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Spring 5-1-2003

Volume 15, Number 01

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Hill, G. William Editor, "Volume 15, Number 01" (2003). *Reaching Through Teaching*. Book 36.
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Reaching Through Teaching

*A Journal of the Practice, Philosophy, and Scholarship
of College Teaching*



Volume XV

Spring 2003

The Center for Excellence in Teaching and Learning



Reaching Through Teaching

Volume 15, Spring 2003

Reaching Through Teaching is an online journal, which is published at the KSU Center for Excellence in Teaching & Learning (CETL) Web site. Its content is devoted to peer-reviewed articles and invited essays that address the teaching/learning process in higher education. Submissions that address the following topics from the perspective of any discipline are encouraged: research on teaching and student learning; assessment of teaching and student learning; research on problems and issues faculty face and related solutions; and innovative techniques or demonstrations.

Contributions are solicited from faculty at all colleges and universities. Please submit articles in Microsoft Word to the editor on a disk or as an email attachment (bhill@kennesaw.edu). Graphics must be submitted in jpeg format as a separate file with the manuscript. Starting with the Fall 2003 issue, all submissions must conform to the American Psychological Association publication style. We reserve the right to edit articles in keeping with our editorial practices. We do not accept previously published articles. For additional information on submissions, contact Bill Hill, Center for Excellence in Teaching and Learning, Kennesaw State University, 1000 Chastain Road, Mailbox #5400, Kennesaw, GA 30144-5591. Phone 770-423-6410.

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Sharing Teaching: The 10th Anniversary of the Georgia Conference on College & University Teaching

Bill Hill, Editor

Director, Center for Excellence in Teaching & Learning and Professor of Psychology

Ten years ago the then Director of the Kennesaw State University Center for Excellence in Teaching & Learning (CETL), Dr. Donald Forrester, had the vision to establish an annual interdisciplinary conference that would bring together faculty across the University System of Georgia to discuss and share research and innovations in teaching. Over the last 10 years the conference has prospered, providing a venue for faculty to form a community of teaching through sharing and conversation, both during and outside scheduled sessions.

Early in the history of the conference Dr. Lana Wachniak, who succeeded Don as CETL Director, instituted an annual practice of inviting presenters to publish papers of their presentations from the conference in *Reaching Through Teaching*. This issue continues that practice, but with a slight revision. The 2003 conference instituted a submission procedure that included a new category of competitive papers. Faculty were invited to submit full papers for conference presentation that were peer-reviewed for acceptance as both presentations and for ultimate publication in *Reaching Through Teaching*. This issue includes three competitive papers that were accepted for the 2003 conference after the peer review process.

In addition, this issue also includes the abstracts from all of the other presentations at the conference. In order to extend the community of discussion about innovative

teaching, I have included the email address of the author or first author for each presentation. I invite you to peruse the list and contact the authors for further information.

Last year, KSU President Dr. Betty Siegel, approved a significant reinvention of CETL. This included establishing half-time Faculty Fellows to advance teaching and learning in several areas: the scholarship of teaching and learning, the reflective practice of teaching, e-learning, scholarly discourse across disciplines, incorporating diversity in the curriculum, and student success and retention. The Fellows have inaugurated several on campus initiatives and assisted in other existing initiatives such as the Georgia Conference and editorial work on *Reaching Through Teaching*. Two of the 2002-2003 Fellows, Sandra Hillman (the reflective practice of teaching) and Mary Garner (scholarly discourse across the disciplines), have also contributed essays for this issue of *Reaching Through Teaching*.

Finally, I invite you to revisit the CETL Web site (<http://www.kennesaw.edu/cetl>) for additional information on CETL initiatives. Early in Fall 2003 we will be posting information there concerning the 11th Georgia Conference. I hope you can attend.

Bill Hill
CETL Director
June 2003

The Vending Machine Model of Undergraduate Education Vs. Interdisciplinary Team-Taught Courses

An essay by
Mary L. Garner
2002-2004 KSU CETL Fellow for Discourse Across Disciplines and
Assistant Professor of Mathematics

After his first experience with an interdisciplinary program at Evergreen State College, a middle-aged, married, African-American man with two children had the following to say about his previous education:

I went to schools that were real traditional. And it was always the same. It was like you went up to a vending machine, stuck in a coin, and out came a biology class. I would get so much information every week. I was expected to know the information for the quizzes, the midterm, and the final. And that was it. There was nothing about how biology applied to other areas. Nothing about studying biology in the United States, and the relationships between science, politics, and racism. You never got that. It was just one dimensional. At the end of the quarter you took your final and two weeks later you'd forget the stuff because you'd never use it again. It was a joke. (McCann, 2001, p. 356)

Vending machine food is perhaps the lowest form of sustenance, but unfortunately has many parallels with undergraduate education. Only one type of food at a time can be obtained from the machine, just as only one subject at a time can be studied. The food is often old and stale, not unlike some courses. If you walk away with nothing, you can get your money back (withdraw), just choose another machine (enroll with a different teacher), or come back later and try again. No matter where the machine is located, you can count on exactly the same product. Your selection of the product is the only active part you play

in the process; otherwise, you're a passive consumer.

Of course, some standardization in courses is necessary so that students are provided with the skills and techniques necessary to succeed, and there must be criteria for applying credit towards a degree or transferring credit for courses to other universities. As a teacher, I honestly believe that I am not providing a vending machine education, even though my course material is prescribed by standardized syllabi. I try to deliver a gourmet meal that reflects the personality and skill of the chef (me), as well as the special preferences of the customer (student), while at the same time delivering the required balance of meat, carbohydrates, and vegetables (skills and knowledge). I've often delivered finely concocted meals in the form of what I perceive as eloquent lectures, or even carefully planned assignments and series of hands-on activities, only to find later that the students came away with a vending machine education. They're not even quite sure of what it was they ate. I'd expect that most, if not all of the teachers of the student quoted above also earnestly delivered what they thought were gourmet meals.

The greatest weapon I've found against the vending machine education is a high quality, interdisciplinary, team-taught course. Perhaps such courses cannot be offered throughout the curriculum as a standard diet. A team of chefs cannot be assembled for every meal; a vending machine meal is sometimes necessary because of time constraints. However, vending machine education cannot be the

model that drives all courses in the curriculum.

