INTRODUCTION

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 four 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 E. Doolittle
Director, VT CIDER

This second edition of Pedagogy in Practice highlights effective instructional practices occurring across the Virginia Tech campus. These practices reflect the professors’ and instructors’ commitment to educating the whole person, promoting disciplinary competence, and developing responsible citizens. It is through this commitment that Virginia Tech provides a superior graduate and undergraduate education to its diverse student body.

In these articles you will see examples of the approaches Virginia Tech faculty are using to provide their students with pedagogically sound, technologically current, and interactive learning experiences that challenge and support students in their acquisition/development of knowledge. From transforming astronomy education, through fostering reflective practice in student learning, to unique approaches to educating first year students, our faculty members are engaged in both liberal and transformative education.

I am proud of our faculty and their commitment to providing our students with the best educational experience possible. The articles provided in this publication make clear how attention to instructional excellence results in meaningful learning for students. For support in your own efforts to strengthen your pedagogical practices, I encourage you to contact the Center for Instructional Development and Educational Research (CIDER – cider@vt.edu). Dr. Peter Doolittle, Director, and his staff are eager to provide support and collaboration to faculty and departments as they strive to present our students with the best possible learning opportunities.

Regards,

Daniel Asua Wubah
VP & Dean for UG Education
STAFF

Peter E. Doolittle
Director
pdoo@vt.edu
540-231-3954

C. Edward Watson
Associate Director
Editor, Pedagogy in Practice
edwatson@vt.edu
540-231-7930

C. Noel Byrd
Assistant Director
cnbyrd@vt.edu
540-231-5212

Cortney Martin
Coordinator
martinc@vt.edu
540-230-9366

Lauren Bryant
Faculty Development Fellow
labryant@vt.edu
540-231-6823

Jessica Chittum
Faculty Development Fellow
Assistant Editor, Pedagogy in Practice
chittumj@vt.edu
540-231-6823

Abbie Werner
Faculty Development Fellow
abhiwerner@vt.edu
540-231-6823

Bonnie Alberts
Administrative Assistant
halberts@vt.edu
540-231-6823

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.

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Virginia Tech, University Relations
When I heard about Virginia Tech’s Pathways to Success – First Year Experiences initiative, I thought, “Oh no! The university is imposing something on the first year curriculum that will undermine the pedagogical grounding of the School of Architecture & Design’s undergraduate program, specifically the Foundation Design Lab.” The educational structure of the design lab, established nearly 50 years ago and evolving all these years, is part of the Bachelor of Architecture program. This program is consistently ranked in the top five out of over 125 programs in North America. Contrary to my initial reaction, I found that the three learning objectives of the First Year Experiences (FYE) initiative – problem solving, inquiry, and integration – coincide with the core learning objectives of the Foundation Design Lab.

The design lab is the primary learning environment for students studying one of the four disciplines that comprise the school – architecture, landscape architecture, interior design, and industrial design. Design lab is a particular situation that enables students to examine and explore issues and circumstances through what I call structured play. For four hours, three times a week, students explore challenges through a process of developing and constructing iterative plausible outcomes. Students come to understand the parameters of a problem through examining default and conventional responses to stated parameters. They learn to ‘problem solve’ by questioning limits and boundaries of a problem, which leads them to establish the actual challenge. Donald Schön calls it problem setting, a process involving inquiry through observation, exploration, research, and analysis that enables synthesis and integration.

Students are challenged to see the everyday in a new way and to discover the unknown. Through a process of making 2D and 3D constructs, students learn the visual-conceptual vocabulary of design. This mode of learning differs radically from the verbal-abstract process typical of their academic experience prior to college. Each student develops their own design

**ARE YOU RIDING THE DONKEY...**

**or is the DONKEY RIDING YOU:**

*First Year Experiences within the School of Architecture and Design*

By: Kathryn Clarke Albright, AIA Associate Professor and Foundation Program Chair, School of Architecture & Design.
process through generating iterative responses to requisites set by the faculty. Students also learn the value of lateral peer-to-peer learning as they work in teams of two, groups of four, and as an entire lab of 24 towards design proposals. Through critical discussion and reflective assessment, students develop criteria driven, innovative designs.

Although the three FYE objectives easily coincide with existing teaching and learning practices of our Foundation Program’s Design Lab, three other parts of the FYE initiative – ePlanner, Common Book, and ePortfolio – prompted me to develop a new course, Design Thinking: Defying Preconceptions. The overarching purpose of Design Thinking is to introduce incoming freshmen to fundamental educational principles of the school, the university, and southwest Virginia five weeks prior to the start of fall semester in order to familiarize them with their architecture and design education, particularly Foundation Design Lab.

The multi-faceted investigation contained in Design Thinking advances students’ learning at the outset of their collegiate education. Surveys of participants over the past two years have identified the following benefits:

- Reduces anxiety due to transition from home to college for parents and students.
- Allows students to acclimate under calmer circumstance than the fall semester.
- Fosters positive introduction to university, faculty, and peers.
- Assists understanding of courses offered and guides students to prepare their own plan of study.
- Allows students to acculturate with other architecture and design students.
- Creates camaraderie among students through teamwork and collaboration.
- Promotes mutual enrichment between students and faculty.
- Fosters students’ confidence in their studies.

- Advances pedagogical innovation and experimentation that informs established curriculum.

Design Thinking meets two hours everyday for five weeks. Students engage the learning environment of the design lab – collaborative thinking and working through exercises and assignments archetypal of design lab. Students also engage in workshops to: (1) research courses and make a plan of study using ePlanner; (2) document their work through digital photography and scanning to make a record using ePortfolio, and (3) understand human-centered design through methodologies of LUMA Institute. Discussions of the Common Book in relation to the understanding of design occur during the five weeks.

I have found that these initiatives are not wholly contrary to the existing teaching and learning practices of our school, and have therefore begun to integrate them into the content of the Foundation Design Lab. However, the visual options available within the ePlanner and ePortfolio conflict with teaching what comprises good design. As a result, care is taken regarding how they are introduced and discussed in relation to design discussions. The broader integration of the Common Book depends upon the book selection and requires commitment on behalf of the faculty.

