

CIDER
We Know Pedagogy

Center for Instructional Development and Educational Research

PEDAGOGY



IN PRACTICE

 **VirginiaTech**
Invent the Future

SPRING 2010

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 two 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

This inaugural 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 taking 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 integrating Spanish language instruction with agricultural and landscape education, to implementing electronic portfolios to empower students to become self-regulated learners, to leveraging popular culture films to address issues of race, gender, class and identity, our faculty are engaging 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 make contact with the Center for Instructional Development and Educational Research. Dr. Peter Doolittle, Director, and his staff are eager to provide support to faculty and departments as they strive to provide our students with the best possible learning opportunities.

Regards,



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MISSION

The Center for Instructional Development and Educational Research (CIDER) fosters the design, development, and implementation of disciplinary and interdisciplinary learner-centered instruction; promotes and recognizes excellence in higher education instruction; supports and conducts cutting-edge research on the scholarship of teaching and learning; and collaboratively advocates for a campus climate that values educating the whole student through effective, innovative and transformative instruction.

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Exploring the Promise of Team-Based Learning™

Eric Kaufman

Assistant Professor, Leadership Development, Agricultural & Extension Education

In January 2008, I finally discovered a mechanism for accomplishing my goals as a classroom teacher. Virginia Tech's Center for Excellence in Undergraduate Teaching (now known as CIDER – Center for Instructional Development and Educational Research) hosted a winter workshop on Team Based Learning™, facilitated by the founder of this approach, Larry Michaelson. Although I had been previously trained as an educator through my bachelor's degree in agricultural education, I had long-since been frustrated by traditional approaches to teaching. I continued to look for ways to engage my students in the learning process, developing their interpersonal skills and preparing them to be life-long learners. Team-Based Learning offers all of that.

Team-Based Learning (TBL) is a special type of small group facilitation, which differs from cooperative

learning or group activities. The TBL approach integrates case studies and applied learning throughout the entire semester, with student teams remaining intact for all of the small group discussions and assignments. Although each course has a different set of learning objectives with respect to content knowledge, the broader course objectives for TBL courses are consistent regardless of course topics. I now begin my courses by sharing these objectives with students:

- Understand course content,
- Be able to apply course content,
- Develop interpersonal and group interaction skills,
- Become life-long learners, and
- Enjoy the course.

Beyond working with small group assignments, TBL has changed my overall structure for courses. I break my courses into five or six units and begin each unit with a readiness assurance process. The result is less lecture time because the readiness assurance process promotes student reading and study prior to the start of the unit. On the first day of class for each unit, we begin with a readiness assurance test that students take first as individuals and then within their teams. Immediate feedback turns these tests into learning experiences more than assessments. After the readiness assurance tests, I can address student questions and offer focused mini-lectures on content that requires more explanation than the assigned readings offered. Upon completion of the readiness assurance process, we spend the remaining 75% of the unit class time engaging in case

studies and application activities. All of the units of study and application experiences feed into a larger project that each team completes at the end of the semester. For more information about the structure of TBL, visit www.teambasedlearning.org.

My implementation of TBL has been met with some resistance from students who find comfort in traditional teaching and assessment techniques. For example, at the end of the course, one student said, "I didn't gain a great deal from the team based learning experience because I personally learn a lot from lecture." However, in the same class, another student said, "Team based learning would have been more effective had we used our teams more. Lectures again got in the way of learning." My reason for persisting with the approach is captured in a third student's comment: "More like the real world, the team based learning is a good preparation process for the future." In end-of-course surveys, 74% of my students have agreed or strongly agreed that TBL was an appropriate way to structure the course, and 69% agreed or strongly agreed that TBL enhanced their learning experience. While I am pleased with this early success, I believe the student experience with TBL will be further improved as I gain more experience with the approach and refine my implementation of the structural components. Preparing quality application activities that highlight the desired content and concepts is more challenging and time consuming than I had anticipated, but I am making gains with every course offering. As I move forward, I am also working to measure the direct effects of TBL on student development and learning gains through pre/post measures. I am grateful for several instructional micro-grants that are assisting me in that regard.



Expanding Experiential Learning in the Animal and Poultry Sciences Undergraduate Curriculum to Include a Capstone Experience

Cynthia M. Wood

Associate Professor, Animal and Poultry Sciences

One of the hallmarks of the undergraduate program in Animal and Poultry Sciences (APSC) in the College of Agriculture and Life Sciences at Virginia Tech is the emphasis on experiential learning as an integral component of the learning process. During a comprehensive review of the curriculum, APSC faculty decided that a specific capstone experience would further enhance the education of our students and better prepare them for life after the BS degree.

A number of factors contributed to this decision. First, many APSC students do not have a background in agriculture or the animal sciences. Many potential capstone experiences involve real-world experiences that would help bridge that gap. Second, feedback from employer surveys indicated that students need better training in areas other than technical expertise: ability to work in teams, to communicate with a variety of audiences, and to take responsibility for a task and see it through. Additionally, advisors noted that the most outstanding students already were taking advantage of opportunities that fit the definition of a capstone experience; making it a requirement raises the bar for everyone. Finally, students choosing to major in APSC represent an ever-increasing diversity of backgrounds, interests, and career goals. To help these students tailor their undergraduate degree programs as much as possible the faculty agreed that about one-third of the credits needed to graduate should be restricted and free electives, and that the capstone experience should be individualized for each student.

