Pedagogy, the art and science of teaching, provides the foundation for deep and meaningful student learning. Across the Virginia Tech campus, faculty members are engaging in an array of instructional approaches designed to foster pedagogical excellence. This proactive development of learner-centered instructional environments results from a conscientious commitment to the needs of a diverse student body, dedication to an intellectually honest approach to disciplinary and interdisciplinary education, and a passion for engaging students in critical thinking, self-awareness, and global citizenry.

During the past five years, the Center for Instructional Development and Educational Research (CIDER) has been working with and supporting numerous individuals and groups across campus to augment their pedagogy, resulting in increased student learning and growth. These efforts have ranged from integrating multiple forms of media into courses, to focusing on formative assessments as learning opportunities, to instigating problem-based and case-based approaches to learning. Some of these efforts might be categorized as “cutting edge,” while others may be more subdued, yet they all have one central focus – the enhancement of student learning.

This Pedagogy in Practice publication provides an avenue to share the stories of several Virginia Tech faculty members who are engaging students in “holistic and transformative educational experiences” through the creation of effectual pedagogy. It is with gratitude that I extend my thanks to those willing to share their stories of pedagogical challenge and change, as well as those engaged in similar ventures whose stories are yet to be told.

Regards,

Peter Doolittle
Director, VT CIDER

Creative and energetic faculty members are at the core of educational excellence. This third edition of Pedagogy in Practice highlights several noteworthy efforts designed by faculty members who are deeply committed to Virginia Tech’s teaching mission. The range of disciplines represented in this issue reflects the breadth of impact of the Center for Instructional Development and Educational Research. In this issue are articles that describe how student-centered pedagogy inspires learners to excel in traditional classroom settings and in environments beyond campus. Faculty members advance excellence by creating new ways to use writing, online technologies, research opportunities, and colloquia. Excellent teachers also reflect on their pedagogical practice and share their ideas with colleagues. Peer review can be an effective process for students, who learn from evaluating other students’ scholarly work and also learn a skill that can be useful in their careers. Virginia Tech remains committed to its instructional mission and the Center for Instructional Development and Educational Research is a valuable faculty development resource for skill-building and for advancing the scholarship, art, and practice of teaching excellence.

Jack W. Finney
Vice Provost for Faculty Affairs
MISSION

The Center for Instructional Development and Educational Research (CIDER) works with Virginia Tech faculty, administrators and graduate students to design, develop, and implement disciplinary and interdisciplinary learner-centered instruction; promote and recognize excellence in higher education instruction; support and conduct cutting-edge research on the scholarship of teaching and learning; and collaboratively advocate for a campus climate that values educating the whole student through effective, innovative and transformative instruction.

CONTENTS

3 Collaborative Teaching in the Civic Agriculture and Food Systems Minor: An Interdisciplinary Experience
Kim L. Niewolny and Susan F. Clark

5 Scaffolded Peer Review: An Explicit Pedagogy for Developing the Dispositions of Novice Instructional Designers
Jennifer M. Brill

9 Honors Colloquia: Unique Possibilities for Faculty and Students
D. Michael Denbow

11 Connecting Subjects: Facilitating Student Learning and Understanding Through Reflective Papers
Katherine Allen

13 Reality Check: Pedagogy at the Intersection of Practice, Education, and Outreach
Marie and Keith Zawistowski

17 Listening to Students to Improve Teaching and Learning
Jesus M. de la Garza

19 Invent the Sustainable Future: Dreamers and Storytellers
Donald J. Orth

22 An Exemplar of Online Instruction in Summer Sessions that Meets the Needs of Students and the College
Quinton J. Nottingham

25 The Door in the Dream: Unveiling the Possibilities through Undergraduate Research
Dennis Dean and Tomalei Vess

Photo Credits: Whitney Weeden, Whitney Unis, Virginia Tech University Relations, Jeff Goldberg/ETSO (Zawistowski article), Espirit Photography (Zawistowski article)
Higher education is perhaps one of the most fruitful settings to experience teaching and learning innovation. One particular example of this innovation comes in the form of interdisciplinary, collaborative teaching in the College of Agriculture and Life Sciences (CALS) at Virginia Tech (VT). As CALS collaborative teaching colleagues, we have been challenging ourselves for several semesters to develop and implement interdisciplinary curricula through the new Civic Agriculture and Food Systems Minor (CAFS). This minor uniquely enables students to critically identify, examine, and integrate sustainable agriculture and food system concepts and skills through active engagement in and outside the classroom. It specifically aims to promote academic enhancement, personal growth, and civic responsibility by exploring the social, cultural, and ecological foundations and practices of sustainable agriculture. A key ingredient in reaching this goal is to provide students with learning experiences that support this inherently multifaceted, interdisciplinary program of study. For us, this means several things: focusing on didactic and experiential learning methods, engendering reflective practice through ePortfolio assignments, and scaffolding community-based projects across core CAFS courses. Most importantly, we have found it essential that the curricula leverage knowledge and skills from multiple disciplines and perspectives. In this view, we are committed to developing, practicing, and threading a collaborative teaching model throughout the CAFS minor to be effective introducing and integrating new ideas, knowledge, and skills.

So what does interdisciplinary, collaborative teaching actually look like? Who is involved? How much work is it compared to traditionally taught courses? And how do students react to this teaching approach—especially when it is often different from other courses they have taken? These are just a few of the questions that keep us nimble.