Architects and designers rely on 2D graphic portfolios to re-present their work. These manifest in various forms but are always compositions of images and text on a page or pair of pages that are part of a set of pages. Groupings are significant. Sequence matters. Collaboration with staff in Learning Technologies has resulted in substantive and meaningful changes such that our students can join in the ePortfolio Initiative. For our curricular needs, ePortfolio is mostly a place of electronic interface and storage, an interactive warehouse where students place their thoughts and images of their work. ePortfolio also allows eternal linking to websites, and we use that feature to provide students with the flexibility to provide professional quality examples of architecture and design portfolios. Nonetheless, I support ePortfolio as a way to engage students to reflect upon their on-going work as well as an end product that has contemporary currency in higher education. I have not initiated changes to the graphic design elements of ePlanner, as its use is internal to the university.

The Common Book has proved less problematic to merge into our curriculum. Design lab learning objectives closely mirror the university’s aim to broaden the students’ personal perspectives through participation in community discourse. Barbara Kingslover, Steven Hopp, and Camille Kingslover’s (2007) Animal, Vegetable, Miracle: A Year of Food Life, and Jay Allison, Dan Gediman, John Gregory, and Viki Merrick’s (2008) This I Believe II: More Personal Philosophies of Remarkable Men and Women, provide ample ways to make meaningful and constructive connections to architecture and design education, specifically how design thinking can inform how students conceptualize their design beliefs, processes, and ways of living.

The capacity for tenets of the School of Architecture & Design’s Foundation Design Lab to align with the learning objectives of Pathways to Success - First Year Experience speaks volumes to the integrity of a decades-old, well-conceived, constructed and enduring pedagogy. Furthermore, Design Thinking fosters peer-to-peer learning that has been a primary underpinning of the Foundation Design Lab for decades. I view Pathways to Success’ objectives as a lens with which to focus the freshmen’s first year experience towards holistic learning.

References
Embedding Reflective Practice in Student Learning

By: Kelly A. Parkes, Assistant Professor, School of Education
In higher education, one of the requirements for outside accreditation for professional education programs is evidence-based program evaluation. This is most often met by asking students to create an ePortfolio of their work, a product that is an exemplar of their growth and learning over time. Students are asked to collect work they complete across their courses as well as work categories as well.

This product-based form of assessment, the ePortfolio, can then demonstrate students’ individual journeys, from “novice” to “expert”, or in some cases, from “competent” to “almost expert”. In the best-case scenario for a professional program, such as teacher-education, their move from “student” to “teaching professional” should be clear.

Reflective practice is required by outside accrediting agencies, but it can be problematic to embed across courses, especially when prose and personal writing has not been a large part of a student’s education within the program. I have found that an effective first step is to give students examples of reflective writing from a different content area, such as through *This I Believe II: More Personal Philosophies of Remarkable Men and Women* (the First Year Experiences Common Book text). My students are graduate level students, and they appreciate engaging or re-engaging with the book and looking objectively at the text for instances of reflective writing. I then ask them to write reflectively about their practical experiences in K-12 schools. I deliberately set up a class site in Scholar, and use the Blog tool in a way that enables my students to write to me privately. I begin this writing assignment by asking specific questions and requesting responses which utilize a required style and length. I then provide weekly feedback individually to each student in order to build a coach-like narrative between the students and myself. Since I have only a small cohort of students, and I have them for an entire year, I have been fortunate to be able to make the time necessary for this detailed work. It has always paid off. Benefits to the students have been numerous. They often remark that they enjoy
being able to ‘vent’ in academically professional ways and to know that I will respond. Their writing always improves and the process strengthens the rapport and connection I have with my students. I also garner a great deal of information about what they think they are learning, which informs my teaching of them as well.

While the fall semester functions to foster student reflective writing, we then move onto a wider platform in the spring semester where students can articulate their reflections about their growth as teachers each week, using a variety of modalities. We shift from using Scholar to housing their blogs on a site called WordPress (www.wordpress.org) but deliberately close the settings so that the blogs are not public. These blogs are then only visible to me after I have signed into a password-protected site. This allows students to continue our dialogue in a confidential environment, and it also continues to develop the quality of their writing. In addition to the more traditional blog, I also ask my students to vlog (video log). Vlogging involves student development of videos of themselves talking reflectively about their week. Vlogging yields additional communication data, through facial and body gestures. Students post vlogs to their blog page every other week.

Another reflective tool I utilize is the video collage. The video collage is a type of meta-reflection where students gather clips of themselves in practice (teaching in K-12 schools). They make one collage product using the clips from an entire month to visually illustrate their pedagogies and the products of how they are transferring teaching theory to their actual teaching practice. This encourages a deeper level of reflection, as students must make meaning across the clips and across a whole month, rather than just one week. Students produce three collages in the spring semester, one each month. I learned this technique from a colleague here in the Department of Teaching and Learning. For a full description of our work together, please see Parkes & Kajder (2011).

When it is time for my students to select, reflect, and connect artifacts for their ePortfolios, I see that they are articulate and very comfortable in showing how they have made the shift from graduate student to teacher. After utilizing many methods for reflecting on their growth as practitioners, they illustrate gains in their learning, in their thinking, and in their actions by sharing their many instances of reflection. My students’ ePortfolios (see http://www.soe.vt.edu/musiced/portfolios.html) have improved over the past 4 years, and the quality of reflective practice has been steadily improving as a result of my continued focus on thoughtfully embedding it in as many places as possible in my courses.

Reference
I am one of those teachers who had been put in front of a class before anyone ever told me what to do in front of that class. As the designated leader of three discussion-sections that each met twice a week, whereas the large lecture only met once, I was advised by the major professor that it would be a good idea to show up to lecture. That was it. How I survived my first year as a teaching assistant is beyond me. As a means of survival through this experience, I developed my pedagogy from the ground up.

During my second week of “leading discussion,” one of the students (whom I eventually grew quite fond of) challenged me to stop asking questions and try answering some for myself! On another occasion, a group of particularly chatty students from one of my sections attempted to bring a boombox into the main lecture hall and play it. Minutes before the lecture started I spotted them huddled in a back corner as the rising volume of some song – I think it was Jodeci – began radiating throughout the auditorium. When I approached the group, explaining that this was neither appropriate nor allowed, a few of them gave me confused looks and acted as if something I had said or done in discussion-section (perhaps playing music on a boombox) had led them to believe that it was. Inevitably, I have learned to have more control of my classes but I have never lost an appreciation for the virtues of how I began.