Beginning with the class of 2011, therefore, a capstone experience tai-

lored to each student is a graduation requirement. The capstone experience must be completed within 45 credits of graduation (no earlier than the second semester of the junior year) and must be worth at least two credits at the senior or graduate level. It may consist of a single course or two related courses.

Because of the individualized nature of the capstone requirement, and



to help assure a quality experience, two pre-requisite courses are extremely important. One, APSC 1504 Animal and Poultry Science Survey, has long been a requirement in the major. In this course, students develop a four-year academic plan that lays out the coursework needed to complete at least one degree option and emphasis in the major. The course also introduces students to a variety of extra-curricular organizations and activities that may enhance their formal coursework. The second required course is APSC 2004 Animal and Poultry Sciences Seminar, which is a new course developed specifically to bridge the gap between APSC 1504 and the capstone experience. This course is designed to help students with career preparation (assignments include resumes and cover letters, as well as a mock interview), and to begin the process of developing their individual capstone experiences

by preparing a draft capstone proposal. To that end, students are provided with a variety of examples and access to a database of potential experiences.

Even a quick review of capstone requirements at Virginia Tech and other universities reveals that such experiences can come in many forms. For the APSC requirement, students are encouraged to look into a variety of possibilities,

including undergraduate research, internships, field studies, education abroad, and formal coursework at the senior or graduate level. To ensure consistency, a set of guidelines have been developed for the capstone proposals, which are submitted by students at least one term prior to undertaking the experience. The proposals are evaluated by a faculty committee, which helps provide quality control.

The proposals are expected to address eight specific learning outcomes: analyze, interpret, and synthesize information from a variety of sources; solve real-world problems in real-world situations; successfully complete a major project; improve verbal, visual, and written communication skills; practice critical thinking skills; be a contributing member to a team effort; gain an understanding of the "bigger picture"; and enhance self-confidence and preparation for a career and/or post-baccalaureate education.

The inaugural class is proceeding through the capstone approval process and will begin their capstone experiences in 2010. They completed APSC 1504 their freshman year and APSC 2004 as sophomores. They currently are working their way through the remaining degree requirements and will be submitting the first set of capstone proposals in Spring 2010. Based on the

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draft proposals submitted in APSC 2004 last year, about 75% of students are thinking about internships and field studies for their capstones, 15% are leaning toward undergraduate research, and most remaining students are looking at formal courses that incorporate at least six of the eight learning outcomes associated with the capstone requirement.

Informal feedback from this first class indicates that while many of the students agree that the capstone experience may be a good idea, they are not quite sure how it will work

out. Some students obtained internships this past summer that laid the groundwork for a follow-up capstone experience, while others have begun working in research laboratories in preparation for an undergraduate research project. A large number, however, will need encouragement from advisors and faculty mentors to meet this graduation requirement, and formal feedback from students, faculty, and internship supervisors will be needed to fine tune the requirement for future classes.

Dare to Be Different! Revamping the Elementary Curriculum for Japanese (or other foreign language)

Kirsten Jensen, Ph.D.

Lecturer Prof CY, Language and Culture Institute

When I “inherited” the two-semester Elementary Japanese Language course in August, 2007, I was rather dismayed at how outdated it

curriculum was that the textbook was the curriculum; four chapters of the book were covered in the first semester and 4-5 in the second. Although the

also not of the standard found in materials for learning the common European languages.

Thanks to the worldwide spread of anime, manga, video games, and other aspects of “pop-culture” such as sushi and karaoke, plus Japan’s leading role in consumer electronics, robotics, nano-technology, etc., there are many students eager to study Japanese. Now that a second elementary section has been added at VT, there will be an increasing proportion of freshmen in future years, some of whom will already have done a year or two of Japanese in high school and are false beginners. Added to those are many students from Korea and China, who would often rather learn another Asian language than a European one, but who are also frequently false beginners.

Most students want to be able to speak and use a foreign language appropriately in real-life situations, rather than just be able to read and translate it. This is especially important for languages like Japanese, in which the cultural differences with the West are profound, and the language and culture are inextricably intertwined. I reasoned that if I could provide multimedia materials from which students could pick and choose to master the assigned communication skills for each unit, it would help them take own-



Three students from JPN1106 doing a timed final speaking assessment on buying Mother’s Day gifts at a “department store.” The scene is set, but students must listen and react to each other during the course of the conversation. The instructor watches, listens, and scores each student according to a pre-determined rubric.

seemed. I decided to rework it based on a communicative competency and cultural literacy approach. Through computers, multimedia, different pacing and sequencing of content, the judicious use of an entirely different text and workbook, and far more active language production by students, the course was refreshed, updated, and made more appealing to the “digital generation.”

The main problem with the previous

course was ostensibly “communication-oriented,” it was in fact grammar-based, and the textbook was extremely long-winded and confusing, with explanations, exceptions to the rule, and “one-of-a-kind” scenarios. The text was poorly set-out and visually unappealing, and it contained no colored pictures, very little font differentiation, boxing, diagramming, or highlighting. The accompanying workbook and audio tapes were

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ership of their own learning, allow for a much more inductive approach, and be more geared to their interests, especially as the classes contained a mix of false and true beginners.

