introductory or general classes. The national conversation about recruitment and retention of science, technology and math majors and the ineffectiveness of traditional lecture approaches in large enrollment science classes led to the formation of the Summer Institutes. The Institutes are aimed at changing how faculty think about teaching. This can be a difficult task with science faculty due to the nature of science courses (lots of facts that we feel need to all be covered) and the nature of graduate training in science (a focus on research and little to no consideration of teaching). To overcome this challenge, the Institutes are structured around the idea of Scientific Teaching. Though, as you will see, this approach lends itself to the teaching of just about any topic.

In a nutshell, Scientific Teaching asks faculty to approach their teaching in the same way that they would approach their research. As we learned at the Institute, there are two aspects to this scientific take on teaching. The first can be thought of as the faculty approaching the course scientifically. Is the course designed around current pedagogical theory and are the techniques used in that course based upon that theory? Does the faculty think critically and creatively about the goals for the course? Does the faculty measure student learning in the class and adjust the class in response to their findings? The second aspect focuses on what students experience in the class. Are they practicing the skills necessary to the discipline in the classroom (in the cases of Biology, are they practicing real science)?

While traditional courses focus on facts, a “scientifically taught” course would focus on conceptual understanding, important principles, ways of thinking, understanding context, and applying all those in an authentic intellectual experience. During the week we were at the Institute, we learned a great deal about Scientific Teaching through seminars and hands on experience developing a teachable unit.

One of the major ideas that we took away from the Institute is the usefulness of backward course design. Backward course design involves three steps: 1) identifying the desired learning goals or outcomes, 2) determining the evidence of learning—assessment activities—that will be gathered, and 3) planning the learning experiences. Starting with the learning goals rather than starting with the chapters in the textbook keeps the focus on student learning. The learning goals are the basis for the rest of the course and the goals set the learning outcomes, how those outcomes will be assessed, and what activities will move the students toward mastery of those outcomes. Backward course design need not be restricted to science courses, but is a natural fit for Scientific Teaching due to the parallels with scientific experimentation.

Another major takeaway for us from the Institute was the importance of active learning. Simply put, active learning involves having students do stuff to learn things. This is a pretty big shift from the traditional lecture approach where students passively listen and take notes. But as we learned, the gains are worth the effort. A workshop reviewing the literature on active learning showed that active learning approaches produced higher test scores, greater normalized learning gains, better retention of material and stronger higher-order thinking skills, while reaching a diversity of students. We also learned about and practiced a number of approaches to incorporating active learning in the classroom such as:

- Group problem solving: groups are given a problem to solve and solutions are gathered and then discussed.
- Use of audience response systems: “clickers” can allow for polling about understanding of a point during a class. Results are tabulated and displayed for the class.
- Brainstorming: a broad, open-ended question that generates discussion and can be used to find misconceptions.
- One-minute questions: short writing assignments to see how well material is understood.
- Strip sequence: a step by step process is scrambled and students need to put the steps in the right order.
- Decision making: students are asked to imagine a scenario where they have to make a decision. They need to make a decision and justify their reasoning.
- Concept mapping: students are asked to produce a graphic representation of the relationships between concepts.
- Case and problem-based learning: present students with real life situations or examples to which they must apply the material they have been learning. Along with engaging students in their own learning, these activities allow opportunities for assessing student learning.

The above approaches to teaching can be seriously im-

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pacted by the physical space within which teaching takes place. We were fortunate enough to be in the new Science Teaching and Student Services Building on the University of Minnesota campus. This building was designed around active learning classrooms (originally called SCALE UP rooms, but often given different names on different campuses). You can see more about the rooms here: http://www.classroom.umn.edu/projects/alc.html. These rooms have round tables that seat nine students. Each of these tables has a white board, video screen, plug ins for laptop computers, microphones and speakers. This arrangement allows the students to work together on active learning exercises. There is also a teaching station that allows the instructor to control screens, use a central computer to display material (which could be from the instructor or from one of the student groups) to the entire classroom. More importantly though, the room is set up so that the instructor can easily move around and interact with all the students and the student groups can interact with each other. While not necessary for Scientific Teaching, such a classroom certainly expands the possibilities of what can be done effectively in a class. Fortunately, UND is developing such a room (O’Kelly 61) and we are looking forward to bringing these ideas into the new SCALE UP room starting next Fall.

New Faculty Writing Group Opportunity

Need some motivation to crank out those writing projects? How about a weekly deadline and feedback from a helpful group of colleagues?

Join a group of four faculty who meet weekly for 45 minutes to respond to each other’s writing. Each group member brings no more than two double-spaced pages to share, and everyone gets five minutes to read each piece and five minutes to respond to each piece. Everyone gets feedback at each and every meeting. Research shows that faculty who practice brief daily writing sessions produce more writing with less agony (see, for example, Robert Boice’s Professors as Writers or Advice for New Faculty Members). Participating in this writing group will ensure that you produce manageable chunks of writing every week. Plus, you’ll get to know a group of colleagues from across campus.

To participate contact Kathleen Vacek, 777-6381 or katleen.vacek@email.und.edu.