Since childhood I have had a periodic stutter – a recognized speech impediment characterized by “stoppages and disruptions in fluency which interrupt the smooth flow and timing of speech” (Enderby, 1996). Although my stuttering hasn’t always been a major factor in my teaching, during the moments and semesters when it has, I have found myself drawing on my ground up pedagogy as a means of negotiating my difficulties with speaking and effectively performing my role as lecturer and discussion leader. Stuttering, which has been estimated to affect roughly one in every hundred people, has been referred to as “society’s hidden disability.” Although stuttering behaviors manifest along continuums of manner, frequency, and severity, they often remain cloaked behind self-conscious tendencies on the part of people who stutter to avoid talking. So how and why have some of us who sometimes struggle with stuttering arrived at a career choice that upholds speaking eloquence and fluency as its indisputable ideal?

I’ve only recently begun noting where and when stuttering is most visible in our society. Aside from the occasional news story that makes it onto the national wire – such as last year’s controversy surrounding a New Jersey college student whose professor told him to stop speaking and the Oscar-winning success of The King’s Speech, serious discussions of stuttering are virtually nonexistent, save for speech therapy circles. Stuttering is sometimes mentioned in literature, typically as an index to a character’s dishonesty or lack of certainty. The last thing a teacher is supposed to be is dishonest or unsure of his or herself (perhaps).

By spotlighting the successes of teachers who stutter, we can challenge the flawed notion that good teaching is defined foremost through speaking.
eloquence. Furthermore, through these discussions, we can begin to re-envision the dynamics of power that shape the successful classroom landscape in a manner that prioritizes de-centered instruction, open-ended outcomes, shared vulnerabilities, and mutual trust. My ground up pedagogy is organized around a full disclosure of my stuttering. As an effort to foster a truly collaborative learning environment, in many of my classes I aspire to re-close the distance between my students and me, foregrounding my own imperfections as a means of empowering them to do the same. In my time doing this, I have found that most students reciprocate these gestures and are thus willing to take on greater levels of responsibility and ownership to ensure that my class, which is equally their class, is a success.

Reflecting on teaching with a stutter helps to expand pedagogical philosophies and broaden existing notions of effective classroom leadership. It transforms qualities and characteristics that may be perceived as weakness into practical and conceptual strengths. In over a dozen years of teaching my own classes, and three years of leading discussion-sections before that, I have taught well over 2,000 students. Yet, I can count on one hand the number of students that I recognized as having stutters. Stuttering is as much about the negative feelings and thoughts associated with speaking as it is about actual speaking fluency. I believe it is important for students, particularly those who stutter, but also those who don’t, to see successful stutters. After learning about my plans to initiate a series of discussions around teaching and stuttering, one of my dearest friends, who is not an academic, sent me an email saying, “I can’t help but think how different I would have been if I didn’t stutter. Everything I ever did was directly affected by my stuttering.” By promoting ourselves as successful teachers who stutter, my colleagues and I are encouraging our students to not let perceived disabilities stand in the way of pursuing their goals, passions, and dreams. We are also challenging and re-defining the pedagogical ideals of good teaching in ways that can benefit all teachers and students.

Reference
My classroom is noisy. The students pay far more attention to one another than they do to me. They surf the web for help with the assignments that I give them. If they cannot figure out a problem, they ask their neighbors for help. If that does not work, they get up and walk around the room until they can find someone who can help them. Is this chaos? Is this anarchy? Or, is this instead a community of highly motivated learners?

Welcome to my SCALE-UP (Student-Centered Active Learning Environment for Undergraduate Programs) class. When students first walk into the SCALE-UP class, they realize that the experience will not be “learning as usual.” The room looks more like a café than a classroom. Students sit at one of six tables that seat nine per table and are organized into working teams of three. Each team has a networked computer. Three projection screens are located around the room so that students seated anywhere can view the screens without moving or interrupting their team collaborations. The teaching station is wired so that the instructor can project the desktop from any of the teams’ computers to share with the rest of the class.

SCALE-UP is a framework for inquiry- and team-based learning that originated for undergraduate physics programs at North Carolina State University. The SCALE-UP concept has since been adopted at over 50 universities for undergraduate courses in physics, mathematics, life sciences, and the humanities. Studies have shown improved learning gains and student attitudes in SCALE-UP versus traditional instruction classrooms (Beichner et al., 2007). Collaborative assignments and engaging students in “science as science is done” have been demonstrated to be some of the best practices for achieving student engagement and retention (Kuh, 2008). The SCALE-UP model provides a venue for groups of students to participate in these practices even in a large class.

Typically, formal lectures are kept to a minimum in SCALE-UP. In my Cell and Molecular Biology class, I provide an introduction to the weekly topic in an interactive 20-30 minute lecture. The students are expected to have read the introductory material, so I move quickly. If these students are not prepared, they will then have to answer to their teammates, not to me. The students spend the rest of the remaining class time working on weekly team assignments. These projects rely heavily on problem solving, quantitative, and information literacy skills as well as teamwork and communication. During the remaining class time, a team of undergraduate teaching assistants and I circulate the room offering guidance and suggestions as needed.

The weekly assignments are lengthy and challenging, typically
including graduate-level problems. Student teams must negotiate time and place to meet outside of class (in person or through collaborative electronic venues) to complete and proofread their assignments. The weekly projects are graded for completeness, accuracy, legal and ethical use of information, insight, and the extent to which teammates made equal contributions. Learning outcomes and a grading rubric are provided with each assignment, so students have a good sense of what is expected of them. In lieu of a final exam, teams present a capstone synthetic biology project in which these teams of students design a genetically engineered cell to perform a function of their choosing. Projects have ranged from engineered bacterial blooms that will clean up the Gulf oil spill to cells that remove atherosclerotic plaques.

As an educator, I have always challenged my students to reach beyond the minimal standards of learning even in introductory courses. I know that these students are capable of so much more than memorization and “cookbook” exercises. I also know that students become highly motivated when they are recognized as intellectuals, as colleagues, as scientists. Even so, the students in SCALE-UP astound me every week with the creativity, insight and professionalism that they bring to their work. Preparing an effective SCALE-UP experience requires considerably more behind-the-scenes effort than preparing a traditional lecture-style course, but the class time spent among the students is more than sufficient reward. Whitney Martin, a junior majoring in Biological Sciences, says it best: “In the SCALE-UP classroom, everyone is a teacher and everyone’s a student. We learn, and then we share. That has to be my favorite part.”