There is evidence that students in high quality, interdisciplinary, team-taught courses develop exactly the skills that faculty long to develop in their students – ability to engage in critical thinking, skill in written and verbal communication, the ability to evaluate arguments, an appreciation for different perspectives, awareness of ethical issues, even increased interest in specific disciplines. William H. Newell, Executive Director of the Association of Integrative Studies and Director of the Institute in Integrative Studies at Miami University in Oxford, Ohio, describes the benefits of interdisciplinary courses in the following manner.

Students in high quality interdisciplinary courses are consistently reported to develop the traditional liberal arts skills of precision and clarity in reading, writing, speaking, and thinking; to confront challenges to their assumptions about themselves and their world; and to develop the habit of asking why instead of merely memorizing accepted facts.

Other educational outcomes seem to be a product of the interdisciplinary process itself: an appreciation for perspectives other than one's own; an ability to evaluate the testimony of experts; tolerance of ambiguity; increased sensitivity to ethical issues; an ability to synthesize or integrate; enlarged perspectives or horizons; more creative, original, or unconventional thinking; increased humility or listening skills; and sensitivity to disciplinary political or religious bias. (Newell, 1994, p. 35)

An example of a course that provides evidence for such student outcomes was presented at the 10th Annual Georgia Conference on College and University Teaching and is published in this issue of *Reaching Through Teaching*. Kenneth

Saladin, Distinguished Professor of Biology at Georgia College and State University, described a team-taught interdepartmental Honors Seminar built around the controversy over evolutionism and creationism. Saladin was the designated leader of the course and he engaged in debates with proponents of creationism. The students were assigned to teams and required to participate in a series of four debates, alternating as proponents of creationism and proponents of evolutionism. In describing the students' performance, Saladin said:

We did not teach them what they ended up knowing about evolution; we gave not a single lecture that laid out the theory or evidence of evolution. They learned that on their own, through the research that they deemed necessary to avoid embarrassment and defeat in debate. We on the faculty called ourselves *facilitators*, and indeed that is what we did—we did not dispense information, but facilitated and guided their learning. I think we succeeded in producing students who were scientifically and historically better informed, and spiritually more self-aware. (Saladin, 2003, p. 28)

Two other benefits of interdisciplinary team-taught courses that are often cited in the literature include the opportunity for faculty development and the opportunity to experiment with innovative pedagogy (Cornwell & Stoddard, 2001; McNeal & Weaver, 2001; Wineburg & Grossman, 2000). The intense collaboration across disciplines required by high quality interdisciplinary courses has been shown to be a rich means of faculty development. The collaboration not only enhances faculty members' understanding of their own disciplines and its influence on other disciplines, but can also significantly change faculty members' views on teaching and learning. Interdisciplinary team-teaching also promotes better teaching and experimentation with innovative pedagogy.

In all references to the benefits of interdisciplinary team-taught courses, authors are careful to refer to “high quality” versions of such courses. The term “high quality” refers to courses with the following characteristics (Newell, 1994; Wineburg & Grossman, 2000):

- There is a firm and rigorous basis in the disciplines. Such courses do not sacrifice disciplinary content or water it down, but serve to reinforce it and enhance it. The courses often stimulate increased interest in and appreciation for the disciplines.
- The faculty members involved must come to know and respect each other as scholars and thinkers before working together on the course.
- The interdisciplinary team must engage in extensive planning and ongoing revision of the course and its materials.
- The course must have a hook, a focus that may take the form of a book, an issue, or a question that cannot be fully understood without an interdisciplinary perspective.
- Most of all, there must be a dialog among faculty from different disciplines. “What lends interdisciplinary study much of its challenge and delight is the creative tension that arises from contrasting disciplinary insights” (Newell, 1994, p. 39). Many courses named “interdisciplinary” or “team-taught” are actually small versions of the vending machine model of education in which faculty lecture in a serial fashion, independently of each other. No interaction, debate, or synthesis of views occurs in such an environment. The term “multidisciplinary” is often reserved for such courses.

The key to designing and delivering high quality, truly interdisciplinary courses, according to Newell (1994) and others

(Davis, 1995; McNeal & Weaver, 2001; Wineburg & Grossman, 2000) is the faculty team.

As it turns out, collaboration on an interdisciplinary team is a lot like marriage. One must ask whether the particular mix of personalities proposing a course will work together appropriately. Are the prospective partners discreet as well as knowledgeable? They will learn where the other is most vulnerable or deficient. At least half of the course will deal with material outside one’s expertise, which means that one runs the risk of exposing some cherished assumptions as incomplete and misleading if not actually wrong. Values as well as facts become the focus of discussion and debate, so that a partner must be trusted as well as respected. Love is optional. (Newell, 1994, p. 38).

The catalyst for the establishment of effective interdisciplinary teams is usually some form of interdisciplinary faculty seminar. “At the intellectual heart of many successful interdisciplinary programs,” writes Newell (1994, p. 36), “we find an interdisciplinary faculty seminar” in which a particular book or issue is discussed on a regular basis from a variety of perspectives. These seminars “promote an intellectual community, expand faculty perspectives, develop interdisciplinary skills” and then spawn new interdisciplinary courses. Adler (2001) agrees:

Essential to any faculty member’s transformation from purveyor of specialized knowledge to facilitator of interdisciplinary learning is his or her active participation in faculty cadres where courses and themes are formulated and through which the process of continuing interdisciplinary faculty education occurs. (Adler, 2001, p. 157)

A major part of CETL’s mission is to provide such opportunities for faculty.

High quality, team-taught interdisciplinary courses have no place in the vending machine model of education. They require very active and time-consuming participation by both faculty members and students, and the experience is one of growth and learning for both faculty and students. Students participate in the preparation of the gourmet meal, led by a team of chefs, and emerge with a set of complex skills that can be transferred to a variety of situations. Participation in a high quality, team-taught interdisciplinary course, particularly one that pulls together very different disciplines, can be a profound opportunity for faculty renewal and student learning in the deepest sense. We can begin moving toward the design and delivery of more team-taught interdisciplinary courses for all students by engaging with other faculty in discussions around substantive intellectual works or issues. As faculty, we can model the passion for learning, critical thinking, and respect for colleagues that we desire to see so much in our students.