The CAFS minor derives guidance from an interdisciplinary taskforce comprising CALS faculty, VT students, VT Dining Services, and two non-profit community partners: Heifer International and the YMCA of Blacksburg. The CAFS collaborative teaching model is the direct result of the taskforce constructing core values that embody the definition of civic agriculture as related to local-regional food systems. The four main courses are taught with a combination of faculty, student, and a community partner. All four teaching teams are responsible for developing respective course curriculum, planning weekly lesson plans, instruction of course lessons, and student evaluation. The teaching teams meet together once per semester to share ideas and evaluate curricula, course outcomes, and administrative needs. Although each course looks and feels different, each collaborative teaching team centers course objectives on engaging students with community partners. Inclusion of community partners reflects our commitment to strengthening partnerships between the university and the community, enhancing experiential learning activities, and developing student and partner capacity for sustained community engagement. The Introduction to Civic Agriculture, ALS 2204, is the first course students take within the minor. Its format is designed to help students work with numerous community partners, (e.g., the Hale Y-Community Garden, Student Garden at Smithfield, Dining Services Garden at Kentland Farm and several local farms around Blacksburg). Students gain interdisciplinary knowledge and skills about “civic agriculture” through direct involvement. The goal is to integrate new experiences into what students already know so they can more critically apply concepts and activities into personal and professional practice. This means we use a variety of teaching and learning formats that emphasize collaboration in and outside the classroom, including: small/large group discussion, critical reflective writing, collaborative case work, and hands-on fieldwork activities and field trips. Unique to the course is the incorporation of a community partner liaison as a teaching team member. Ms. Jenny Schwanke, Hale Y Community Garden Coordinator, actively participates as a teaching team member. Her grassroots perspective in the classroom helps students make practical connections about what they are learning.

Foundationally, we acknowledge that co-teaching, team-teaching, and collaborative teaching have been used to define teaching that involves more than one instructor, and it is often difficult to differentiate between these three ideas. According to McDaniel and Colarulli (1997), collaboration among instructors varies along four dimensions: (a) the degree of integration of ideas and perspectives, (b) the degree of interaction between
Students in particular often remark that they value being able to critically interact with faculty from different disciplines in tackling challenging issues such as community food security, globalization, and food sovereignty. This interdisciplinary collaboration also provides ample opportunity for professional development and moral support for faculty. As teaching team colleagues, we are eager to refine our collaborative, pedagogical practices to enhance learning outcomes.

References


I work as an associate professor in the Instructional Design and Technology (IDT) graduate program, a program offering masters, educational specialist, and doctoral degrees to a highly diverse group of domestic and international students. Reiser (2002) defines the field of IDT as “the analysis of learning and performance problems, and the design, development, implementation, evaluation and management of instructional and non-instructional processes and resources intended to improve learning and performance in a variety of settings, particularly educational institutions and the workplace” (p. 12). Like other professional disciplines demanding solutions to complex human challenges (think health care, environmental science, architecture, etc.), IDT requires collaborative and creative problem-posing, framing, and solving from a team of individuals working together. Fostering such dispositions in novice instructional designers, many of whom come to our program with education and experience in other fields and little experience collaborating in a design discipline, can be one of the most challenging (and rewarding) aspects of my professional life as an educator and mentor. Design problems, including those aimed at improving learning and performance, are complex, messy, situated, and problematic (Norman, 2002; Schon, 1983; Stolterman, 2008). They can also be quite fun — with some thoughtful pedagogy built into the experience!
Scaffolded Peer Review as an Intentional Pedagogy

I have been using peer review in my instructional design and other IDT courses since 2002 in varied forms. Initially, my goal was to immerse novice designers in the messiness of instructional design problems as I had experienced it as a professional designer myself, working in mostly corporate settings since 1986. I wanted to confront my students, early on in their academic work, with the real-world complexities of design problems, design practices, and design spaces, moving away from some of the more pristine academic exercises I had been troubled by as a masters student. Peer review has been defined as “the structuring of a process to allow peers to review each other’s professional processes and/or products with the goal of improving such processes or products” (Wooff & Quinn, 2001, p. 22) and is recommended as a pedagogical strategy for developing adult learners for professional practice in design disciplines (Chapman & van Auken, 2001; Lai & Law, 2006). Through my own experiences and research, I am convinced it can be integrated by any educator interested in fostering learning outcomes related to critical analysis/evaluation, collaboration, and problem-solving while pursuing learning approaches that are active, experiential, and engaged.

What Does it Look Like

My “Foundations of Instructional Design” course is a 15-week, face-to-face course required of all IDT majors in their first semester of studies. Through 3-hour weekly class sessions and significant work outside of scheduled class time, students master core ID concepts, models, and practices through a variety of approaches including readings, lecture, discussion, cases, exams, presentations, and, most prominently, the team-based design and development of a real-world instructional design project. It is through the 15-week team project that students iteratively engage in within-team and across-team peer review. Figure 1 provides an overview of the process (see also Brill & Hodges, 2011). I’d like to highlight some key aspects. First, during week two, students are guided through a simple and structured peer review process in class. The primary goals for this first peer review event are for students to: (a) grasp the nature of and rationale for peer review; (b) acquire a simple process for executing one; and (c) complete their first peer review in a low-threat and supportive environment, through the application of a simple, yet important, ID concept: the instructional goal. During weeks 3-11, teams of 4-5 students work, in earnest, on analyzing, designing, developing, and evaluating real-world ID projects of varied types. Put simply, each week, teams master a core ID concept/skill; apply it through project prototypes; receive feedback from peers and the instructor; and revise their prototypes. In reality, things get messy. As the weeks progress, teams are urged to work systemically, revisiting and refining any project components, as needed, in order to move toward the most effective design for instructional design problem resolution. So, whereas one team may realize, through peer feedback during week five, that it needs to reconsider its instructional goal, another team may already have developed confidence in a fairly refined goal for which they are now designing assessments. Surface messiness, with a strong undercurrent of intentionality, is the order of the day.

“...[peer review] can be integrated by an educator interested in fostering learning outcomes related to critical analysis/evaluation, collaboration, and problem-solving...”
extensive and in-depth peer review. This review is completed by each student over one week’s time outside of class and results in detailed feedback documenting the strengths and weaknesses of the design along with recommendations for improvement. Each team then has 2-3 weeks to make final revisions, submit designs, and, during the last class meeting, debrief the group on the project, including any adjustments made as a result of peer review.