References


“...the class makes you more involved and engaged. A lot of times you have to step up and speak your mind (Cindy Min).”
As a faculty member in the Department of Computer Science, I have consciously pursued pedagogical approaches that aligned with my constructivist beliefs regarding learning. While my disciplinary knowledge has helped as I selected technologies for this purpose, broader constructivist teaching practices provide the basis for these choices. What follows is a narrative of these selections coupled with discussions regarding why these decisions were important to the learning goals in the courses I teach.

Foundationally, I have found course management systems (e.g., WebCT, Blackboard, and Scholar/Sakai) to be a useful way to allow students to have more control over their learning process. In fact, using course management systems reminds me a lot of Fred Keller’s (1968) Personalized System of Instruction. Key underlying principles are personalization and modularization. Breaking courses down into small modules, sometimes corresponding to what is covered in a week or what is discussed in a textbook chapter, helps with learning management.

For each module, providing feedback and allowing repeated attempts at alternative tests helps to ensure that students can master each part of the class content.

With courseware management systems administering the many small tests, students can proceed at their own pace (as long as they meet semester-imposed limits) and receive personalized attention. Further, with the aid of digital libraries providing access to educational resources, such as the Ensemble system for computing (see http://www.computingportal.org) that is part of the National Science Digital Library (or National Science Distributed Learning System, http://www.nsdl.org), there are tailored algorithm visualizations and other materials that can be found and integrated into particular modules.

With this approach, lectures are rarely needed, and more than half of the time that students spend on a class can be focused on other activities. Building on constructivist learning theory, instructors can guide students to construct artifacts to ensure memorable learning. One such type of artifact that helps students focus on key concepts and relationships is a concept map. For years, our Digital Library Research Laboratory has run a server implementing the Institute for Human and Machine Cognition’s (IHMC) Cmap Tools software. This has enabled our students to develop and post concept maps (cmaps) created on lab or personal machines running the cmap client software. Typically, students build a cmap for each class unit and/or each textbook chapter. Thus, by the end of a semester, students have developed an additional skill that helps them take notes when studying, reviewing content, and communicating designs or other ideas.

Term projects also allow students to create learning artifacts. These artifacts often are of sufficient scale that a team of students is involved. At the start of the semester, after soliciting project request descriptions from campus, local, or collaborating organizations, students are briefed on a long list of project ideas. Sometimes they propose additional ideas, which, if they successfully pass through a screening, are added to the list. Groups of two to five students coalesce around the projects that they find interesting. On occasion, the instructor may adjust the groups to enhance diversity and balance (e.g., gender, nationality, learning preference, etc.). Since the projects relate to real needs of real clients, students learn to communicate with stakeholders, navigate among the set of people requesting the project, identify requirements, demonstrate prototypes, explain designs, cooperate on testing, and ensure that project deliverables (including documentation at executive, user, and maintainer levels) are suitable. Often these projects are highly motivational, and there is a long list of campus departments, local agencies, and other parties who have expressed heartfelt appreciation for assistance rendered. In several cases, projects have led to publications or funded proposals – other proofs of the value of the effort. Additionally, students...
have also listed these projects as items on their resumes.

I attended a Center for Excellence in Undergraduate Teaching (CEUT) workshop in January 2008 on Team-based Learning (TBL), led by Larry Michaels. This workshop highlighted the merits of TBL and provided empirical data regarding its effectiveness (Michaelsen, Knight, & Fink, 2004). Following his model quite closely, I employed a fairly pure implementation of his approach in my spring 2008 offering of CS5604 (“Information Storage and Retrieval”). I found it to be quite effective, and as a result, I have used variations of this model in every course I have taught since then. As examples of my own TBL strategies, in the fall of 2009 I coupled TBL with my usage of cmaps. Every student prepared and uploaded a personal cmap for each textbook chapter. Next, each team discussed those cmaps as they prepared a team cmap. Then, a designated student in the class considered the several team cmaps when preparing a class cmap. This was finally discussed in class and made available to help students review for tests. Thus, students learned additional skills including debating different perspectives, as well as organizing and communicating the key ideas of a chapter.

Another type of constructivist artifact resulted from an implementation of TBL in the fall of 2008. Educational modules were incorporated into CS6604 (“Digital Libraries”) and are still being used in that course today. The modules are part of a larger collaboration with the University of North Carolina at Chapel Hill who have served as co-investigators on a National Science Foundation project (funding: IIS-0535057 and IIS-0535060) with Virginia Tech since 2006. The purpose of this project was to develop curricular materials to help with learning about digital libraries (Pomerantz, Oh, Yang, Fox, & Wildemuth, 2006). In particular, we identified over 40 learning modules that would together cover the core topics in the digital library field as might be taught in either a Computer Science or a Library & Information Science graduate program.

Though we proposed to develop approximately 12, we have completed about 35, with the extra number largely thanks to the efforts of teams in these Virginia Tech classes. In the fall 2008 term of the CS6604 course, each of four class teams, in addition to undertaking larger term projects, developed a module and presented it during a class session. As a result, they learned skills similar to those teachers use in preparing lesson plans and experienced how that is manifested during class activities. In CS5604 in the fall of 2009, one team of five students, for their entire semester-long project, had each student developing a new module with cross-validation by other team members. This project then culminated with class presentations. In the fall of 2010, CS5604 teams of students developed 10 new modules, supplemented with images in the IBM cloud to facilitate learning about relevant software packages and toolkits. In the spring of 2011, one team in CS4624 (“Multimedia, Hypertext, and Information Access”) developed four more modules, also accompanied by Linux system images in the IBM cloud. In the fall of 2011, the 14 students in CS6604 updated one of the previously developed modules, so ensuring that content remains current. All of the modules prepared are available from the project web site and through Wikiversity (Pomerantz et al., 2006). An evaluative study has also shown benefits to users (Wildemuth, Pomerantz, Oh, Yang, & Fox, 2008).

The pedagogical interventions in CS5604 and CS6604 are discussed further in Murthy et al. (2010). Many of the interventions discussed above have also been implemented in CS4624, a capstone course in the computer science track on knowledge, information, and data. Thus, the pedagogical practices discussed have been incorporated in classes for seniors, masters, and doctoral students. Since benefits have been documented based on student comments, project deliverables, papers published, proposals funded, and evaluative studies, we believe that constructivist instructional interventions similar to those described above would prove of value in other course settings as well.

References


With support from the Dean of Undergraduate Education, Dr. Daniel Wubah, we launched the first Virginia Tech signature experience class last year in the form of an enlarged and expanded Introduction to Astronomy course, PHYS 1055-6. Our concept was to reach a large number of non-science major students and foster an appreciation and understanding of science through a topic that holds much interest in the general population: astronomy. In order to supply a high quality educational experience for our students, we have employed the following three main ingredients: (1) learning assistants, (2) educational technology, and (3) modern media.