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Why Reflect? The Relevance of Reflective Practice to Teaching and Learning in Higher Education

An Essay by

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One of the three main premises of the National Commission on Teaching and America's Future states that what teachers know and can do is the most important influence on what students learn (Schultheiss, 1998). If we want student learning, we need good teachers. If we want good teachers, we must find out what makes them good. Until recently efforts to explain what teachers do focused primarily on knowledge and skills. This suggests a static view of teaching that implies once teachers acquire knowledge and skills they are automatically effective in the classroom. Because theories about teachers' knowledge and skills fail to explain effective teachers' talent for the changeability and unpredictability of the classroom, a new area of study has emerged--the study of reflection. This view implies that while knowledge and skills are essential for teachers, so are certain ways of thinking or reflecting on who they are and what they do. Reflection then, seems to be another piece of the puzzle, which in addition to knowledge and skills explains not just what teachers do, but how good they do it (Jay, 1999).

Reflective practice is an interesting and important evolving concept in the literature on teaching and learning in higher education. It involves thinking about the self who teaches, learning from your own practice of teaching as well as from the practices of others. Reflection enables the teacher to get in touch with the self who teaches and gain new perspectives on the dilemmas and contradictions inherent in educational situations, improve judgment and increase the probability of taking informed action when situations are

complex, unique, and uncertain (Florez, 2001).

In the 1930's John Dewey defined reflection as a proactive, ongoing examination of beliefs and practices, their origins and their impact (Stanley, 1998). This definition has undergone much interpretation in its application to teaching. In 1987, Schon introduced the concept of reflective practice as a critical process in refining one's artistry in a specific discipline. Since that time reflective practice has been influenced by various philosophical and pedagogical theories. One of these influences is constructivism. The constructivist approach views learning as an active process where learners reflect upon current as well as past knowledge and experiences to generate new ideas and concepts. A humanistic element of reflective practice is its concern with personal growth and its goal of liberation from values that may limit that growth (Kullman, 1998). In reflective practice, faculty engage in a continuous cycle of self observation and self evaluation in order to understand the actions and reactions that they elicit in themselves and in their students (Brookfield, 1995).

As an epistemology of practice, reflection is simultaneously both a way of knowing and doing. It addresses the familiar dichotomy between hard knowledge of science and scholarship and the soft knowledge of clinical artistry and unvarnished opinion. In a sense reflective practice is an oxymoron and a paradox. It is a proposition that seems self-contradictory but in reality expresses a possible truth (Longenecker, 1999).

Reflective practice on the self that teaches and on our own performance as

teachers is one form of professional assessment. If we are to become more *effective* teachers, we need to become more *reflective* teachers. To be reflective we need to articulate our theories of learning, critically examine them, and replace what needs replacing. Consciously engaging in reflective practice enables the teacher to learn from and potentially enhance teaching and learning about teaching. Reflective practice can include teaching, encouraging learning, and the scholarship of teaching.

The potential for reflection to increase the effectiveness of teaching has led to efforts to describe the processes of reflection so they can be learned and applied by faculty. Together with pedagogical skills and knowledge, reflection helps to round out the picture of what it is that effective teachers do (Schon, 1983).

There are numerous, unique and complex ways in which reflection can shed light on different educational issues for teachers. While it is essential to know that reflection is one composite concept, looking at it from different angles can help us to see it as a whole more clearly. Over the last decade Dr. Parker Palmer has developed the Courage to Teach program, which invites teachers to identify and reflect on the self who teaches. In addition reflection on teaching and learning can take the forms of a problem solving technique, a frame analysis, a bridge between theory and practice, and a Zen like mindfulness (Jay, 1999).

Palmer (1998), building on the concept of reflective practice of the self who teaches, suggests that teaching, like any truly human activity, emerges from one's inwardness, for better or worse. He contends that as we teach, we project the condition of our soul onto our students, our subject matter, and our way of being together. Reduce teaching to intellect and it becomes a cold abstraction; reduce it to emotions and it becomes narcissistic, reduce it to the spiritual and it loses its anchor to the world. Intellect, emotion, and spirit depend on each other for wholeness. They are interwoven in

the human self and in education at its best and we need to interweave them into our pedagogical discourse as well.

According to Palmer, the teacher within is not the voice of conscience but of identity and integrity. It speaks not of what ought to be, but of what is real for us, of what is true. It says things like, "This is what fits you and this is what doesn't." "This is what gives you life and this is what kills your spirit." The teacher within stands guard at the gate of selfhood, warding off whatever insults our integrity and welcoming whatever affirms it. The voice of the inward teacher reminds you of your potential and limits as you negotiate the force field of your life (Palmer, 1998)

Palmer (1993) recalls that many of the countless teachers he has worked with have confirmed his own experience that as important as methods may be, the most practical thing we can achieve in any kind of work is insight into what is happening inside us as we do it. The more familiar we are with our inner terrain, the more surefooted our teaching and living become. He suggests that technique is what teachers use until the real teacher shows up. Good methods can help a teacher find a way into the student's mind, but good teaching does not begin until the real-life teacher joins with the real life of the student (Palmer, 1993).

Parker Palmer invites teachers to go beyond the outer surface of structural reform and summon the courage to explore the inner landscape of their lives as educators. Palmer focuses on the questions: "Who is the self that teaches?" "How does the quality of the teacher's selfhood form or deform the way in which he or she relates to students, the subject, and colleagues?" "How can educational institutions sustain and deepen the selfhood from which good teaching comes?" (Palmer, 1998).

How do we apply reflective practice to teaching? One way is to view reflection as a problem solving technique, a strategy for waiting out problems or interesting phenomenon (e.g., when teachers know the

curriculum is not working for students and they find a need to make change). Issues may be vague, as when the teacher senses a resistance tone from a class but doesn't know why. Once defined the teacher can think the problem out in a purposeful and deliberate way (Dewey, 1933).

The personal nature of reflection and the idiosyncrasies of classrooms indicate that reflection, as a problem solving technique, may not always be consistent. However, there are some common processes that generally seem to take place, including describing the situation, surfacing and criticizing initial understandings and assumptions, and persisting with an attitude of open-mindedness, responsibility, and whole heartedness (Jay, 1999).

Evans (1995) describes an interesting example of reflection applied to problem solving in trying a writer's workshop in her classroom that used the topic of family stories. In her words, "quite simply it was a disaster"(p. 267). In her process of reflecting to first understand and then redress this instructional problem, Evans continued to try new strategies to make the writer's workshop successful. At the same time she continued reflecting through journaling and dialoguing with colleagues. Ultimately an explanation for students' unwillingness to write emerged. Apparently many of the students' lives contained violence, poverty, abuse, hopelessness, and rejection. As a result they were not ready to reveal their home lives (Jay, 1999).