Evidence of Impact
In trying to understand the role that peer review plays in developing the design dispositions, knowledge, and skills of novice instructional designers, I have been researching it in the ID course for several years now. In brief, findings demonstrate that most students favor it as a useful approach to learning, for knowledge/skill development, and for ID product improvement. As one student commented, “Because we were required to give elaborate feedback, we had to really dive into the theories and their application to give meaningful feedback which in turn strengthened our ID knowledge.”

Most students also report that using PR helped them to comprehend ID as a collaborative and problem posing/solving process, another desired outcome of the course: “It brings a real-life experience into the classroom. This is as real as it gets.” In terms of my own observations and assessments, PR enables students to “go farther, faster” with core knowledge and skill development so that I can engage with them at more intellectually sophisticated levels, exploring the puzzles, problems, and challenges of design work more deeply, in context, as they arise.

Lessons Learned about Using Peer Review
Based on my experience and research findings to date, I have four initial recommendations for any instructor who wants to integrate peer review into a course experience. First, use peer review iteratively throughout the course experience rather than as a one-shot activity, beginning with a small, low-threat, structured experience and advancing to more complex assignments. By including the brief, in-class peer review of learning objectives during class two of the semester, I set a positive tone for peer review as a manageable, integral, and enjoyable part of the course experience. Second, scaffold/support peer reviews with resources (rubrics, job-aids, models, etc.) that enable learners to reflect on and apply the knowledge and skills that are fundamental to desired learning outcomes for the course, addressing both product and process expectations. My research findings, in particular, have helped me to understand that students want and appreciate scaffolding, especially cognitive scaffolding, even in less structured, collaborative, learner-centered experiences. That said, it is important to resist even implying that there is “one correct answer” in any scaffolds provided.

Third, and directly related to recommendation two, promote a
culture emphasizing that complex problems, including design problems, have no one right answer (no easy task for students who have been trained through years of formal education to provide the correct response). Such a design culture presses students to apply rigorous analytic and evaluative techniques, along with sound ID concepts and strategies, to develop “best fit” solutions given identified constraints, but never succumbs to the “one right response” trap. Finally, collaborative work among students will always have some measure of conflict. Approach peer-to-peer conflict by coaching students to refocus on core concepts and practices, for example through the scaffolds provided, as the means to consensus. Principles of effective practice (including professional respect) should be the driver to successful problem resolution rather than an unproductive emphasis on personal differences. An appropriate degree of humor can help. As I’ve been known to remind my students, “It’s not about you; it’s about the work.”

**Some Final Thoughts**

Motivating students to engage with ill-structured, rather than well-structured, problems over a 15-week course experience can be a challenging endeavor. For an instructor, it requires embracing ambiguity and argument – not to be confused with a lack of leadership, standards, or productivity. A thoughtfully designed peer review pedagogy has provided me with a means for confronting novice students with the very real challenges of instructional design problems and instructional design work while helping them move forward with mastery of fundamental ID knowledge and skills.

**References**


which they may not have a multitude of experience. This provides a formula for an exciting and unique educational experience for everyone in the room, including the professor.

Currently, much of scientific research makes use of the scientific method (Wilson, 1952). The scientific method entails making quantitative measurements and extrapolating a cause and effect relationship. Students are taught about this method early on, and it is the basis of much of the learning and research conducted at universities.

I teach an honors colloquium on Chinese Medicine. As instilled as the scientific method is in our culture, it is not the basis of Chinese Medicine. Instead, Chinese Medicine is based on inductive reasoning. Chinese medicine looks at qualitative differences in factors, and then uses an inductive approach to extrapolate the outcome of these differences. As discussed by Porkert (1977), Chinese medicine was developed to a very high level by using this inductive, qualitative approach.

Teaching an honors colloquium on Chinese Medicine, therefore, offers more than a unique opportunity to work not only with a diverse audience, many with preconceived notions regarding alternative medicine, but it also provides an opportunity to discuss a different approach to reasoning and a form of medicine based on a very different approach than allopathic medicine.

Since Chinese Medicine is not linear, it difficult for some to understand. There is not one beginning or end point for presenting the material. One can only dive in and present the material as clearly as possible knowing that students will have to see many of the pieces before it really begins to make
sense. It is sort of like working a jigsaw puzzle in that the picture doesn’t really become clear until enough pieces are in place so that one can see where each piece fits into the bigger picture.

For me, it has been a journey to find the best strategy for teaching what appears at first to be very foreign ideas (i.e., wind heat, qi, Tao, Wuxing), as well as a system of medicine—not to mention a system of thinking—that doesn’t follow our standard paradigm. Studies have shown that most college students lack well-developed abstract-thinking abilities (Grasha & Yangarber-Hicks, 2000). As stated by Grasha and Yangarber-Hicks, “the classroom is like a dance in which one partner leads, and the other follows. As in a dance, the person leading is not completely in control; how a dance partner responds affects the next move of the person leading” (p. 7). The first couple of years I taught this material, it wasn’t easy to engage students in their journey with the subject. I made a series of PowerPoint presentations, each covering a different topic. While the students had access to all the presentations, and the material was presented in class each week, it wasn’t always obvious that the students understood the material. While students were asked each week if they had any questions, they typically did not voice many. As further stated by Grasha and Yangarber-Hicks, “unless we take care to involve students in the material and establish a two-way dialogue, we may reinforce a passive-dependent learning style.”