After much consideration, I decided to alter the pacing and sequencing of material while utilizing visually appealing, up-to-date high school texts and workbooks from Australia, with their accompanying A-V resources, teacher materials, and interactive website. By experimenting with this radically different approach and soliciting feedback and help from the students in adapting the material to our purposes, students did, in fact, take more ownership of their learning, and many were motivated to continue with their study of the language and culture beyond the elementary level.

With the previous syllabus, students were expected to master the Hiragana syllabary in the first semester of study, and the Katakana syllabary and some Kanji (ideographs) in the second. With the new curriculum, students learned both the Hiragana and the Katakana scripts simultaneously and as needed, as the tightly controlled vocabulary and patterns were rapidly expanded in a spiraling approach, which involved a great deal of listening and speaking.

Learning outcomes/objectives were clearly given at the beginning of each unit and a checklist at the end. Instead of requiring all students to do all exercises in the Workbook, once students mastered the skills for that section, they could move on.

Much of the learning of script can be done on the computer, and students were taught how to set up their computers to type in Japanese, which greatly appealed to them. This decreased the amount of class time devoted to script learning, allowed for learners to master the basic scripts at their own pace (within the course constraints), and allowed for more interactive oral language use during our group meetings.

Most of the listening testing was

done as a group in class time, but for the speaking parts, several different formats were tried before we settled on sign-up sheets outside my office for two or three students at a time.

To obtain feedback beyond the standard SPOI computer-read questionnaire and comment sheets required for every course, short optional surveys were conducted at the end of each semester with students responding to six questions by circling appropriate numbers on a 5-point Likert scale and adding further comments.

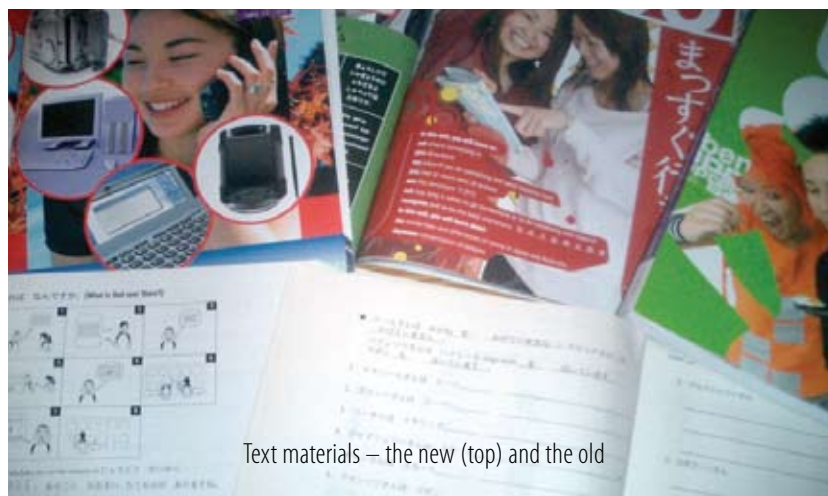
Although the number of respondents to these surveys differed slightly in the fall (N=40) and the spring (N=37), the students' overall view of the course for both semesters was exactly the same: overwhelmingly positive, with 95% choosing 4 or 5, and the remainder

and more traditional university teaching methods.

However, this emphasis on the development of the primary communication skills of listening and speaking in culturally appropriate ways is far more demanding of the instructor, and requires extra time for oral assessment, mostly outside of class.

My advice to those considering revising an introductory course would be:

- Pay attention to the attributes of your particular student population
- Focus on learning outcomes, objectives, and mastery of skills, not on covering a certain number of text pages, chapters, or all the exercises in a workbook
- Supplement according to the needs and interests of your students
- Consider using a high school text



Text materials – the new (top) and the old

choosing the neutral 3. There were no negative responses!

Thus it is clear that this re-working of the curriculum was well-received by the particular student population in Beginning Japanese, despite the use of materials primarily aimed at younger students. Not only is this a very flexible approach to language learning, but, with enough planning, it is suitable for any level. It is very student-oriented and gives students more opportunities to speak and demonstrate what they have learned than is usually possible with large classes

for an elementary level course, as they contain many great ideas, activities, and resources and are very visual, which appeals to the digital generation

- Dare to be different (from other schools and peers teaching the same level course)
- Convey your enthusiasm for the subject in your willingness to explore, adapt, and revitalize.

You won't be sorry you did!

Finding Education in Film

David Hicks

Associate Professor, School of Education

Educational psychologist Sam Wineburg suggests that popular culture is a vital part of the “cultural curriculum” that shapes young peoples’ (mis) understandings of history. How we learn about the past and come to understand history, he argues, does not simply occur within the four walls of the history classroom - or from reading history textbooks. His work reveals that history educators cannot hide from the fact that popular culture, especially in the form of films and television, is a powerful force that shapes historical consciousness.

Such insights from research in history education served as the initial trigger for the development of my summer course - EDCI 5784 Education and Film. Though focused on history education, the course was designed to explore how films – specifically movies and documentaries- connect and clash with our own understandings and beliefs about the purpose of education and the nature of teaching and learning.