**Learning Assistants (LAs)**

The main task of the LAs is to give non-mandatory weekly “class enhancement sessions” for roughly 20 students at a time. This opportunity provides students with a personalized experience within a large class structure. It also provides much-needed educational support to the less-prepared students in this heterogeneous class (it contains a broad cross-section of students ranging from senior Physics majors to freshmen Theater majors). Our LAs are selected from the pool of top students who were enrolled in the previous year’s course. As a result, they can relate well to the students who are currently taking the class. In addition, LAs grade essay questions for both homework and exams. This feedback mechanism is an important educational asset in conjunction with all the technology at our disposal.

A higher level of understanding is strongly correlated with the ability of the students to form their thoughts in writing and receive feedback on this effort.

**Educational Technology**

We use the clicker technology extensively. There is a two-question quiz at the beginning of each lecture that serves to incentivize the completion of assigned readings prior to class. This quiz also brings the vast majority of students to class on time. Timely and complete attendance is also enhanced by a clicker question at the end of the lecture, which prevents the disruptiveness of an early exodus from class. More importantly, we give one to three clicker questions in the middle of the lecture, typically after teaching an important concept. The immediate feedback allows us to re-explain a concept if a significant percentage of the students did not answer the question correctly. Finally, for most of the mid-lecture questions, we give our students approximately one minute to discuss the question with their neighbor prior to answering. This opportunity for social learning in a large class setting enables students to benefit from teamwork and having
to verbalize their thoughts. Another major educational technology tool we use is a website created by the publisher of the course textbook. As a result, roughly two thirds of the homework is computerized through this website (the other third are the aforementioned essay questions), and a high degree of assessment and evaluation is possible as a result of the data gathered and available through this site.

**Modern Media**

To capitalize on the innate excitement generated by astronomy, we make use of modern media in several ways. For small amounts of extra-credit, students are encouraged to submit a PowerPoint slide that contains the essence of a current astronomy story in the news media. This enables students to participate in the shaping of part of the lectures and connects them to current subject matter beyond the content of the textbook. We also extensively use high-quality educational movies (many of them from NASA) to add another dimension to discussed concepts. Computer simulations and high quality images and graphics complete our media usage.

**Major Accomplishments:**

Through the strategies described above, we were able to increase the size of the class from 200 to over 600 students. This not only demonstrates the great thirst for astronomy education found in our student body, it also suggests that students prefer the active learning strategies offered by the LAs’ and the clickers as well as the engagement opportunities offered by incorporating media. The demand for this class was so high this past fall (2011) that all 650 seats in the course were taken by July 25. It’s likely that we still haven’t addressed the full demand of this course. Additionally, we hire 10-11 undergraduate LAs each semester. The LAs’ recitations likely contributed to the positive trend we have seen regarding class grades (see Figure 1). At the same time, these LAs gained valuable teaching experience, and more than half of them are now interested in becoming K-12 science teachers. Another accomplishment we achieved has been that, through the use of the publisher test-bank questions and associated evaluation tools, we were able to quantify the achievement of students in this course by comparing them to students in over 100 similar courses at other institutions that use the same textbook.

**Exam Grades Comparison**

The course has three in-class exams during the semester plus a final exam. All of the exams in the past three courses have had a similar format and level of difficulty with most questions taken from the publisher’s test question bank. Therefore, it is reasonable to compare the exam grades for these courses. Below we show the comparison of all 12 exams given in these three courses (see Table 1). While the number of students almost tripled, the grades for each exam have improved for the signature experience class as compared to the previous two offerings of this course by the same professor. Averaging all four exams in each course, we see that in fall 2010 the exam average was four points higher than in the two previous courses. We attribute this significant difference mainly to the recitation sessions given by our LAs (see Figure 1).

Future directions include promoting components of this model for integration into other large classes at Virginia Tech. Additionally, the potential exists to utilize the teaching enthusiasm that results from the astronomy LA model to develop a curricular and advising path for those students that would ultimately address national K-12 science teacher issues. The size and structure of this course also makes it well positioned for greater research and evaluation regarding the LA model and the efficacy of the clicker technology.

**Acknowledgements**

First and foremost, I would like to thank our wonderful graduate student teaching assistant Brandon Bear. Brandon’s conscientious hard work allowed much of the class organization and management to flow smoothly. He has helped to achieve the high quality educational product that this class delivers. Our enthusiastic LAs made a huge difference in the educational experience of our students. I want to also thank Drs. Peter Doolittle and Eddie Watson from the Center for Instructional Development and Educational Research (CIDER) for their continuing support of this initiative, including giving training sessions to the new LAs. I also want to thank the chair of the physics department, Dr. Beate Schmitmann, for helping to launch this project, and of course, the Dean of Undergraduate Education, Dr. Daniel Wubah, who supported this project and financed the hiring of the LAs for this class.
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Assessment of Advising & Mentoring
GRADUATE STUDENTS

By: Penny L. Burge, Professor, Educational Leadership and Policy Studies

The improvement of teaching and learning is a central goal of faculty at Virginia Tech. Most often, this improvement is focused on what happens in our classrooms and how our curricula enhance student knowledge gains. For graduate programs, particularly, the advising relationship, as recognized by recent literature on the subject, is critical to graduate student success. This relationship is not typically included in assessment processes and is often ignored in discussions of program improvement. Most would agree that while this relationship is hard to assess, it is one faculty activity that requires much consideration, skill, and time.

The advising relationship is complex to assess in part because it varies considerably across each major faculty/student dyad. A colleague recently said, “I have seen this relationship be anywhere from heaven to hell.” A title of a publication on graduate advising included the words “mentor or tormentor” in the title. These sentiments are likely thought by many and speak to the importance of giving this part of graduate pedagogy attention and analysis. That being said, it is also important to recognize that it is difficult to define or operationalize quality in advising. Besides the uniqueness in each adviser and advisee relationship, the many dimensions involved in the advising process, such as communication, career development, subject matter enhancement, and professional assimilation, make assessment challenging.