Evans' example indicates that reflection is more than looking over what she had done; it also helps to see where she should go next. The purpose of reflection, as a problem solving technique, is to make more sense of a puzzling situation; working toward a better understanding of the problem and finding ways of solving it (Loughran, 1995).

Another form of reflective practice is called frame analysis, which involves uncovering assumptions and beliefs. Using Evans' example, her frame, the writer's

workshop, determined her strategies for solving the problem. The frame set the direction in which she tried to address the situation. She focused on making the writer's workshop successful. Schon (1987) pointed out that when teachers are unaware of their frames for roles or problems they do not experience the need to choose among them and they do not attend to the ways in which they construct the reality in which they function. In Evans' example, her initial lack of attention to her construction of reality provides an example of how teachers who are not reflective practitioners can fall victim to their blind spots. When Evans' assumptions were challenged by her students' personal reality and past writing experiences, she then considered reflecting on her frame of reference. Becoming aware of the alternative perspective of herself made it possible for her to surface the assumptions inherent in her teaching approach. Frame analysis occurred when the reality of students' home lives helped break her out of her original frame. Frame analysis is similar to problem solving when a problem is explicitly evident but also offers potential for helping teachers attempting to surface hidden, implicit problems that they don't even realize exist (Jay, 1999)

Reflection on theory, a means by which teacher can use their judgment and experience to render abstract ideas more practical, personal, and meaningful, is another form of applying reflective practice in the classroom. Reflection can be viewed as a process by which a teacher can try on a theory, consider its meaning and consequences in a particular context, and experiment with the application in practice. For example, Evans might begin by exploring theories of teaching for diversity suggested by these and other writers by incorporating them into her teaching approach, then reflecting on the result--continuing to study, test, and reflect on the idea until perhaps her practice becomes transformed and more effective for students (Jay, 1999). Reflection as a bridge between

theory and practice, in addition to solving problems and examining assumptions, enables teachers to enhance the limitations of their own singular understanding of a situation by tapping other perspectives revealed by theories (Jay, 1999).

Reflection can also be viewed as a way of being that transcends strategy and practicality, approaching artistry in its execution. This view of reflection recognizes teaching as more than problem solving and the application of theory; it has an element of intuition and mindfulness. As Tremmel (1993) explains, “mindfulness means to pay attention to right here, right now and to invest the present moment with full awareness and concentration” (p. 434). Reflection as mindfulness, while esoteric to many, is no less direct and concrete than other forms of reflection. Teachers reflecting in the moment rely on classroom discussion itself to determine the plan to get students to reach a deeper level of understanding on the topic as opposed to following a scripted plan with discussion points carefully laid out. The spontaneity of this type of reflection suggests its reliance on intuition and emotion. Reflection has different forms which effective teachers apply and so teachers can see what is happening when it is happening (Jay, 1999).

In summary, it is important to remember that these forms of reflection are not mutually exclusive and they become intimately intertwined to compose a composite concept. The power of reflection lies in the way it thrives on the complexity of educational life. The primary benefit of reflective practice for teachers in higher education is a deeper understanding of the “who” that teaches as well as one’s own teaching style, a process that ultimately results in greater effectiveness as a teacher. Research on effective teaching over the past two decades has shown that it is linked to inquiry, reflection, and continuous professional growth. Other specific benefits noted in the current literature include the validation of a teacher’s ideals, beneficial

challenges to tradition, the recognition of teaching as artistry, and respect for diversity in applying theory to classroom practice. Reflective practice requires a commitment to continuous self-development and the time to achieve it.

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Building Community in the Foreign Language Classroom

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North Georgia College & State University

Abstract

In this paper we discuss the anxiety a student feels in a foreign language course. In order to lessen this feeling and create community or cohesion among students in the class, we offer practical suggestions for group work and theatrical productions. The role of the professor in facilitating this process is also discussed in terms of creating a more student-centered class.

How do faculty create community in the classroom? Open and truthful communication is the key. Both the words community and communicate are derived from the Latin *commūnis* “common.” We have something in common with all of our students. We too were beginning learners of the language in which we are now considered experts. We have to communicate to them that we understand what they are going through because we too had to learn the language. This does not mean we should “baby” our students, but we should be empathetic with them. We also need to create a classroom community in which students are free to meet fellow students and realize that they are not the only “strugglers.” Such an environment promotes more truthful discussion of the problems the students are facing and bridges the gap between professors and students.

Open lines of communication are one way to create community among students and between student and professor. In the foreign language classroom language complicates communication since language skills are limited. In this paper we will discuss ways to create classroom community by describing what we use to bring motivated and not-so-motivated students together and by pondering the classroom relationship between teacher and students.

Reducing Anxiety and Increasing Trust

During class registration some students spend countless hours asking around “Who’s the easiest Spanish teacher?” or reworking their whole life schedule to avoid taking the “native” teacher. This, of course, also applies to other anxiety-provoking courses. Why did we or do our students do this? Most professors do not think of themselves or their colleagues as threatening. The fact is that many students are simply scared to death to take a foreign language, especially if they have never had one before. From the outset, the word “foreign” conjures up fear, something that is unknown, something that cannot be related to, or, for many students a subject that is just plain alien. To temper these fears, we have to be user-friendly educators. Students are scared enough about the language and should not also have to be frightened of coming to their teachers for help. In fact, when students ask, “Who’s the easiest?” they probably are referring to who has the best rapport with students or in whose class they will feel most comfortable.

Most of a traditional college age student’s success depends on what their peers think of them. Imagine what being in a class where you cannot even pronounce the words or put a whole sentence together can do for student morale and reputation. Non-traditional students have probably been in the work force, have a family, already feel pressure about being the only “golden oldie” in the class, and now have the added pressure of not being able to produce a coherent sentence. The feeling of being evaluated as unintelligent by peers could be worse than being evaluated similarly by the professor. This dual fear of evaluation definitely compounds the problem of creating community. Students begin to

experience fear before they even attend the first class meeting. We need to discuss their anxiety on the first day of class. Therefore, faculty from day one must be armed with ammunition to combat students' anxiety.