Over the past couple of years, in addition to the PowerPoint presentations, I started requiring students to have one written question down, which is collected at the beginning of each class. While this is a simple strategy, it appears to more readily engage students in the material. I go over each question at the beginning of class. For those students who don’t wish to speak in class, they are now engaged in the conversation without having to publicly ask a question. The student questions also generally evoke other questions and conversation that would not have otherwise occurred during a typical lecture on the material. Finally, near the end of the semester, students get a chance to put into practice what they have learned. We have a class in which students “play doctor.” Some students agree to act as patients, while the remainder of the class is tasked with diagnosing, from a Chinese Medicine perspective, the patient’s problems. Students suddenly have to integrate everything that has been discussed throughout the semester. And, they have to defend their diagnosis. By defending their diagnosis, they essentially have to be able to teach the material to others.

Thus, introducing honors students from across the university to a new way of thinking, I hope to get students to return to their own disciplines with a broader conception of the concept of reasoning. Such a class is a challenge, both because of the disparate students and the lack of any common prior work, but it is also engaging to have students bring different perspectives that cause them to ask different kinds of questions. University Honors colloquium courses also provide chances to teach something important to me that is not available in the standard curriculum. These complimentary rewarding possibilities for faculty and students make honors colloquia unique and extraordinary at Virginia Tech.

References


An opportunity and a challenge in teaching undergraduate students in the Department of Human Development is the intricate connection between our “subject matter” and our “subjects.” We teach about, and study, individuals and families over the life course. Our topics, including family development, human sexuality, diverse families, family risks and resilience, and human services delivery, are relevant to our students, both personally and professionally. In teaching courses that challenge students’ beliefs about families, whether those beliefs are unexamined, contradictory, or firmly held, I have learned that it is much more powerful to acknowledge rather than ignore the self of the learner. Living in families; starting families; balancing work and family; surviving and thriving in the midst of the inevitable crises that constitute life in families; and finding meaning, support, and resilience in families are all issues that are very much on the minds of young adults who are forging their own family pathways.

Some of the topics that I teach and study include hidden family ties in older women’s lives; LGBT family relationships; college students and sexuality; adult sibling relationships; and family crises and change. Such subject matter often prompts intense responses from students. While some students have not yet been sensitized to disadvantage in their own or others’ lives, many have lived through experiences that do not reflect the so-called norm of the nuclear family, allegedly untroubled by loss, disruption, or unanticipated events. It is more likely that students have experienced many of the family permutations and challenges that we study in class, and to ignore that fact would be counterintuitive and disingenuous. My goal is to present research about how families face challenges and social change while meeting their needs for health and well being over the life course, within a context that acknowledges and honors students’ lived experience. At the same time, teaching in my field requires a delicate balance of helping students to “get out of the way of their own experience” so that they can see a much bigger picture about the social, economic, and political forces impacting family life for others.

The college classroom is an ideal environment for informing students’ most private and deeply held beliefs. Messages they have internalized from parents, peers, media, religious communities, and the like inevitably bump up against the research and theories that comprise the core of our knowledge base about family systems, identities, roles, and relationships. The space where students’ own ideas, feelings, and behaviors collide with the material in our texts and internships in the field provides an opportunity for change. When students’ core ideas are challenged and knocked off center, new knowledge can enter and help them grow, not only as scholars but also as human beings with the capacity for deeper understanding of themselves and of the clients with whom they will work in the human development profession. A powerful way to develop skills to knock down walls between “us” and “them” is through acknowledging, not denying, students’ subjective responses to what they are studying.

How do we facilitate student learning and practice when we study what we often live? One strategy derived from the practice of engaged pedagogy is to assign reflective papers in which students approach the course material to “get it out of their system” about how they may have experienced the
topic in their own lives. Reflective papers on the difficult and sensitive subjects we teach and study in our field provide both a touchstone for reflection and a springboard for action. Making our experience transparent through reflective papers allows us, as human service practitioners, to put ourselves in the shoes of clients, rather than taking a distanced stance. Students especially resonate with the practice of writing about and sharing their subjective experiences with the subject.

“Teaching in my field requires a delicate balance of helping students to ‘get out of the way of their own experience’.”

matter, particularly when given the opportunity to share their stories or listen to other students’ stories through classroom exercises. Students learn so much from each other, and finding out about how their peers have experienced the issues we study provides an exciting opportunity for reflection and understanding. In making the reflective work a part of the class, students not only learn to connect the personal to the professional, but they learn a lesson that is essential for getting along well in contemporary work and families: collaboration with and openness to learning from one’s peers.
The undergraduate Architecture degree offered by Virginia Tech’s College of Architecture and Urban Studies is an accredited five-year professional degree. Though much of architectural education revolves around theoretical concepts necessary to the development of creative sensibilities, a key component is the College’s obligation to prepare students for the practice of Architecture. A recent strategy to excel at student preparedness was the creation of Professor of Practice positions within the college. As the School of Architecture + Design’s first Professors of Practice, we strive to reinforce the knowledge and skills necessary to the successful and meaningful practice of Architecture. To this end, we are teaching students to think creatively about practice as they do about design.

Both the Designing Practice course and the design/buildLAB we teach were created within the Professor of Practice framework. In Designing Practice, a required 3-credit Professional Practice seminar, practicing professionals are invited to be part of the course and share their insight into the professional world with students, through guest lectures or student-initiated field interviews. The students then design their own virtual practice: establishing a business model, locating and organizing their office, marketing their services and managing their finances. In the design/buildLAB, a required 6-credit studio integrated with 4-7 credits of allied curricular requirements, students collaborate with local communities and experts to conceive and realize built architecture projects. The aspiration of these courses is to remove the psychological boundary between the world of the academy and the world of practice.
Project-Based Experiential Learning

Students often have difficulty connecting with course content without understanding how they will deploy it in their own unique futures. To counter this issue, the design/buildLAB offers students real world experience where education is the primary driver. The facets of the program, which address social consciousness, community leadership, project management, environmental sustainability, hands-on experience, etc., are the vehicles through which the students are educated. The making of their project requires students to hone skills in design, construction, communication and administration. This project-based pedagogy merges academic knowledge and the many aspects of an actual architectural practice.