One thing that unites students is that they have all experienced a long, informal “apprenticeship of observation” with regard to teaching and education. Having spent years sitting in classrooms watching and listening to teachers, as well as watching and reading portrayals of teachers and teaching in popular culture, most people (nearly) always have something to say about education, teachers, and students. My hope was that this course would serve as a safe space for informed, reflective and thoughtful conversations about education: representations of teachers and their students, the teaching and learning process as a whole, and how race, class, gender and sexuality permeate through films over time and space. The essential questions for the course clearly reveal that I was biting off more than I could chew, but with the support of CIDER I had collected a wide range of resources and films to play with, and I could not seem to contain my lofty aspirations for the class in

terms of what I hoped we would explore:

How do films- popular movies and documentaries - portray teachers’ identities, their social relationships with students, public perceptions of teaching, the institutional role of schooling, and the potential for teachers to bring about social transformation over time and space?



How do films represent the pedagogical nature of teachers’ work, i.e. the day-to-day work of teaching and learning—preparing lessons, designing activities, scaffolding participation, giving feedback, and so on—over time and space, and how do these representations resonate or contrast with our own apprenticeships of observation, beliefs and practices with regard to teaching?

How do images of teachers, students, and schools in film and documentaries influence our own perception of schooling?

How can we use film in our teaching?

The scope of the questions reflected the type of students I hoped to lure to the course. Both preservice teachers as well as practicing teachers and graduate students interested in education were all welcome, and my hope was that the range of experiences and beliefs they brought with them would foster invigorating conversations and products.

The essential questions for the course and the number of films at my disposal left me struggling to identify which films to use and the nature of

the final student products to be developed. To allow good conversations, I needed to make sure there was time for discussion of the film and accompanying readings in each 3-hour class. This meant that the questions’ frames would have to connect with the student’s own experiences and interests, while also allowing the opportunity for students to make connections and comparisons across the films that were shown and the texts that they read. Finally, the assigned projects/products had to be designed in such a way that students could make clear connections with the issues that had percolated and resonated within and through our discussions.

I also had to select films that would allow students with different experiences the freedom to embark on work that was meaningful and worthwhile to them. For the first 3 class sessions I chose *The Class*, *The History Boys*, and *Freedom Writers* to open up discussions regarding the nature and purpose of teaching and learning in different contexts. I also identified 3 documentaries, *High School and High School II*, by Frederick Wiseman, and *Hard Times at Douglass High*, as subsequent entry points to look at the institution of schooling in urban centers over time and space.

In the first class, students examined the films and documentaries I had available, searching for categories and patterns within the collection. This activity led to an unexpected development with the students borrowing movies from the collection to take home as well as sharing movies that they subsequently found and thought would be of interest to their peers. To make time for classroom conversations, I borrowed a class set of iPods from the Learning Technology group at VT and placed a collection of movies on the iPods for the students to watch on their own time. These movies either connected to previous class discussions or were required viewing to support future discussions and analysis.

To allow students the opportunity

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to develop projects they considered worthwhile, a menu of options was provided. These included opportunities to: (1) write reflective papers and film reviews; (2) create digital collages/mashups of movie scenes that examined and compared various themes and representation of individuals, groups and institutions; and (3) develop annotated reference guides and lesson plans that explored the potential of movies within their classrooms. The menu option appeared to work well as evidenced by a series of high quality products that included one student using the film “With all deliberate speed” as an initiating de-

vice to teach about the legacy of Brown v the Board of Education and the impact of massive resistance in her hometown. Other projects included: a collection of films clips focusing on representations of disability with accompanying questions that were to be used with preservice teachers as a way to unpack and discuss disability; a digital mashup that examined Hollywood representations of (white) women teachers in urban schools; and a paper that explored issues of narcissism and portrayals of teachers and students from a Marxist perspective.

I noted in my syllabus that my “hope

for this ‘course’ /experience is to share films that can allow us to have substantive discussions regarding representation and portrayals in education—to talk about issues of teachers’ pedagogy, class, gender, race, and identity in terms of education writ large...and really think about how education is represented and portrayed over time and space and how that impacts our own understandings of teaching and learning.” I went in search of meaningful and challenging conversations and discussions about key issues in education, and my students helped me find them.

Reflecting on Reflective Practice

Joan Monahan Watson

Assistant Director, Undergraduate Studies in Interdisciplinarity, Department of Religion and Culture

I can distinctly recall a moment on a sunny autumnal afternoon in Blacksburg nearly 20 years ago that would shape my future as a teacher. Dr. Patricia Kelly, professor of my “Teaching in Secondary School” methods class, uttered what would become her mantra for the semester – and ultimately mine throughout my professional career: “You must be a reflective practitioner.” No one had ever really instructed me to actually think before, neither had anyone suggested that time be specifically allocated for the purpose. As a non-traditional student who had lived another life prior to coming to college, the profundity of the charge resonated with me.