One of the ways we can do this is to earn our students' trust which will create a more comfortable environment in which they can be open to taking risks with the language in class with the likelihood that mistakes will be made. As Stephen Krashen's (1982) affective filter hypothesis implies, students with low affective filters are more open to receive and acquire comprehensible language input whereas those with high affective filters will be impeded in language learning. Krashen states, "The effective language teacher is someone who can provide input and help make it comprehensible in a low anxiety situation" (1982, p. 32). Williams (1991) notes that a low-anxiety state may have a facilitating function and a high-anxiety state a debilitating effect. Thus, a little anxiety is not a bad thing because it keeps the students on task. However, anxiety should only occur in healthy doses. If not, we risk our retention rate of students who may find themselves wanting to minor or even major in Spanish.

As all faculty who have taught before know, the first day of class sets the scene for what is to come. Without seeming schizophrenic, how do we get across to our students that we are empathic to their language learning, that we know it is not easy, yet we still have to hold them to a certain standard and are going to immerse them (or as they read it, make their lives miserable) by possibly speaking only in the target language? It is not easy. We cannot expect our students to trust us after only one class meeting, but we can certainly make them feel better about being in the class and begin lowering their affective filters. How do we do this? We use humor, anecdotes of our language learning, and try to give the students a sense of who we are so that they come away thinking we are somewhat human. In a foreign language course,

especially a beginning course, we exchange all kinds of personal information. Faculty try to get the students accustomed to this on the first day by giving our personal information. We find that adding stories of linguistic mishaps in the foreign language also helps to break the ice. By personalizing our experiences through anecdotes we not only demonstrate our humanness but we accomplish other goals as well. We share with our students' examples of our own vulnerable experience when we may have felt stupid or laughed at while at the same time showing them that we survived it! This sharing facilitates opening the doors of honesty by admitting that we are not perfect. In addition we are open to discussing language-learning issues in the classroom and in our offices. Finally, we are using the stories as a common link between faculty and students. Taking a couple of minutes to share funny or perhaps embarrassing tales is one way to lower the affective filter and put the students more at ease. They see that we do not expect them to be perfect after 16 weeks of instruction.

In many foreign language classrooms that insist on one hundred percent use of the target language, truth is not practiced. We should not evade questions or invent answers. If we do not know, we say, "I don't know, but I'll find out and get back to you." This gains more student respect than bluffing our way through an answer. Why then do some foreign language teachers say "No comprendo" *I don't understand* or simply pretend to not understand when a student asks or comments in English? The truth is we do understand. We are compromising our integrity with our students by lying when they all know that, of course, their teacher understands English. If we insist on students asking in the target language when they cannot articulate, we are breaking the lines of communication. If the question is one students should be capable of articulating at that level, then the teacher should simply say "Por favor, haz la pregunta en español" *Please ask in Spanish*.

If students cannot express the question, then this can be used as a brief exercise in teaching circumlocution, or a different easier way to ask the question in Spanish, a skill that is essential to foreign language learners. If the question is too difficult for students, they should not be made to feel bad about using English, especially in first year Spanish. Another way of making students feel like their questions are important to us is to allow a couple of minutes at the end of each class for clarifications or questions in English. This validates those students who will simply become mute at times and perhaps will help keep most students on track. Of course, all students should feel welcomed in office hours to discuss their problems. Faculty attitudes can perpetuate an atmosphere of silence which is the result of following a strictly prescriptivist curriculum or they can facilitate a community-based feeling where students are more comfortable speaking or are not terrified to ask a question in English.

To build a truthful relationship with our students, they should not be put on the defensive. No one likes to be put in this situation. Being placed on the spot for a whole semester is counterproductive to learning. The issue of feedback and correction has received much attention over the years in second language acquisition research. Our feedback in class should not make our students look dumb. We should not say direct statements such as “No, where did you come up with that?” It is natural for them to make mistakes in a foreign language, and we need to make sure they know this. In-depth feedback can be given on written work but in a non-threatening manner. Putting students in groups is one way to lower anxiety. Students can discuss their answers and if, in the end, they are incorrect, it is the whole group that is wrong and not the individual thus dissipating the sense of embarrassment.

No matter how much of an equal opportunity community we want to create in our classrooms, we will always be the power

figure simply because we are the professor with the final word and the grade-giver. It is essential that we create a community where faculty and student work together and every voice has a chance to be heard. In other words, we do not want to project ourselves as dictators who are out to flunk or destroy members of our community who do not always conform (i.e., have the correct answer). Our students know we have the ultimate power, but we do not have to flaunt it in front of them. We can be effective leaders without threatening them. Another way we make ourselves seem less dictator-like is moving out from behind the podium or the desk to de-center the class and empower the students. We are less of a figure to be feared if we mingle with our students and participate in their groups. By putting students in groups they also have a sense of collective power and the focus of the course can become more student-centered. Collaboration through group work is indeed a means of building community in our classrooms.

Building Community Through Group Work

The work of human development theorist Lev Vygotsky and his concepts of scaffolding and the zone of proximal development serve as a valid theoretical framework for the adoption of group work as a community building practice. Prawat (1993) noted that Vygotsky emphasized the key role of social relations for all types of complex mental activities. The acquisition of knowledge or skills through collaboration with others is, according to Vygotskian approaches, the most effective way of learning.

If learning occurs as Vygotsky describes, then it is only logical to think that through interaction with others is how we learn best. As teachers we should try to create an environment in which group interactions are at the soul of classroom practices. But if we look at how most

classroom work takes place we will see some, but not much of what Vygotsky suggests. It appears that most teachers are in favor of group work from the theoretical point of view, but when it comes to practice there is a great of reluctance. What could be the basis for faculty to have this attitude toward group work? Is group work harder to control? Do students work or waste time when they are in groups? Do all the students work or does just one do the work while the others do nothing? Do they all like to work in groups?

Prior to analyzing these questions we need to look at what we understand a group to be. A group in the classroom is formed when three or more students decide to work together toward a common goal. As time goes by the group shares experiences, ideas, emotions, and identity as the group slowly develops. A simple rearrangement of furniture or instructing students to “work in groups” will not be sufficient to comply with the above definition of group. More than that is required for a group identity to develop. Along the same lines is the previously mentioned concept of teacher versus student-centered approach. Creating a student-centered environment requires more than moving the chairs in a circle. When responsibility, control, and attention are placed on the students themselves working in groups, then they become the center of the classroom, and they lead the way. The trick or the difficulty lies in creating a content-challenging environment that will promote this behavior as opposed to total classroom chaos.