Because students realizing work in the public sphere has a tangible result, discussions about this approach often center on the act of building. In reality, the projects are developed to ensure that building maintains an appropriate proportion within the overall course content. The purpose of experiential learning is to balance theoretical underpinning with technical competence, not to favor one over the other. Concepts uncovered in peripheral courses such as Building Structures, Environmental Building Systems, and Professional Practice are tested in furtherance of conceiving and realizing a work of architecture: a kind of practical experience that has often remained the domain of the internship. However, opportunities for students to “practice” their profession within the framework of the academy allow for much greater control of the quantity, quality, and breadth of curricular content, and engender an environment where mistakes – teachable moments - are possible.

In the design/buildLAB, students must learn to respond to a community’s aspirations and worldview and collaborate among themselves and with the contributions of professional consultants from other disciplines. These diverse and concurrent resistances challenge and galvanize students’ problem-solving abilities. This is atypical in an academic setting, were the focus is often placed on the student's individual performance rather than his or her ability to function in a complex professional environment.

Student-Led

The design/buildLAB is not a faculty-led research initiative with student assistants, a practical internship with professional mentors or a professional apprenticeship with studio masters, nor does it profess an accepted understanding or a
“This collaboration process results in complete ownership of the project outcome by every student, and a sense of empowerment that can only be derived from leading the project from conception to completion.”

common way of doing. Rather, it is a learning environment where projects are led by students and faculty are simply advisors who bring resources to the discussion and refocus or encourage as needed. Students react to propositions developed by their peers, and faculty positions matter as much or as little as anyone else in the room. This “laissez faire” approach is the best way to build students’ confidence and maximize their investment in learning. It allows for exploration and innovation, which can reach beyond the faculty’s knowledge, and is therefore not limited by it.

Projects are selected for their scope, scale, and benefit to the common good. The scope of each project allows the students to complete it within the course of one academic year, while the scale of it enables them to manage every aspect of its realization. The charitable nature reveals the usefulness of the students’ knowledge
and skills, inspiring them to high professional ethics.

In order to facilitate sufficient complexity, projects are collaborative. The design process is framed to allow each student to develop their own individual design skills while gradually merging ideas toward the realization of a single group project [see Figure 1]. This allows for multiple concepts, approaches, and solutions to be explored and discussed. All students take part in the design and management of the project, which they build. Students are evaluated on measures such as aesthetic development, technical development, presentation skills, management abilities, participation, and critical thinking. Because it is essential that each student in the group gain competence in the expected curricular content, collective accountability prevents them from stagnating in a secondary role. This collaboration process results in complete ownership of the project outcome by every student, and a sense of empowerment that can only be derived from leading the project from conception to completion.

**Durable Knowledge**

The intensity of real-world project experience drastically differs from the linearity of the learning process in a typical lecture course. Rather than each subject being brought up sequentially, the multiplicity of factors involved results in a range of questions arising simultaneously [see Figure 2]. Each requires knowledge from various areas of expertise, which need to be synthesized in practical applications. In this context, “savoir” (knowledge) and “savoir-faire” (know-how) are of equal importance. The imperative to utilize these abilities in tandem results in the forming of durable knowledge: knowledge that is deeply engrained.

**No Discipline**

The successful transfer and integration of the design/buildLAB’s key tenants: student-led, real-world, and project-based learning into the seminar Designing Practice has shown that this pedagogical model is not limited to the context of outreach projects beyond the classroom or to any particular discipline. Any course that fosters students’ interaction with the professional world in a way that is authentic, approachable, and relevant can yield profound results.
I am no stranger to teaching large numbers of students, and I have always tried to discover ways to connect to these students in hopes of improving my teaching as a semester progresses. My first experience with large classes was in 1990 while teaching CEE 3014 - Construction Management in the Litton-Reaves Auditorium. In many ways, it was an exercise in “finding Waldo.”

Because my office is in Patton Hall, about a quarter of a mile and a 15-minute walk from Litton-Reaves, I decided to use my walking time to learn from my students in the course.

One day, I brought two pencils with me to class, one red and one blue, and gave each to two different and randomly selected students without telling them the purpose. I told them that the holder of the blue pencil needed to walk back with me to my office. The goal was to have an informal and uninterrupted 15-minute conversation about the course. As our chat concluded, I told the student that s/he needed to give the pencil to someone else in class. Similarly, I told the student holding the red pencil that s/he had to pick me up in my office 20 minutes before the next class so that we could walk together to class and have a similar conversation. Once in the classroom, s/he needed to pass the pencil to another student. Given the students’ class schedules, students themselves decided if they wanted to get in line for the blue or the red pencil. I designed this intervention to try to get to know most of the students and their names, and as a result, by the end of the semester, class no longer felt like finding Waldo. I learned much about my teaching and my course as well.

Over time, the class grew larger and larger, and in 1995, I changed strategies and instead invited students to join me for lunch in small groups. In addition, I now provide students with name-tents on the first day of class and ask them...
to bring those cards with them to every class. If a student forgets to bring his or her name-tent, I will call them by a generic and/or rare name (e.g., male students without a name-tent once were known as “Casimiro” and female students were known as “Leticia”). To keep the humor current, I change these names from term to term, but the name-tent strategy enables me to call students by name and build rapport from day one of class.