Over time and throughout my career, I have written “R.P.” in many conspicuous and inconspicuous places, reminding myself to reflect on my practice each day. Sometimes being a reflective practitioner will keep me awake at night as I muse on the day’s “should’ve’s” and “could’ve’s” and “next time, I will’s.” Sometimes it makes my job more difficult, and sometimes it makes my job much easier. But, above

all, being a reflective practitioner has made me a life-long learner by keeping me engaged as a researcher and a teacher and by reinforcing the notion of “work in progress.” Intellectual growth comes only through practice – doing (sometimes failing), reflecting, revising, doing (differently this time), reflecting, revising. With each revision and (re-)visitation, I learn something new, grow a little more, build a bit of expertise.

In my reflective peregrinations, it occurred to me that my students might benefit from being told that they, too, must be reflective practitioners. Encouraging students to develop habits of mind that will engage them in life-long learning and challenge them to continually hone their critical thinking skills is at once implicit within and transcendent of all university curriculum; these objectives are found within Virginia Tech’s Strategic Plan and within the goals for the Curriculum for Liberal Education. To be responsible citizens of the world, we must know how to think, how to reflect, how to adjust our actions, how to learn. So,

taking my queue from Dr. Kelly, I uttered the mantra.

The initial challenge in introducing reflective practice into the classroom was to teach students how to do it. Reflection is tricky: it is personal in that it deals with an individual’s experiences, but it is not intended to be a whiny rant nor a painstaking report of events as one might include in journals or diaries. Reflective practice activities call students to deliberately interact with new and/or provocative ideas and experiences and connect them with their own histories, actions, and lived experiences as “practicing” individuals. Providing guiding questions often helps, but by the middle of the semester – or sometimes sooner – these prompts are no longer necessary as students begin to think of themselves as “practitioners.”



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The ambiguity of this term is at once liberating and debilitating, as I do not teach courses on teaching methods ("I'm a practitioner? Of what?!"), but it ultimately encourages students to identify themselves in a specific role—whether it be that of student, son/daughter, teacher, friend – or in a variety of roles, reinforcing the idea that, as individuals, we might espouse multiple ways of knowing, being, and practicing.

I recently revisited the senior research course that I teach online, repeating the mantra and charging my students to be reflective practitioners. A capstone experience for IDST majors, this course relies heavily on interactions among students in their communities of practice, groups of 3-6 students who conduct synchronous and asynchronous discussions and workshops online. The curricular objective for this course requires students to develop an interdisciplinary research project, for which they systematically write and publish a research proposal online using ePortfolio. During the first part of the semester, students engaged in synchronous conversations as they

reflected together on shared readings within the discourse of "Peace, Fear, and (In)Equality"; most of these students had experience with reflective practice activities with me in previous semesters, and the quality of their reflections and inquiries suggested a higher level of engagement with the more granular and critical components of the content.

During the second half of the semester, the students were asked to reflect on their practice as "researcher," which first required that they consider exactly what it means to be a researcher. Students remarked informally that being able to identify themselves as "researchers" helped them focus on the task at hand and gave them more confidence about writing their proposals. After submitting drafts to their community of practice and receiving feedback for each piece of their writing, students submitted a reflective practice piece prior to the revision of the final drafts of their introduction, literature review, and design and methodology sections. The prompt for these reflections was quite simple: "Reflecting on your practice as a researcher, what substantive changes did you make from your first

draft to this final draft? Why did you make these changes?"

Speaking anecdotally, I can attest to the fact that my students, over the course of the semester, became more thoughtful and deliberate problem-solvers; they recognized a sense of personal relevance with respect to the theories and discrete content we addressed in class; and because the students were engaged and invested, they were generally more motivated. At the end of the semester, I asked them to reflect on their practice as students; invariably, they mentioned the reflective practice activities and shared that since they learned how to "think that way," they can't seem to stop. I know how they feel.

While the idea of being a reflective practitioner isn't novel, I believe it takes on new life when introduced to individuals who, perhaps, never considered the value in such thought. I am hopeful that my former students spend quiet moments thinking of the "should've" and "could've" and "next time I wills." There seems to be no better way to invent the future than through one's own reflective practice.

Cultivating Electronic Portfolio Learning Environments

Susan F. Clark, RD, PhD

Associate Professor, Department of Human Nutrition, Foods and Exercise, Dietetics

As teachers, we are responsible for fostering student learning and modeling best practices. When faculty collaborate with students and actively involve them in the education process, it empowers students to take ownership of their learning. Students also become more self-aware, active learners when they gain opportunities to connect their academics to their professional development. To me, formative assessment in the classroom is pedagogy in practice. However, I began to wonder if it could be used across an entire curriculum. While attending a faculty development program on electronic portfolios (ePortfolios), I realized that the answer might reside in the ePortfolio system given its dynamic multifaceted functionality. ePortfolios offered a methodology for students to chronicle and share their scholastic and professional achievements in innovative ways that captured a multi-dimensional transcript. The system could also mea-

sure assessment of student learning to improve teaching and program curriculum. I decided to explore how the dietetics program might integrate utilizing the ePortfolio system across the curriculum.

Who & Why? The Dietetics Program is accredited through an external accrediting body, the Commission on Accreditation for Dietetics Education. To maintain accreditation, we are obliged to provide evidence of student learning. Beginning their sophomore year, dietetic students have been required to maintain hard copy portfolios as evidence of learning throughout their academic tenure. Students are responsible for adding samples of work to the portfolio that exemplify their academic and professional accomplishments.