The sense of belonging to a group not only aids the acquisition process as Vygotsky describes, but also helps in dealing with the high level of anxiety most foreign language learners feel when entering a foreign language classroom. As we mentioned earlier, peer evaluation is sometimes more stressful than evaluation given by the instructor. When their performance is sheltered and supported by a group, it can become a much less stressful

experience. The goal of making their classroom experience more comfortable is not about making things “easier” for students. It is about creating a less threatening environment that will allow the interaction of ideas and negotiation of meaning. This negotiation can only occur when the interaction occurs between peers and not only between teacher and students. When the work students have to produce is the result of a group creation then the tension and responsibility is shared among the group members. It is also widely mentioned how working in groups helps promote a more positive affective climate increasing a student’s motivation to learn. This sheltered environment is extremely helpful for those students who entered the language classroom with fear of opening their mouth.

Other suggestions to help build a comfortable and productive group work environment are the following:

- At the beginning, create activities that are challenging but at the same time reasonable enough for them to gain confidence.
- Address them as a group and although the question may be focused on one individual in particular make it a point that the whole group is there for support and help.
- Promote healthy competition among groups to help build team spirit.

Another common concern about group work among teachers is what happens when one does the work and the others do not do anything. This issue too can be addressed with positive results. Dr. Wienckie (Personal Communication) at the State University of West Georgia outlines how to deal with this situation:

Make the first activity a team building one, an activity that will require little linguistic production but a lot of group coordination. The goal of this first step is to get them acquainted with each other and give them confidence.

If a student is going to be a slacker in a group, he or she will very likely be a slacker when working individually also. But perhaps a group environment serves as a motivating experience for one who would normally be a slacker. This is also concern held by the rest of the group. Is it fair to them to do the work for him/her? This is one thing all of us probably go through with group work assignments. The following is my explanation as to why it is important to do group work:

One important reason for working in groups is that once you go into a job you will likely have to work in teams. The ability to deal with someone who is not doing his or her part is also an ability you have to learn. If you can't find a way of dealing with it then come back to me.

In most cases they can solve the problems on their own. The more responsible we make students for their own learning process and outcomes, the more chances we will have of creating and sustaining a more truthful relationship with them.

While it is definitely important to recognize the research that supports the idea of group work in the classroom, it is probably equally important and useful is a selection of examples that can illustrate what is discussed in theory. The following is a scenario with examples of what can be done to building a learning community in the classroom. We approach our students at the beginning of the semester telling them, of course, about the syllabus. We spend time discussing content and then we go straight to how they will be expected to work. We make it clear that about 50% of their grade will come from work they will produce in groups. Class work will be almost all in groups. So we talk about how to form these groups and we negotiate details to make them comfortable. They have the first week and a half to decide with whom to work. Once the group is set we take pictures of them, they come up with a name for the group, and they all exchange names and

emails to make sure they can contact each other. Then we explain to them that for each project each team member has a role and the roles will have to be rotated every 2 weeks, which corresponds to every project and gives us enough time to see every student performing in each role. The roles are: leader, writer, editor and reporter. In everything they do in groups they are responsible for fulfilling those roles. The first project is for them to get to know each other, learn about the mechanics of working in groups and produce basic sentences about themselves in Spanish. In this first project each student has to talk about who they are, where they are from, what they like to do and something special about them. The leader will time the project, assign tasks and stay on top of the group's production. The writer will collect and put together everyone's information. The editor, of course, edits grammar, content and presentation. Finally, the reporter is the one in charge of presenting it to the class. Expectations, responsibilities, and tasks are specified clearly from the beginning. The reporter is also responsible for emailing us every Friday with brief comments on the group's performance for that week. If there are problems within a group, the reporter will inform us of that. For the next project the roles rotate and it goes on for the rest of the semester. Our experience with this type of approach is far from broad, but still we must say that in the 9 years we have been teaching a foreign language this type of work in groups has been the one with the most positive results.

As Perkins (1991) points out, cooperative learning illustrates distributive intelligence. Perkins defines distributive intelligence, as an accomplishment that is not a function simply of individual capabilities but the product of individuals and tools (such as language) at work, each of which contributes to achieving desired goals. The ability to work in a group to solve problems and develop products is a skill that not all of us have or enjoy. But what

students learn, Brown, Collins, and Duguid (1989) argue, “should not be separated from how they learn it”. Students must come to understand how to transfer knowledge by learning it at the same time they are applying it in meaningful contexts.

In language learning, language is mainly a tool of communication, to express ideas, thoughts, and emotions, etc. Learning a language and applying it at the same time will require almost inevitably the setting up of group interactions in which to practice the skills that are to be acquired. A meaningful language-learning context translates mainly as a context that creates opportunities for students to express themselves with others.

Using Theater to Create Meaningful Learning

One way of achieving meaningful conversation beyond the short dialogs we all have seen in textbooks is by incorporating theater into our classes. Theatrical productions within the context of the foreign language class allow for a culmination of the strategies for productive relationships and truth in community. Building personal relationships is easily effected when working outside of the textbook-based target language exercises. Within the context of a theatrical production, the stressors associated with the words “homework,” “quiz,” “exam,” and “grammar exercise” disappear. The theater terminology brings a new perspective and new attitude toward the activity since it is not “work,” but rather a “play.” It is not focused on the text, although a script is studied. It focuses on the people speaking, moving and inter-acting. The power of the word “play” immediately removes the angst of verb conjugation, assessment and searching for vocabulary. Anxiety may still exist, but it is not for those specifically associated with performance in the language classroom. The concept of memorizing lines and interacting on stage has its own challenges for any student, but they are familiar and tangible, thus more

easily conquered, and specifically not “foreign” to their realm of experience, though the language may be.

A dramatic representation is inherently collaborative. Students rely on the language to communicate in a real-life situation and on the teacher for comprehension of linguistic nuances as well as pronunciation. The collaboration, however, shifts the focus from teacher and student to that of interdependence between students. Students must face each other, know their lines, pronounce them well enough to be understood, relay the appropriate emotion at the right time and be trusted by their fellow actors to rehearse, to prepare and to work together for the finished production.