For the past two years, I have pursued a more methodical approach to learning more about my students and their perceptions of my course. I learned of CIDER’s (Center for Instructional Development and Education Research) mid-semester evaluation process and decided to give it a try. This consists of a proactive data collection process that helps the instructor find out: (a) what is working well; (b) what is not working so well; and (c) what needs to be changed in the course. This intervention is ideally executed halfway through the semester, which enables the instructor to make changes that enhance the teaching-learning experience before the semester concludes. The intervention requires about 20 minutes of class time, and it is executed, for obvious reasons, without the presence of the instructor. Two to three faculty from CIDER poll the students, first individually, to write down entries for each of the aforementioned areas; they then form groups and ask the groups to do the same. This second stage requires dialogue and a collective decision making process. After this, the CIDER faculty engage the students in a collective discussion regarding the third question: what needs to be changed. The responses are written on the board, and each student is given two votes. Everyone is asked to vote for the items that are most relevant to them. This requires students to reflect upon what is really important and avoid wasting votes on minute items. This also enables CIDER to report a weighted and ordered list of recommendations to the instructor. Following the in class process, CIDER develops a report of the student responses. They then provide the report to the instructor during a meeting in which recommendations are discussed. All stages of the process are confidential and student responses are anonymous.

I have benefited immensely from this process and have been able to make strategic changes to my classes based on the feedback and input received. For example, I have now changed the designation of what constitutes a grade of “A” in my course based upon cogent student input. Another example involves the textbook, which has changed from being required to being optional. I routinely play music before the start of class, and the feedback received via the mid-semester evaluation process confirmed that students’ value and enjoy this tone setting technique.

With the rapid proliferation of IT gadgets, it is possible to deliver content to students’ tools and possibly bypass students’ brains altogether—and we as faculty need to be very sensitive to this danger; however, it is sometimes difficult to know this is happening. One of my biggest challenges is to keep the students’ brain and feet in the same place; and I have found that simply asking students about their perceptions of IT and other instructional strategies provides me with the needed feedback. Anything and everything that can be done to align the instructor and the students goes a long way in enriching the mutual teaching-learning experience.
Sometimes I feel like a dreamer in a world of dream killers; in this world a “half century of unbelievable prosperity and ease” has resulted in the “end of nature,” or so argues Bill McKibben, author of The End of Nature and Earth: Making a Life on a Tough New Planet. These feelings and observations provide the contextual foundation for the College of Natural Resources and Environment’s Pathways to Success program I direct for the College’s first-year students.

Taught for the first time during Fall 2011, the course within this program serves as a student’s introduction to the College, so we discuss the realities of the global human and environmental condition—poverty, ecosystem decline, population growth, economic disparity, and climate change. We also discuss the fact that we live in unprecedented times in the midst of a sustainability revolution. The realities are often depressing, whether you are 18 or even much older. How do I teach first-year students at a critical transformational period in their development without killing their dreams?

My dream is to make a difference in the life of each first-year student by nurturing his/her dreams. I believe in the power of personal narrative to motivate and create a sense of belonging, and that belief is among the influences of my pedagogical approach with this course. What follows are the theoretical underpinnings and the practical strategies I use as I teach first-year students.
Foremost, I challenge students to accept responsibility for their learning, and the future they want for themselves and future generations. Each week, they are exposed to inspirational stories of the people and organizations that are inventing the sustainable future. Students arrive on campus with a script, and as a first-year teacher I need to understand the script and challenge beliefs and support the dreams. One of my students wrote, “Imagine a world where everyone treated those around them - and all around the world for that matter - equally and with respect rather than being judgmental…” I can’t afford to kill this dream.

Like other First-Year Experience (FYE) programs, this course required a focus on inquiry, problem solving, and integrative knowledge and the use of Pathways Planner, ePortfolio, and the Common Book. What I learned from my first attempt at delivering a FYE course was that cramming too many lessons into the course left little time for students to develop their personal narratives or assess whether they are making wise choices on a daily basis. In Life Mapping, Bill Cohen describes life mapping as a five step process: (1) determining your beliefs; (2) developing your principles; (3) deciding on your goals; (4) dividing goals into necessary activities; and (5) assigning the schedule of activities. This seems simple and straightforward. Yet, until both the beliefs and life purpose are clear, the college experience will be a collection of courses and extracurricular activities and grades – an extension of high school. Until the student identifies the passion and purpose of college, he or she is simply taking college classes. As Carl Jung said, “there is no change from darkness to light or from inertia to movement without emotions.” Student emotions need to be engaged before they can meaningfully use their Pathways Planner or ePortfolio or understand Covey’s Quadrant II of time management.

Inquiry and problem solving strategies may be applied to meaning-making questions. The purpose of inquiry is to reduce doubt and clarify beliefs, and each student chooses their inquiry topic, which flows naturally from their story. I found that the rationale, pedagogical strategies, and real-life vignettes of Nash and Murray (2010) to be personally empowering to help me mentor students with the initial question: “What gives meaning to my life?” Answer that, then answer, “What major is right for me?” And then answer “How does the type of career you are preparing for give your life meaning?” and “How will you contribute to inventing a more sustainable future?”

Nash and Murray (2010) assert, “what matters most in personal narrative writing is the conviction that the writer’s own life actually testifies. It matters” (p. 120). Students in the College of Natural Resources and Environment should stand for something, and it should show in their choice of major and extracurricular activities. Students struggle with many challenges in college, especially in their first year. The story writing activity I employ in this course helps them realize the transformation they need to make if they are to be successful college students. They arrive at William Perry’s (1968) “Garden of Eden” stage of knowing and look to me (the authority) to tell them what is right and what to believe. Yet when it comes to writing their story, choosing their major, and developing an academic and career plan, the student must transition to being the authority.
Stories reflect choices that students have made, and during the first weeks of college, they make additional choices that influence their emerging stories. In order to monitor the choices that students make, I have selected a 64-question self-assessment of choices related to personal responsibility, self-motivation, interdependence, self-awareness, lifelong learning, emotional intelligence, and belief in self (Downing, 2011). This assessment provides students with a quick look at whether their personal choices will either seldom, sometimes, or usually keep them on a successful path toward their academic goals. Their mistakes and consequences of poor choices along the way become part of their story.