What? In spring 2008, the dietetics faculty collectively decided to have students transition from maintaining hard

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copy portfolios to the ePortfolio format so we could centralize assessment of teaching and student learning. The initiation of ePortfolio thinking was done in a stepwise manner. We assembled a student management team (STM) composed of seven dietetic students representing various academic levels, a Learning Technologies Multimedia Associate, and me. Together, we developed a customized ePortfolio system, inclusive of two matrices, an assessment and a portfolio matrix.

Initially, the student team and I reviewed course syllabi and accreditation education standards, and then categorized student learning outcomes into six learning domains: Professionalism and Ethics, Disciplinary Knowledge, Multifaceted Communication, Multidisciplinary Teamwork, Systematic Analysis, and Experiential Learning. Using Scholar, the team constructed a web-interface assessment matrix for students to electronically archive scholastic evidence that demonstrates each learning outcome. The team also composed journal prompt questions for each of the six domains to be completed by the students to help them become reflective practitioners who take ownership of their learning. The assessment matrix is the fundamental component of the Dietetics ePortfolio initiative that archives student work for faculty to assess and make appropriate curricular improvements. The team constructed another matrix, the portfolio matrix where students create, chronicle, and publically publish their portfolio contents. The portfolio matrix is comprised of eight categories that represent the pages of the portfolio: Homepage, Education, Experience, Organizations, Awards/Honors, Extracurricular, Work Showcase, and Resume. In this matrix, students build pages for their portfolio by selecting evidence of experience and accomplishments inclusive of reflective commentary. The published ePortfolio represents the backbone of their professional development and culmination of their learning awareness.

How? The SMT introduces the ePortfolio system to a new cohort of sophomore dietetic students enrolled in the required Professional Dietetics course. Supplemental instructional resources have been developed by the SMT to help students navigate the matrices and construct an ePortfolio. These include a hard copy manual, videos, efolio email account to reply to student questions, open office hours, and workshops that are designed to aid students in building their portfolio.

Challenges? How would we sustain and teach subsequent generations of students the ePortfolio system? We repurposed the SMT into an ePortfolio peer mentor team. To ensure a sustainable method of teaching ePortfolio, each year we will

replace graduating team seniors with new sophomore level students who will learn from the more experienced members. This plan maintains a peer resource pool of dietetic students who will mentor the ePortfolio system to future cohorts of dietetic students, ensuring a sustainable ePortfolio practice. Plans to assess the effectiveness of using peer mentors to teach the ePortfolio system will drive future changes in the ePortfolio process.

Impacts? The value of electronic portfolios has become more recognized in higher education and its use continues to evolve in the dietetics program. We know the concept of an ePortfolio can be intimidating, especially to those students with limited technological skills. However, we have found



that using the peer-mentoring model and other student-designed resources facilitates the student's subsequent creation of their ePortfolio. In fact, 100% of the first peer-instructed cohort of students was successful in creating their initial ePortfolio infrastructure. The SMT members have also grown as a result of their role in this signature ePortfolio experience. Last spring, four graduating senior mentors who shared their ePortfolios with prospective dietetic internships were offered dietetic internship placement in what is a very competitive market. The SMT team has also published and presented their ePortfolio work in professional venues, and they are currently participating in

undergraduate ePortfolio research in conjunction with the Inter/National Coalition on e-Portfolio Research. Additionally, they have garnered respect from their peers and faculty, and cultivated innovative leadership skills that are an exemplar of an ePortfolio learning environment.

Overall, the matrices and portfolio system have the potential to be valuable learning and assessment tools for students and faculty. It is the student's responsibility to upload various assignments/projects into the matrix tool to enable them to decide how to construct their ePortfolio for public distribution during senior year. The ePortfolio system engenders integrative learning whereby students take ownership of their learning, cultivate reflective thinking, and advance their technology skills. Students who can reflect while actively engaged in metacognitive thinking are actively involved in their learning. They eventually move towards purposeful, creative activities that demonstrate evidence of using higher order critical thinking skills and documents learning. Hence, students engaged in the ePortfolio activity are becoming lifelong learners and skilled in reflective practice, which will serve them well long after graduation.

Program Pedagogy through Learning Outcome Assessment

Steve Culver, *Assistant Director, Academic Assessment Program*

Ray Van Dyke, *Director, Academic Assessment Program*

As individual faculty, when we think of pedagogy, we typically think of how we teach in our individual classes, not how teaching occurs across our major, our department, our college, or the university. However, working to improve what goes on in our individual classrooms may not be productive if that improvement occurs unrelated to what is happening in the rest of the curriculum. In the Office of Academic Assessment at Virginia Tech, we strive to develop processes at the program level that will connect and inform what goes on at the course level.