The typical arrangement for mentoring in a graduate program is to connect the graduate student with the faculty advisor who chairs the student’s committee. This pairing allows for many ways to achieve personalization in graduate pedagogy. This personalization results from advising that is broad in scope and can be one of the most enjoyable parts of an academic life. The concept of personalizing results from mutual approachability, trust, caring, accessibility, positive style, humor, flexibility, and empathy. Personalization is effectively demonstrated when an advisor identifies when each student needs and wants attention, as well as identifies which characteristics of advising will be most effective for the relationship.

These complexities have been taken into account by the faculty in the Educational Research and Evaluation Program (EDRE) in the School
of Education. As we have been engaged in designing program goals, objectives, and assessment measures to accomplish the best results, we have also built advising into faculty and student activities as a critical part of our educational planning. EDRE has moved forward with assessment of student learning by providing systematically derived feedback and communication among advisors, advisory committees, and advisees to enhance our ability to critique and improve student learning and advising. Quality in this assessment has a long-range goal of improving students’ opportunities for quality learning experiences and advising effectiveness.

The EDRE faculty have worked together to build a plan for continuous assessment and improvement of advising as a part of the instructional efforts. This plan has not only affected advising, but it has also affected curriculum design across the program, evaluation forms used, recruitment efforts, and entrance criteria. This process of change has begun with a rewrite of our mission statement, which now is, “The Educational Research and Evaluation Program strives to advance and improve scholarly inquiry to serve educational enterprises and the public good.”

From this mission, advising of graduate students still means translating the graduate school culture and meeting individual student needs, often within a reasonable time frame. However, advising now also includes helping students to document that they are able to demonstrate the outcomes that faculty have derived from the mission statement. These are the five outcomes that faculty expect graduates of our program to achieve:

1. Students will demonstrate an in-depth understanding of ethical principles and practices associated with designing, conducting, reporting, and evaluating scholarly research.
2. Students will demonstrate thorough understanding of major research methodologies (quantitative, qualitative, and mixed methods) currently used in behavioral and social science research.
3. Students will effectively design, conduct and report scholarly research.
4. Students will critically evaluate scholarly literature and effectively synthesize information from this literature.
5. Students will design and conduct program evaluation.

These specific outcomes provide well-defined areas for faculty mentorship and advisement of students. Advising using these outcomes has remained personalized and also taken on a sharper focus designed to be a more explicit part of the teaching and learning process. Using these outcomes, program faculty have developed ways to measure student progress and achievement and discover areas in need of improvement. We have rubrics for rating all four of the major exams that are completed by each student: qualifying, preliminary, prospectus, and final defense. We also use an Advisee Annual Progress Report form and the IRB required human subject protection certificate as measures of success. All students complete a research project and develop an oral and written report before moving to the preliminary exam. This apprenticeship work is a cooperative effort with the advisor, judged by the entire committee, and documented with a rubric. It is important to note that the advisor and student, as they work toward meeting the program objectives, have the benefit of working with other members of the student’s committee on the phases of the program. These individuals play an assisting role in all aspects of advising and mentoring to benefit both the student and advisor.

Advising is becoming more explicit for everyone in the EDRE program. The statement of outcomes informs all aspects of the program including mentoring and serves as a communication tool, so that students know what is expected. Our faculty will continue to think about how to best go about advising and measuring success while being privileged to work with future colleagues.
The World is Their Oyster:

Restructuring World Regional Geography to Maximize Student Learning Opportunities

By: John Boyer, Senior Instructor, Department of Geography

World Regional Geography, a survey of the modern world via a spatial lens, is a staple course offered in geography programs around the country. At Virginia Tech, this class serves as a foundational course for the Geography major. However, with increasing enrollments of students from a diverse range of majors, academic levels, and personal backgrounds, it has also become one of the most popular course options for fulfilling core curriculum requirements for undergraduates at Virginia Tech.

In the last decade, the class size has grown from 50 students to over 2,750 students. This rate of growth has resulted in the course having one of the largest enrollments at the university. This large class size then presents a number of physical and pedagogical challenges to those who engage in and manage this ultra-large class experiment.

A major shift that the World Regions course has undergone is to make the class more pedagogically accessible and engaging to a larger number of students, while simultaneously making it more manageable for the faculty and graduate assistants who teach. This restructuring has been three-pronged: (a) to implement a system that allows for maximum student flexibility of assignments, (b) to create a positive feedback loop to empower students when it comes to assessment, and (c) to incorporate social networking technologies to build community, engagement, and social presence in and out of the classroom. In essence, the challenge has been to transform the course from a rigid, top-down, and highly structured format to a more decentralized, user-defined, and personalized experience for the learners. The goal is to create an individualized and unique experience for each student, despite the fact that they are participating in a class of 2,750 students.

The motivations for this change are plentiful and long overdue. A guiding assumption for this change is that the standard A to F grading scale is de-motivational to learners. That is, from the very first day of class, each student has an A+, and then instructors give the students a series of assignments and tests that serve to take points away from them when items are marked as incorrect. Every type of assessment, such as a paper or an exam, is viewed not as an opportunity to gain points but rather as an opportunity to lose them. This then creates a negative feedback loop of failure. Students can only lose and even getting a perfect score is mere maintenance.

With a large number of students in a class, a one-size-fits-all class structure becomes increasingly difficult, both for student learning and class management logistics. Students in the World Regions class come from diverse backgrounds (with approximately 80 countries represented), with different levels of knowledge and experiences, driven by differing motivations and maturity. As the class size and student diversity increases, it becomes increasingly difficult for instructors to devise a single exam or assignment to challenge and assess such a group. For example, trying to schedule an out-of-class event, such as an exam, for 2,750 people becomes an overwhelming and consuming task.

In reconceiving the class to be learner-centered, community building, and relevant to today’s students, the outcomes for the class were revisited with the assistance of the Center for Instructional Development and Educational Research (CIDER), to ensure the course aligned with the course description, modern world geography and current world events, student prior knowledge and cultural experience, and the goals for the Curriculum for Liberal Education (Areas 3 and 7). These outcomes
were then used to develop a positive and flexible assessment system focusing on point accumulation, rather than point reduction. This new approach required the development of several avenues where students could demonstrate their knowledge and performance, while accumulating points. At the end of the semester, the students’ points are tallied, based upon the works completed, and a final grade is assigned based upon a predetermined, criterion-referenced scale.