After the students have written their personal narrative, they may consider what the Virginia Tech aspirations for students mean to them and how living these aspirations will influence their goals and activities. Just as all US currency is stamped with our country’s values - Liberty, E Pluribus Unum, and In God We Trust, I hope our graduates exemplify uniquely Virginia Tech aspirations: a commitment to unwavering curiosity, pursuing self-understanding and integrity, practicing civility, preparing for a life of courageous leadership, and embracing Ut Prosim (That I May Serve) as a way of life. The first Aspire! Award winners were recognized at Virginia Tech last fall and their stories have the potential to motivate all first-year students.

Self-awareness is a common struggle for the first-year student (Downing, 2011), Jerome Bruner, author of The Process of Education, believes the best way to understand the self is to think of the self as a storyteller. Yet, in our curricula, students are seldom asked to write this way. Students write for themselves, to make meaning. They also write so they have a story prepared for their first meeting with an academic advisor. In revising the narrative, I follow the guidance of Marshall Ganz, senior lecturer in public policy at the Kennedy School of Government at Harvard University; Ganz promotes the power of the story of self, story of us, and story of now. Early drafts are invariably all about self and not much about beliefs or others. But as the story develops it should have a plot: a “challenge and choice and an outcome” (Ganz, 2011). Nash (2004) provides guidelines for writing scholarly personal narratives. From these guidelines, I have created a rubric more suited for first-year students to guide their narrative development with respect to a hook or the question, particulars and generals, larger implications or truths, background and experiences, passion, and clarity.

Mark Twain wrote that “really great people make you feel that you, too, can become great.” Those really great people are the faculty and other invited guests in the course. I have invited groups of faculty with interests in a similar theme to come to class. I provide little instruction except “no PowerPoint presentations allowed!!” Students are given notice of the theme and the identity of the faculty panelists and use their inquiry skills to learn about the faculty and develop meaningful questions to guide our discussion. Without a PowerPoint, the faculty member will naturally resort to telling his or her story, about enduring beliefs, how they entered their field of study, and how they are engaged in problem solving or inquiry related to the theme.

Intrinsic factors play in a person’s happiness and offer promise for solving social and environmental problems (Kasser, 2012). Students explore their values in a variety of ways during the course: writing a personal narrative; taking Career Service’s My Plan inventory; survey and discussion of environmental beliefs; and faculty interactions. As the student’s story and dreams emerge, s/he is able to find others on campus with similar values and beliefs and join clubs and organizations. Student ambassadors present first-year students with stories of their struggles and experiences in the first year at Virginia Tech. These stories help students deal with daily adversities, knowing that others struggled at first but eventually worked through it. Developing a sense of belonging influences a student’s academic motivation and achievement (Walton, Cohen, Cwir, & Spencer, 2012).

As each new fall semester begins and a new cohort of first-year students arrives, I will enact and realize my own dream of making a small difference in dreams and stories of first-year students. When I tell my story, I will end with the admonition of James Dean to “dream as if you’ll live forever, live as if you’ll die today.”

References


An Exemplar of Online Instruction in Summer Sessions that Meets the Needs of Students and the College

Quinton J. Nottingham | Associate Professor, Business Information Technology

Over the last two years, I developed two Business Information Technology courses for online delivery. During the summer of 2011, I delivered BIT 2405 - Quantitative Methods I, which is a business statistics course required of all Pamplin College of Business majors and minors. During the summer 2012 session, I delivered BIT 2406 - Quantitative Methods II, which is somewhat of a continuation of BIT 2405 but with more emphasis on management science techniques. BIT 2406 is also a required course for all Pamplin College of Business majors and minors.

As requirements, the courses (BIT 2405 and BIT 2406) have always been over-enrolled. We don’t always have the resources to offer enough sections and thus there were many students (usually non-majors attempting to transfer into the College of Business or minors) unable to fulfill their requirements during the fall and spring semesters. Delivering the courses online during the summer is an ideal alternative for students who were unable to take them in the spring/fall semesters and who prefer an asynchronous learning environment that fulfills the same learning objectives as the traditional face-to-face courses. It has been noted that upon offering the courses during the summer, the demand for fall/spring terms has been reduced and the number of force-add requests has been significantly diminished.

“The courses have always been over-enrolled... Delivering the courses online during the summer is an ideal alternative.”

Both courses were delivered in a very similar manner. Lectures were narrated and recorded via the Camtasia Studio Add-In in PowerPoint. Once recorded, I would make the lectures available to the students through the Modules tool in Scholar so that they could be viewed using any web browser. Each chapter was organized in a module that contained the following: learning objectives, PowerPoint slides, the narrated/recorded chapter lecture, recommended problems, and the chapter quiz. Students were encouraged to “attend” the recorded lectures and take notes just as they would in a face-to-face environment.

I would emphasize to the students that in a normal face-to-face delivery of a topic, it would take 2-3 lectures per chapter. Therefore, the students were encouraged not to underestimate the amount of work required when a recorded lecture was, say, only 50 minutes in length.

Prior to taking the quiz (which is timed and questions are randomly selected from a large pool of questions to maintain the integrity of the assessment) at the end of each chapter, students were encouraged to complete a set of recommended problems assigned from the text that were designed to improve their problem-solving abilities. They also assisted in preparing the students for the two tests and eventual final exam in the course.
The courses are designed to be completed in an asynchronous learning format by any student from any location with a reliable Internet connection. However, this delivery method also has its challenges. One of the largest is fostering instructor-student (and vice versa) interaction and peer interactions. In order to overcome and address these communication issues, I utilized the Announcement and Forums tools in Scholar. Using the Announcements tool, I was able to send reminders for assessment due dates and availability of other class material on a regular basis. Given the fast-paced nature of summer school, it’s quite easy to get behind or forget assessment due dates, and the Announcements tool was an excellent way for me to help the students stay on task. Students were also encouraged to use the Forums tool in Scholar to ask questions. When using Forums, I encouraged the students to help each other as much as possible. The use of the Forums tool was very beneficial to the students — the students helped each other, which seemed to develop and maintain peer interactions. The Forums tool was also beneficial to me because I was able to answer questions that would help the entire class. I did not utilize email as a method of interaction with the students due to the large enrollment in the courses.