Successfully learning language in context is difficult at best in the foreign language classroom. Teachers consistently use visual aids to assist their students in learning vocabulary both in writing and for oral production exercises. A play more realistically imitates the relationship of the student and the language. In a play the context is clear but the language is shared as a means of communication between students, rather than between student and teacher, or student and text. Additionally, the scenes in a play offer students a sense of what conversation in the target language feels like. In lieu of the common question/answer exercises in class between teacher and student or between students, this allows for a much broader scope. Cadence of speech, exchange of comments in a natural conversation, and common interjections all appear in stage scripts, and thus accustom the student to realistic speech in every day life. As most actors know, real life situations often lend themselves to use of lines learned in plays. Students acting in foreign language plays also learn expressions, exclamations, and vocabulary to express feelings and comments in given contexts.

Learning a play offers enormous opportunity for contact hours with the target language, both as individual work and as

group work. Individually, students spend time memorizing lines, practicing pronunciation and by the very nature of repetition, they are learning the grammatical structure of the language. This is one particularly effective way to learn the subjunctive with its irregular verb conjugations. In a group rehearsal, students are more likely to help one another with pronunciation, with working out the meaning of words or phrases and with interpretation of delivery. This type of activity leaves the charged atmosphere of classroom assessments and allows for exploration of the language informally, but with much more attention and participation of the student.

Earning trust is very important in theater, but is also a natural outgrowth of the relationship of student and teacher/director. The teacher's role as facilitator of learning continues, but in the mode of directing the student toward successful performance on stage. Oddly enough, since the venue changes from classroom activity to theater—even if it occurs within the same classroom—the students' attitude changes. They see the teacher as director, someone who is guiding them toward a successful performance, not someone who is asking them to perform grammatically in writing. The pressure is not on being correct grammatically and the pressure does not come from the teacher. The pressure to do well comes from within the students themselves, since they associate personally with their success on stage. We frequently have students drop by our offices to run lines, to review pronunciation and to clarify meanings of lines; the visits are always student initiated, a wonderful change from our perspective as a teacher who always asks students to come by for help.

Another aspect of language learning in the theatrical context is that of truth in community. Truth in language learning means, in very simple terms, that it is normal and appropriate to make mistakes. As mentioned previously, students learn to

fear making fools of themselves and they fear failing because the classroom is inherently laced with evaluations and assessments, not to mention comparisons with fellow students. Truth is not only allowed, but is blatantly obvious during rehearsals. During play rehearsals on stage, actors in English make mistakes, mispronounce or misinterpret lines spoken and the reaction is simply to try again as all laugh or groan, but it becomes a collective effort to support one other and to rehearse together. This is true for any theatrical rehearsal with students of a foreign language. The bond that actors form springs directly from the fact that they share a common goal as well as an individual goal. In the foreign language classroom, efforts students make in class are more often than not simply practice for the oral proficiency exam as a solo performance. The symbiotic relationship of foreign language students and theater allows for students to maintain a "real" context and "real" conversation with natural conversational flow. The test for a theatrical play is when the curtain goes up for the performance, but students are still dependent upon each other, much like any participant in a conversation. By then, the students will have worked individually and collectively enough, trust each other enough, and have studied enough so that they can perform as a troupe and as the individual character for a successful performance, which the spectators will both understand and appreciate.

As we have seen, building classroom community begins with us through the efforts we make from the first day of class to bring students of different backgrounds yet similar language learning anxieties together as a group. For foreign language learning to be effective, we must relieve students' anxiety so that they become risk-takers in the production of language. Group work effectively lowers individual anxiety levels by becoming a cooperative effort as well as each individual having a role within the group. One way of exemplifying the

community that we have created in our classrooms is through a theatrical production where each student must work individually and collectively for the success of the whole play. Through group work and theater, both communication and community are practiced. We are helping our students to be more successful by providing them opportunities in the classroom that mimic both language skills used in everyday conversational interactions and life skills through preparing them to work with members of other communities in which they will be a member.

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How 'Bout Them Dogmas? An Interdisciplinary Approach to Understanding the Debate Between Creationism and Evolution

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Abstract

This paper describes a team-taught interdepartmental honors seminar on the controversy over evolution and creationism. Through research, class discussions, formal debates, and guest speaker, the students explored issues of American history, constitutional law, philosophy, theology, comparative mythology, theater, cinema, and diverse branches of natural science including biology, geology, paleontology, physics, biochemistry, and astronomy. This seminar serves as an example of how the critical analysis of pseudointellectual doctrines can have a uniquely stimulating and broadly interdisciplinary educational impact.

In academic life, we confront many pseudointellectual ideas that contend for public respect and sometimes even for a place in the curriculum. We have revisionist historians denying the Holocaust; cult archeologists telling us extraterrestrial visitors built the pyramids of Egypt; and creationists agitating for inclusion in biology classes. Our reactions to these cult ideologies range from the merely dismissive to organized political opposition, as in the ongoing creationism controversy in Cobb County, Georgia. But whatever the form of our rejection or opposition, it is usually implicit that we deny them a place in our teaching.

I will argue that even while we afford no academic credence to imposters, we can make good educational use of these controversies. We can use them to teach the legitimate content of our disciplines, and to do so with unusual effectiveness. My case in point is an interdisciplinary, team-taught honors seminar that I led in spring 2001 at Georgia College and State University

(GC&SU). The theme of the seminar was the conflict between evolution and creationism.

An Issue That Refuses to Die

A seminar on this subject is timely and politically relevant. The public controversy rages unabated, and seems unlikely to go away any time soon. It is hardly necessary to point this out here in Cobb County, where the science faculty of Kennesaw State University so recently took the lead in trying to head off the introduction of so-called “Intelligent Design” creationism into the public school science curriculum.¹ Even the 2002 race for Georgia State School Superintendent was tinged by this controversy, as the winner, Kathy Cox, indicated that she is receptive to including creationism in science courses. Hardly a year goes by without a creationist bill being introduced in the Georgia legislature. Organizations no less than the National Academy of Sciences² and the American Association for the Advancement of Science³ took stands against the Cobb County school board policy.

Newspaper editorial pages are often full of ill-informed opinion on this issue. If we want our students to be able to participate more meaningfully in this debate, it behooves us to educate them on the issue. That alone is one justification for such a seminar—but I think there are even greater ones, which is what I will address in this paper: Why did we teach this seminar, how did we structure it, and what were its outcomes and benefits?