The options for graded assignments include traditional avenues (e.g., weekly quizzes, atlas-based quizzes, midterm/final exams, and current events papers), social media avenues (e.g., World Leader Shadow Twitter assignment, Economist international assignment, Economist international article online commenting conversations, “flash” podcast quizzes, and international film reviews), and sociocultural avenues (e.g., out-of-class international events attendance, travel correspondence, and reporting). This method allows students to choose assignments that interest them personally, take advantage of natural abilities, express individual creativity, and demonstrate world geography knowledge and skill. An abundance of options is offered, so that the actual point possibilities far exceed what is necessary to earn an “A;” thus, there is plenty of flexibility within the system in terms of choice. Indeed, no single assignment is required, not even exams. If the student plans well, works hard, and turns in quality work, that student can choose to forego all of the traditional assessment options. The harder a student works, the more points that student can then earn. The result is a true meritocracy.

This flexible approach also resolves most logistical issues: nothing is required, so there are no exam make-ups, no excuses to process, no deadline extensions, no extra credit, and no need for a grading curve. If a student misses an assignment, that student may simply choose another assignment option to earn points in a different way. For example, if a student must miss an exam, that student may earn the missing exam points by completing an additional assignment such as a paper or film reviews. Most importantly, at the end of the semester, there is little justification for grading complaints. With so many options offered throughout the semester, students inherently understand that earning a certain grade is about individual responsibility and self-regulation.

Just as important, this is a system of counting up to the grade that a student earns, instead of counting down from the perfect grade assumed at the beginning of a traditionally graded course. This method is intended to motivate students with challenge, choice, control, and curiosity instead of hurdles.

In addition to these recently developed innovative assessment procedures, the large class size has required innovation in the use of emerging technology to facilitate course assignments and to provide opportunities for community building. For example, one of the assignments takes advantage of the proliferation of online news sources. To demonstrate relevant knowledge and earn points, students may post comments digitally to international stories on news sites developed by the Wall Street Journal or The Economist. Specifically, students are required to read the story, analyze the content, and then make a thoughtful contribution to the ongoing “reader’s comments” discussion of the news story. This assignment provides students with the opportunity and motivation to engage in authentic discourse with contributors across the globe. The popularity of this assignment has led to development of online forums specifically for the World Regions class website. On this class website, students post news stories from any news source, summarize the content of the story, and then comment on the story while also interacting with other students’ submitted news stories.

One of the first entirely social media assignments created for class is the “Twitter World Leader Shadow Cabinet.” For this assignment, a student adopts the persona of a president or prime minister and reports on the leader’s location, actions, and thoughts, in the first person, as that person, on Twitter. The student is responsible for searching for news stories related to the world leader, specifically focusing on the “where” and “what” of that leader’s current role on the world scene. Students are encouraged to interact with the other “leaders” on Twitter, while maintaining the character of the real leader they represent.

To increase participation and communication in class, the online service Poll Everywhere is used for instantaneous text message polling during lectures. Students are asked for input regarding what current news stories or world regions should be discussed in class. Students text, use Twitter, or use the web interface to submit their answer to the instructor who responds by adapting his instruction to student requests and including the requested content in class presentations. Another tool used to facilitate increased communication and discussion is a class Twitter hashtag. This tool is used to organize class tweets, encourage community by following class peer posts, and to share information about the class, current events, or campus activities that are applicable to the course.

Other technology tools that help to facilitate the activities of the large
class include video podcasts based on current events that are discussed in lecture. Based on these podcasts, students participate in “flash quizzes.” These are completely online, socially networked versions of a traditional unannounced quiz. For these flash quizzes, students have three hours to take the quiz and are informed about it only through social media. Because of this, staying connected with the class community is the only way to discover these point opportunities. This class activity has been embraced as a gaming device of particular intrigue to this current generation of college students, as have all of the aforementioned uses of technology in the class.

One aspect of the class that emerged in 2011 was the ability to leverage the power of 2,750 students to bring social and cultural luminaries to class. In April, Gary Vaynerchuk, a wine expert, author, and new media entrepreneur, attended class and interacted with students, discussing the impact of new media on the development of his international wine business. In September, in collaboration with Annie Hesp (Department of Foreign Languages and Literatures), a viral video involving the entire World Regions class, Martin Sheen and Emilo Estevez brought their movie “The Way,” a tale of personal enlightenment based on a journey across Northern Spain through the El Camino De Santiago, to Virginia Tech. Finally, in December, again at the request of the students, Aung San Suu Kyi, the Burmese pro-democracy leader and winner of the 1991 Nobel Peace Prize, visited class via Skype and discussed with and answered students’ questions. Each of these events brought the world closer to the students in the class in an authentic way.

The pedagogical shift in the delivery of the World Regions course at Virginia Tech seeks to maximize opportunities for students to learn in different ways. This proactive course revision is designed to foster student understanding and interest in the world at large, including how, where, and why physical and cultural forces shape and define the world. By utilizing the tools that the current generation of students embrace in their daily lives for communications and educational purposes, instructors are able to meet student needs in a way that is comfortable and familiar to the learners. It is hoped that this approach will foster class camaraderie, encourage student ownership of their own learning, and most importantly, help to develop engaged global citizens that continue to be lifelong learners.
By Jennifer L. Sliko, Instructor, Department of Geosciences

During the 2010 summer session, I created an online section of an existing Curriculum for Liberal Education (CLE) Area Four approved course, Physical Geology (EOS 1004). As an approved CLE course, non-majors fulfilling a science requirement typically populate Physical Geology classes. Since online courses are an ideal alternative to traditional lecture courses for distance learners and students who prefer an asynchronous learning environment, the online section of Physical Geology was created to fulfill the needs of these students while addressing the same learning objectives as the traditional, lecture-style sections of Physical Geology.

As this online course is part of a larger CLE Area Four approved course, the students in the online section learn the same material as students in the traditional lecture sections of Physical Geology, which is typically taught to 300-500 students per semester in several large sections. The online course was capped at 115 students during the fall 2011 semester. To measure the success of the online endeavor, the same pre- and post-semester assessment is administered to students in the lecture and the online courses. The post-semester assessment scores in all sections of Physical Geology, including the online course, are statistically similar and higher than the pre-semester assessment scores, suggesting that the students in the online course learn and retain the same material as students in the lecture courses.

The online section of Physical Geology is designed to be completed in an asynchronous learning format by students anywhere with a reliable Internet connection. One challenge of teaching in an asynchronous format is maintaining professor and peer interactions throughout the course. To improve student/professor interactions, peer interactions are encouraged throughout the course. An online course can be very isolating for students, especially when the course is taught in an asynchronous format. One way to combat this isolation is to encourage students to create a brief introductory biographic sketch on the discussion board. The professor also creates a similar introductory post, and students then have the opportunity to learn about their professor and peers outside the traditional course information, fostering camaraderie with their peers.