Upcoming On Teaching Lunch Seminars

Teaching Courses that are Student-Centered by Design: Checking in with the First Year Experience
Tuesday, January 24, 12:30 PM - 1:30 PM (register by Friday, January 20 at noon)

Get your Students to Grade their own Papers: Collaboratively-designed Rubrics
Wednesday, February 08, 12:00 PM - 1:00 PM (register by Monday, February 6 at noon)

Teaching with Performance Tasks
Thursday, March 01, 12:30 PM - 1:30 PM (register by Tuesday, February 28 at noon)

Integrating Teaching, Research, and Service
Thursday, April 05, 12:30 PM - 1:30 PM (register by Tuesday, April 3 at noon)

All sessions take place in the Badlands Room of the Union unless otherwise noted. Visit the Office of Instructional Development online (www.oid.und.edu) to register. For information contact Jana Lagro at 7-4998 or jana.lagro@email.und.edu.
LOOKING AHEAD TO SUMMER 2012

Summer Instructional Development Professorships (SIDPs)

SIDPs fund course development grounded in sound teaching practices. Designed to allow faculty to work full-time on instructional development for four weeks during the summer, these Professorships provide a salary stipend of $4000. Work must go beyond normal course development (the program does not fund updating of course content for example) and focus on enhancing student learning.

The application deadline is March 1 (noon) and complete information is available online at oid.und.edu

2012 Teaching with Writing Course Development Workshop:

How would you like to have that new prep for fall 2012 completely planned out before the end of May? If you are planning to use writing in a new course or a revision of a course, apply to participate in the Teaching with Writing workshop. The workshop provides an opportunity to work on course development with the input of colleagues from across the disciplines. Along the way you’ll learn about best practices for teaching with writing, including ways to use writing to promote learning and ways to teach students the writing conventions of their disciplines.

The workshop will take place May 21-25 from 8:00 am to noon. Participants receive a $500 stipend (subject to standard deductions) and workshop materials.

Applications are due April 2. To apply, complete the online application at writingcenter.und.edu or oid.und.edu

SGID reminder...

Get midterm feedback from your students!

Arrangements for SGIDs (small group instructional diagnosis, a process for soliciting student feedback at midterm) can be made now.

SGIDs are conducted by trained faculty who work as facilitators for the process in their colleagues' classrooms. A facilitator will collect information from your students, write it up into a report for you, and provide you with high-quality student input regarding their learning. You’ll have this information at mid-semester, rather than waiting until semester's end when course evaluations are completed. Furthermore, the interactive nature of the process can motivate students to think more carefully and deeply, so SGID feedback is often more thorough than course evaluations, providing you with a clear understanding of student perceptions. SGIDs are intended to be formative (i.e., for your own benefit as a teacher) rather than summative (they are not to be used as an evaluation of teaching, for example in promotion and tenure files).

To schedule an SGID, please contact Jana Lagro at 7-4998 or jana.lagro@email.und.edu

Check out Teaching Thursdays

Snap this QR code with your smartphone to visit Teaching Thursdays, a blog that fosters campus wide discussion about teaching.

Or visit teachingthursday.org
Join a Faculty Study Seminar

Faculty Study Seminars allow faculty with common interests to learn more about a teaching-related topic. This fall the Office of Instructional Development will offer two. Each group meets four times a semester, at times mutually agreed to by participants, to read and discuss a teaching-related book (books provided by OID). Your only obligation is to read and to show up for discussion. To sign up for a group, e-mail the facilitator noted below with your contact information (e-mail and phone) and a copy of your fall semester schedule (noting the times you cannot meet). You will be contacted once an initial meeting date is set.

*From Brain to Mind: Using Neuroscience to Guide Change in Education* by James E. Zull (Stylus, 2011).

If you are familiar with James Zull's 2004 book, *The Art of Changing the Brain*, you know he has both a keen interest in how the brain learns and a knack for making specialized research accessible and relatable to what we do in higher education. In his latest book, Zull (Professor of Biochemistry and former Director of the University Center for Innovation in Teaching and Education at Case Western Reserve) considers how recent findings in neuroscience can inform our teaching practice. Looking at how the brain receives and processes information, he gleams applicable insights about cognitive development and metacognition. Zull argues that due to major social and economic change, a teaching and learning approach that is informed by cognitive science is increasingly necessary. In an environment in which our students can expect to hold multiple jobs (some of which may not yet exist), where technology is constantly shifting, and where information and opinion seem infinitely available, the awareness of how and why we think as we do is essential to society's well-being.

To participate in this FSS, please contact Anne Kelsch at anne.kelsch@email.und.edu or 777-4233.


From the publisher: Distilling the research literature and translating the scientific approach into language relevant to a college or university teacher, this book introduces seven general principles of how students learn. The authors have drawn on research from a breadth of perspectives (cognitive, developmental, and social psychology; educational research; anthropology; demographics; organizational behavior) to identify a set of key principles underlying learning, from how effective organization enhances retrieval and use of information to what impacts motivation. Integrating theory with real-classroom examples in practice, this book helps faculty to apply cognitive science advances to improve their own teaching.

To participate in this FSS, please contact Kathleen Vacek at kathleen.vacek@email.und.edu or 777-6381.
Writing Center offers class visits

A visit from a writing consultant is a great way to encourage your students to use the Writing Center. Go to writingcenter.und.edu to learn more.

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