In an effort to maintain and foster peer interactions as well as student-instructor interaction, I also utilized two video recording/sharing services call Eyejot and Jing. Eyejot is a comprehensive, free, online video messaging platform that allows users to create and receive video messages of up to 5 minutes in length. Eyejot also has support for iTunes and other mobile devices. Jing (a product of Techsmith that produces Camtasia Studio) is a free product that allows users to take screenshots, record screencasts of up to 5 minutes in length and share with others. Given that BIT 2405 and BIT 2406 are quantitative courses, it’s sometimes difficult to articulate questions via the Forums tool. Therefore, using either Eyejot or Jing allows students to verbally articulate their questions, providing me (or their peers) with a reasonable opportunity to understand and adequately respond to their questions. Upon receiving a message from the students (via Jing or Eyejot), I write the question on a blank PowerPoint slide, narrate/record my response via the Camtasia Studio Add-In, and then post the response in...
Scholar for the entire class to see. Based on my experiences teaching the two courses, the online delivery has been very beneficial to the students, the department, and the college. We have been able to provide courses for students to take from various distances while still meeting the requirements of the College. We have been able to reduce the fall/spring semester demands for the courses and thus, not only reduce the enrollments, but also provide opportunities for non-majors to take the classes. The summer I 2012 enrollment was 45 and 118 for BIT 2405 and BIT 2406, respectively. For BIT 2405, this is significantly smaller than the average enrollment during spring and fall semesters, whereas the enrollment for BIT 2406 was inline with typical spring and fall semester numbers. The below average enrollment in BIT 2405 is expected because most students need to have completed BIT 2406 prior to beginning their junior year in order to gain Upper Division Clearance (criteria that need to be met before students can take 3000- and 4000-level courses).

Lastly, student performance has not been adversely affected by taking the courses online. In evaluating student success in the course, the overall averages for both BIT 2405 and BIT 2406 are approximately the same as the overall averages of the face-to-face versions of the course that I have taught every spring and fall semester over the past 10 years. This suggests that students in the online courses learn and retain the same material as the students in the face-to-face courses. In summary, the online delivery of these courses has been a success for all parties involved.

“Students in the online courses learn and retain the same material as the students in the face-to-face courses.”
In 2011, the Vice President and Dean for Undergraduate Education established the Virginia Tech Office of Undergraduate Research in order to enhance and grow the undergraduate research experience at Virginia Tech, with particular emphasis on interdisciplinary research. Under this umbrella, a robust cohort of undergraduate students engaged in cutting edge research is coalescing, thanks to support from the Fralin Life Science Institute, a recently implemented Howard Hughes Medical Institute (HHMI) undergraduate program, and established NSF supported undergraduate research efforts. Here, we briefly explain why we believe that undergraduate research is an essential aspect of the undergraduate experience, how it expands the possibilities of traditional instruction, and what we are doing in this domain.

Students who engage in undergraduate research out-perform students in traditional, lecture-style classes in their academic, professional, and personal development. While learning disciplinary content, undergraduate researchers also build a tool-kit for lifelong learning that includes written and oral presentation skills, creative problem solving and critical thinking, teamwork, resource identification, time management, and a network of mentors.

“The Door in the Dream: Unveiling the Possibilities through Undergraduate Research

Dennis Dean | Director, Fralin Life Science Institute
Tomalei Vess | Director, Undergraduate Research

“SURF provides students an opportunity to engage in full time summer research that mirrors graduate training.”
In today’s fiercely competitive market, many students acknowledge research as the experience that will set them apart, broadly strengthening their skills and allowing them to develop expertise and a clear vision of the best fit for careers and overall environment.

The Fralin Summer Undergraduate Research Fellowship (SURF) program, in collaboration with the Virginia Tech Office of Undergraduate Research (OUR), provides students an opportunity to engage in full time summer research that mirrors graduate training. Like many other summer undergraduate research programs, select students receive a $4,000 stipend, supported by donors and grant funds, to conduct research and participate in weekly research and professional development seminars, periodic social events, and a final symposium during which students will present their research.

The Fralin-Office of Undergraduate Research partnership has facilitated the growth of the SURF program while fostering new collaborations and reducing the duplication of efforts across campus. Historically, the SURF Program was able to support 14 students. With the support from the newly created VT Office of Undergraduate Research, SURF 2012 boasts 42 participants with additional support from individual faculty mentor’s grants, the HHMI Scineering grant, and other units across campus. The SURF program has welcomed other groups from across campus to participate in programmatic activities such as orientation, weekly seminars and trainings, workshops, and the final symposium.

Each Wednesday morning, throughout the summer, 85 students from the SURF, Scineering, HNFE programs, and others gather for breakfast as a community of researchers. Eight leadership teams offer a more intimate connection for students and help us manage the program. More than 120 students from six programs, including three NSF REU sites, will join us for the final research symposium on August 3, 2012. The Office of Undergraduate Research provides all of the administrative support for the program from application and student counseling to assessment and long-term student tracking.

Why does this matter? Each student and mentor has his or her own approach to learning, teaching, and problem solving and are bringing a specific background and rate of development. Each discipline has its own norms, and interdisciplinary research adds another dimension of complexity. Partnerships with service-focused units like the Office of Undergraduate Research—which has expertise in a broad array of models, approaches, and resources - help stretch our resources, increase our visibility, and reach a broader audience while elevating the quality of the educational experience for our students. Partnerships like this also reduce the “activation energy” for faculty by reducing administrative burden and providing services to those who are interested in engaging undergraduates in research.

Want to collaborate? Write a grant? Join an aspect of the program? Talk about the possibilities and resources? Come on in! The more the merrier! Contact Tomalei Vess at tvess@vt.edu to set up a time to talk about how.