Additional structures and activities are employed to foster engagement in this online section. The course is divided into five different multi-week sections and further subdivided into weekly modules. Each module has a unique learning outcome related to that week’s topic and includes a narrated presentation, a quiz, and a learning activity. The 30-45 minute narrated presentation can be viewed on any web browser and includes several concept questions asked throughout the presentation. Students are required to answer these questions before proceeding with the presentation, thus encouraging them to take notes and pay attention while watching the presentation. These presentations are associated with a weekly quiz, which is administered and graded through an online learning management system (Scholar). The quizzes are timed and questions are randomly pulled from a pool to minimize cheating.

In addition to the weekly quiz, students must also complete a weekly activity. Some activities are designed...
to improve quantitative literacy by having students analyze and interpret real data, while other activities enhance online communication skills by tasking students to create simple webpages summarizing various geologic processes. Through the weekly activities, students learn relevant geologic concepts by completing activities and answering several critical thinking questions about each activity.

The material from the weekly activities is used in a broader context as the students complete a multi-week collaborative project in each section. Previous collaborative work has required each group to create and submit a single document for assessment. This format is not ideal for an asynchronous online course as some students prefer to complete the project shortly after it is assigned, while others prefer to work on the assignment shortly before the due date. Based on emails from students and comments in the post-course surveys, the “early workers” were frustrated because they felt the “late workers” were not completing the same amount of work, while the late workers were frustrated because the early workers finished the activity without them.

To address these concerns, the group work format has been altered to encourage peer-based learning while assigning more individual responsibility to each multi-week assignment. The current format involves providing each group with several critical thinking questions to start an asynchronous group discussion on a discussion board. Each student is encouraged to create multiple posts in the group discussion by interacting with fellow group members. The asynchronous discussion method of group work still accomplishes the goal of peer-led learning, but as individual student posts are now assessed instead of a group report, students have become more focused on the content of the group project rather than the distribution of work.

Through engaging students in a variety of independent and collaborative activities difficult to replicate in traditional face-to-face courses with high enrollment, this course provides students with a valuable and rewarding learning experience. While also providing greater flexibility, students in the online section of Physical Geology successfully achieve the same learning outcomes as their peers in the comparable face-to-face course.

“...online courses are an ideal alternative to traditional lecture courses for distance learners.”
Introducing an LGBTQ Course

By: Minjeong Kim
Assistant Professor, Women & Gender Studies Program, Department of Sociology

Since the emergence of the ONE Institute (see ONE National Gay and Lesbian Archives, 2011) in 1956, academic institutions have incorporated LGBTQ (lesbian, gay, bisexual, transgender, and questioning) studies curricula and eventually certificates and degrees into their programs. The first LGBT course in the United States was offered in 1970; almost 20 years later, the first department of LGBT Studies was established in 1989. Another two decades later, as of 2008, over 23 universities offer a major or minor in LGBT studies while an additional 18 universities offer certificates in this field. LGBT Studies (or Queer Studies) is an interdisciplinary, identity-based field (like women’s and gender studies or ethnic studies) that examines the historical, political, social, and cultural aspects of LGBT individuals and communities and spans varieties of other fields, including sociology, history, literature, anthropology, philosophy, psychology, political science, and women’s studies. Additionally, transgender and transsexual studies and intersex studies emerged in recent years. This gradual evolution shows an increasing commitment by U.S. institutions to the academic study of gender and sexuality. It also suggests that a field is becoming more enriched.

With the Center for Excellence in Undergraduate Teaching (CEUT) Interdisciplinary Instructional Grant in 2009, I developed a 3000-level Women’s and Gender Studies (WGS) course entitled “Perspectives on LGBTQ Issues,” an introductory course on LGBT Studies. LGBT Studies rest on a strong foundation in feminist theory as well as queer theory, thus the most common academic location for LGBT Studies is within women’s and gender studies. This semester-long course covers basic concepts and terminology, a brief history of LGBT activities and liberation movements, debates in science and religion, contemporary legal issues, family issues, anti-gay violence, and LGBT activism. I have taught this course in the spring 2010 and 2011 semesters as a WGS Special Topics course, and plan to teach it again next semester.

In developing the course, I was most concerned about integrating students with different experiences and degrees of knowledge. Social and political issues involving gays and lesbians are not new to the general U.S. public. Countless victims of anti-gay hate crimes and the controversies surrounding the “Don’t Ask, Don’t Tell” policy of the U.S. military, as well as the issue of same-sex marriage, have intensified the cultural clash. As anticipated, this course typically has two groups of students with the following perspectives: WGS students without any prior engagement in LGBTQ issues (other than as observers of controversial topics) and LGBTQ students with active involvement and much knowledge on LGBTQ issues...
LGBT Studies (or Queer Studies) is an interdisciplinary, identity-based field...that examines the historical, political, social, and cultural aspects of LGBT.”

In addition to lectures, films, and course readings, I use the blog feature of Scholar to share and discuss latest news related to the course topics so that students may apply the theoretical perspectives addressed in the class. I also encourage students to participate in on-campus events and activities by LGBT (the Virginia Tech student organization and resource center) and WGS for extra credit and to discuss these events in class. In-class discussions about readings, latest issues, and out-of-classroom participation allow students to share personal experiences and views as well as theoretical applications and self-examination.

To my delight, I have witnessed, over the course of the semesters, the line between the two groups of students is crossed many times and gradually a bridge is formed between them. Teaching this course has been very rewarding. I have been impressed by the range of topics covered in students’ final projects. Examples include a multi-media presentation on the invisibility of bisexual women in television shows; a critical analysis of gender hierarchy in gay relationships; and an examination of LGBT issues in the countries with same-sex marriage, such as Spain and Argentina.

As I have developed this course, I have also built an LGBTQ Resources webpage under the WGS Program and Sociology Department (with the assistance of Kacie Rowell, a Sociology graduate student). I am currently working on a course proposal to make it a permanent WGS course offering. Of course, offering this course cannot solve all the issues that LGBT students at Virginia Tech face. I have learned that some LGBT students in more conservative departments/fields were afraid of taking this course because having it on their transcript might put them under unwarranted suspicion. Nonetheless, I sincerely hope that this course can teach our students about this significant, burgeoning field of scholarship and that it can be a small yet positive step toward embracing diversity on our campus and in our society.

References