The mission of the Office of Academic Assessment is to facilitate the creation of a culture of evidence-based assessment that leads to continuous improvement of teaching and learning. This process typically begins with an academic program revisiting its mission statement and articulating student learning outcomes for the program. A student learning outcome is what faculty expect a graduating student from that program to know or to be able to do. For example, a student graduating with a B. A. in English should be able “to read critically and compose an effective analysis of a literary text.” Students graduating with a bachelor’s degree in Industrial and Systems Engineering will have demonstrated the “ability to generate and evaluate alternatives to design an integrated work system or process to meet requirements through a systems perspective.” The demonstration of these abilities provides faculty with information about where the program is strongest and where there are areas that need attention. With this information, faculty can make changes in courses, in curriculum, in required internships, or in a variety of areas to strengthen the knowledge and core abilities of their graduates.

This continuous, reflective process on the program level improves teaching and learning both in the program and within individual courses in five

specific ways. First, simply explicitly stating learning outcomes helps to explain more clearly to students what is expected of them. Students get a sense of the critical skills or knowledge they must learn to be successful in a class in their major. These clearer expectations help guide them in their studies and increase their motivation



and sense of purpose. Students are able to see more clearly how different courses within their curriculum relate and why they are required to take certain courses in a particular order.

Second, explicit learning outcomes on the program level can help faculty focus more clearly on what exactly they want students to achieve in terms of knowledge and skills in the courses they teach. Course design is facilitated when faculty can more clearly see how their course contributes to students’ achievement of program-level outcomes and how their course relates to other courses in their major curriculum. Faculty can maintain a sense of the most essential knowledge and skills to cover and then design their courses so that this content is given the appropriate amount of time and emphasis.

Third, with specific outcomes in mind, assessment within courses can be designed more effectively so it not only contributes to evaluation in a particular course but also measures a student’s abilities in relation to the outcomes of the program. Faculty discussions necessarily become more specific in terms of what each of us teaches and how each of us assesses

our classes and why. Often faculty will begin to “map” program learning outcomes back to individual classes, sometimes discovering repetition of material in multiple courses. To address this repetition (and to decide if it is appropriate), faculty discussions typically lead to decisions about which classes introduce, emphasize, and reinforce certain skills and knowledge.

Fourth, stated student outcomes and evidence of students’ meeting of those outcomes provide employers with specific knowledge about what graduates from a particular program can do. Conversely, those outcomes prescribe how students can frame their talents and abilities in a manner that would be appealing to potential employers. Programs using ePortfolios to capture evidence of student learning find that they provide students with an important tool that can be used to show authentic examples of their knowledge, skills, and abilities to prospective employers.

Fifth, and perhaps most important of all, the assessment process stimulates discussions about teaching and learning. These discussions occur not only within programs but also across interdisciplinary lines by raising issues central to the teaching mission of the university, with questions such as “what do we really mean by competent written communication and is that an outcome that is shouldered only by the English Department?”

In short, program-level assessment processes can make teaching of individual courses within a program more effective by making student outcomes and assessment measures more explicit, and thus more likely to be understood by faculty and students.

The work of improving pedagogy within the classroom must still be done, but program assessment provides a clear context for that work.

Spanish for the Green Industry: A Content-Based Language Course to Prepare Students for a Diverse Workforce

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Spanish for the Green Industry is a content-based language course focusing on the vocabulary and sentence structures pertaining to jobs within the Agricultural and Landscaping industries.

According to the US Department of Labor, there are 24 million foreign workers in labor industries throughout the United States. Of those 24 million, fifty percent are Hispanic, and farming, landscaping and forestry workers are predominately Latino. With the rapid increase of Latino labor, Landscaping and Agriculture industry leaders have indicated a need for students entering those fields to have Spanish language skills and management skills that keep pace with this changing work force.

Spanish for the Green Industry prepares students going into the Agriculture and Landscaping industries to be better managers of a diverse workforce by encompassing language, culture, immigration and diversity management.

In developing this class, I followed two theories that lent themselves fully to a conversation class with a specific vocabulary base: Content-based instruction and Stephen Krashen's Theory of Second Language Acquisition.

Content-based instruction brings real-to-life situations into the classroom so that students learn the target language in the situations that they will encounter outside the classroom. Spanish for the Green Industry is taught in a classroom located next to the

university's horticulture gardens and greenhouses. Thus, I am able to teach vocabulary and sentence structure using real tools, and the greenhouses and the gardens serve as part of my classroom. Through role-play, students use the language in a setting fairly close to that which they will experience on the job site. As an added vocabulary base, I also use safety and training manuals printed in Spanish by the Extension service, the EPA and OSHA. Because students will not be writing or reading out on job sites, the class is strictly conversation based. Emphasis is put on vocabulary that will help students run their job sites efficiently, cost effectively and, most importantly, safely.

Stephen Krashen's Theory of Sec-
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ond Language Acquisition suggests that students learn a second language as they did their first, through listening and taking small steps toward conversation. Krashen also states that a student's affective filter (emotional conditions that affect learning - i.e. fear, anxiety, poor self image, lack of motivation) needs to be low for the brain to process language

At the beginning of the semester, students learn and use simple nouns and command verbs. They then learn to form simple sentences that describe or ask someone to do a specific job. By the end of the semester, students participate in full conversations discussing daily jobs or tasks. Students begin paired in twos and then, as their confidence, work in larger groups until they are comfortable enough to hold a full conversation in front of their classmates. Speaking assignments are built from simple conversation starters. Homework assignments focus on different aspects of agricultural jobs. Based on the homework assignment, students come to class with a vocabulary structure already pre-thought and are prepared to participate in conversation. By the end of the fifteen weeks, students are given a concept and are expected to create a full conversation without the aid of a prepared homework assignment.

When creating the class, I recorded all the vocabulary and made it accessible from a website to download to any pod catching device. Students can use this as a practice tool or a study tool to hear the language outside the classroom.

In class, I conduct assessment through listening exercises and speaking activities. Using photographs and movies of authentic job site actions, I question students about what is going on in the pictures. Students also create dialog based on the pictures. Over the course of the semester the assessment grows from students pointing out and labeling tools and verbs in vari-



ous pictures, to being able to answer questions about the video or picture, to being able to hold a conversation with a classmate based on the activities going on in the picture. Individuals are graded using a rubric.

Diversity management and immigration issues are brought to life by industry leaders visiting the classroom and sharing their experiences. Students have the opportunity to ask questions and discuss first hand the challenges and rewards of managing a workforce of combined cultures. Spanish speaking workers come in and speak with the students on their experience, which allows the students to practice their Spanish skills with a native speaker.

Students stay current of the latest immigration issues through reading articles from periodicals, conversations with the industry, and via the internet. Students also use the internet as a resource to learn about hiring practices of foreign workers and to access and fill out i9 forms and other government documents used in hiring. Reading "The Devil's Highway," by Luis Urrea, gives perspective on illegal immigration into the United States.

Spanish for the Green Industry was first offered in Fall 2001 as a one-credit elective. Three years later, the Universi-

ty approved the course as a three-credit requirement for four-year Horticulture students and two-year Agriculture Technology students. Urban Forestry added the class as a requirement in Fall 2009. Agricultural colleges across the country have now used this class as a model for similar courses on their campuses. The class has grown from a one-credit language course to a class that encompasses language, culture, and management.

The true test to the importance and impact of the class has been the feedback from the industry and students. Representatives from the landscape and agriculture industries regularly speak to my classes about the benefits of having taken a class such as this one. Industry leaders share the statistics and real life work situations that make a Spanish/culture class necessary. Students come back to visit or email to tell me how they would not have survived their first year out on the job if they hadn't take this particular Spanish class. Students and industry alike continue to validate the need for Spanish for the Green Industry.

IdeationNXT: A New Technology for Learning 3D Modeling

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The process of drawing is one of the oldest modes of communication known to human beings. We learn to draw before we can write. Drawing can help designers generate, develop and expand their design thinking while providing a learning experience at the same time. Drawing plays an important role in the Design process because it records our imagination and gives us reference points to initiate discussions and collaborations. The process of drawing is flexible, and one tool can be used to achieve different results by changing a few attributes, such as the way you hold it or how much pressure you apply. Also beneficial is the short learning curve associated with drawing.

In an ideal world, designers and artists would have the skill and freedom to utilize the immediacy of drawing as well as new technology tools for the creation of multiple forms. Unfortunately, 3D modeling on the computer, unlike drawing, is not easy to learn. While virtual models created in the computer allow for possibilities unavailable to drawings, the process comes with a steep learning curve, requiring much greater effort and patience than traditional representation tools. Within the spectrum of 3D modeling software applications, computer-aided-design (CAD) programs, the industry standard for industrial designers, tend to be exceptionally complicated because of their curve-based approach to modeling and their need to be exact in measurements and proportions. It is not the tool nor the user but the interaction between the two that causes difficulties. Our IDS 4974 was designed to explore the possibility of making this interaction easier and help further this process of interaction.

During the Spring 2009 semester, 5 Art students and 5 Industrial Design students were enrolled in IDS 4974. The



purpose of the course was to examine the benefits of teaching the strengths of each discipline. The students were asked to learn Modo (a subdivision-surface modeling program) using the methodology that has been used in the Design Visualization class. Unlike other CAD programs, Modo uses subdivision surfaces for modeling as opposed to the use of curves for building structures. These subdivision surfaces allow for quicker experimentation with general forms and volumes in the design process.

We modified the approach from tool based learning to task based learning. Of the participants in the class, five were from the senior level and had extensive knowledge of a different 3D modeling software application. The other five were sophomore level students and had a basic knowledge in another 3D modeling software application. Modo was new to both. All of the participants had the basic idea of representing their thoughts via Drawing.

The participants used a ballpoint pen and paper for drawing and Modo for modeling as they were asked to

complete a series of “sketching” exercises. Video tutorials, as well as in class demonstrations, were used to demonstrate the process. The analogue part was designed as a tool to provide the participants with the understanding of the task before it got executed in Modo. Again, because of Modo’s subdivision surface modeling approach, users are provided with the flexibility to change any aspect of a 3D model while modeling in a virtual space. It is like working with digital clay. These tasks are designed to provide users with just enough information and knowledge about the tools to perform that one task in that step. Once mastered, the next step draws on the knowledge gained in the previous step to help the user.

Through end of the semester surveys, as well as the visual examples of the student work, we saw a quick jump in the skills of the students when compared to their previous attempts at working with virtual modeling. More detailed survey information can be seen at <http://filebox.vt.edu/users/akshay/thin/>.

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