Why Teach About Creationism?

Not for a minute do I think creationism is a valid scientific theory or alternative to evolution. Not for a minute do I advocate teaching it as a science. It was neither the purpose nor the effect of our seminar to lend credibility to creationism. Nevertheless, this conflict is a useful springboard for teaching some things about science and society. It provides an especially good opportunity for interdisciplinary teaching. Creationist rhetoric touches not only upon biology but also upon geology, paleontology, biochemistry, physics, astronomy, and a few other branches of natural science.

It is easy to scoff at the creationists' scientific arguments, but less easy to identify exactly what is wrong with them. Creationists say, for example, that the radiocarbon dates obtained from certain clams indicate that they had been dead for 2,000 years, and yet the clams in question were still alive, thus casting doubt on the reliability of radiometric dating. How many people know exactly how to answer that? By critically analyzing arguments like this, our students and even we can learn a lot. It is like teaching archeology by having students pick apart the arguments of von Däniken; teaching a little astronomy by critically analyzing astrology; teaching nutrition by analyzing the fallacies of fad diets; or teaching medical physiology by exposing the illogic of medical quackery.

But outside the natural sciences, the creationism conflict also touches upon important issues of American history, constitutional law, educational policy, politics, philosophy, theology, literature, and even theater and cinema. The exploration of creationism can be a fascinating intellectual journey. There are not many subjects that can tie together so many aspects of cultural and intellectual life.

Another benefit of teaching this course is that when we require students to articulate well-informed opinions on the subject and even to openly debate the issue in class, we

can use it as a vehicle for teaching critical reasoning, persuasive self-expression, mutual respect, and civil discourse.

I never find students bored by this topic; our classroom discussions are very animated and interesting. This is not merely an academic subject to them. It impinges on most people's personal beliefs and values; most people have an opinion about it; and many people, especially in the enthusiasm of youth, enjoy discussing and debating it. Debate on a volatile issue like this has the potential to erupt into heated arguments. But I find that we can use that very peril to our advantage, by laying out and enforcing rules of civility, teaching people how to debate a hot issue without personal animosity.

In short, and in keeping with the mission of my university, this topic contains many elements of an excellent liberal arts education. It was in fact gratifying to me that our president, Rosemary DePaolo, held this seminar up as an exemplar of our liberal arts mission.

Format of the Course

All of the students in our Honors and Scholars Program at GC&SU are required to take two honors seminars. These are team teaching efforts. In our creation-evolution seminar, my fellow instructors were Dr. Rob Viau, Associate Professor of English and CETL director; and Dr. John Sallstrom, Professor of Philosophy and Religion and Associate Vice President for Academic Services. The three of us were better able to expose students to faculty insights and opinions from a variety of perspectives than faculty could from a single discipline, or even from just the natural sciences. Also very involved in the course was Dr. Doris Moody, Director of the Honors and Scholars Program, who handled a lot of the logistics of the course and provided funding.

In addition to these faculty, we had 11 guest speakers, some from our campus and some from places as distant as Boston and San Diego. This was possible because of the

strong support that President DePaolo gives to the program. She calls Honors Seminar the “crown jewel” of our liberal arts mission. Our expenses for the course were about \$4,600, most of it for bringing outside speakers—although I will later describe a more economical variation of the seminar that I taught in earlier years.

The class enrolled 23 honors students ranging from freshman to seniors, but mostly in their freshman or sophomore years. We met in the late afternoons on Monday and Tuesday for two hours each day. The Monday classes usually involved a speaker, with about one hour for his or her presentation and up to an hour for questions and dialog. We assigned readings linked to each speaker’s topic, ranging from scholarly articles to trial transcripts, court decisions, and even a bit of the Book of Genesis. On Tuesday we usually formed three breakout groups with seven or eight students and one professor, meeting in conference rooms to discuss the speaker and associated readings.

A key feature of the seminar is that the students were required to engage in four formal debates on creationism vs. evolution at the end of the term. They were advised of this at the outset and had all semester to research the subject, prepare their arguments, and prepare briefing books for rebutting whatever arguments the opposition might make. The class was evenly divided into four teams. At the end of the term, two of the teams debated in the Monday class and the other two teams on the following day. The week after that, the same teams debated each other again, but had to reverse positions—those who defended evolution the first week defended creationism the second, and vice versa.

This arrangement had two benefits. First, no students could reasonably accuse us of prejudice for forcing a fundamentalist Christian student to defend evolution, or forcing a religious skeptic to defend creationism—because in one debate or the other, everyone had to defend a position in which he or she did not personally believe,

purely as an exercise in rhetoric. Prelaw students, especially, might well appreciate such an experience. The second benefit is that students learn a great deal more by having to see both sides of an issue, and having to research and express a persuasive argument for each side.

Agenda of Speakers and Topics

Our speakers and topics from week to week were as follows. In the first week, we got acquainted, laid out our expectations for the class, and gave them an initial free-writing exercise in which they began a journal, writing whatever expectations and preconceptions of this subject they had at the outset.

The second week, Dr. Amy Burt, Assistant Professor of Speech, addressed the class on the protocols and strategies of collegiate debating, so they would have some tips at the outset on how to prepare for the most effective presentations at the end of the semester. We also divided them into debate teams that week so the students could get acquainted with their teammates and begin to decide on their individual responsibilities.

We then focused on the history of the conflict. Dr. Bob Wilson, Professor of History, talked about the birth of Protestant Fundamentalism in America and how the anti-evolution campaign arose from this movement against theological modernism (Numbers, 1982). This set the stage for a study of the most famous trial on evolution, the Scopes Trial of 1925. Theater director Walter Bilderback discussed how the Scopes Trial has been presented in theater and cinema, how its presentation differs from one cultural context to another, and how the dramatic presentations of the trial compared to its reality. The following day, we showed the 1960 film, *Inherit the Wind*, with Spencer Tracy playing the role (Henry Drummond) modeled on Clarence Darrow, and Frederic March playing the role

(Matthew Brady) modeled on William Jennings Bryan (Kramer, 1960).

We sent the students home with an excerpt from the transcript of the actual Scopes Trial (Rhea County Historical Society, 1978)—specifically, the incident in which Darrow put Bryan on the witness stand. This scene is the climax of the movie, and the movie uses several lines of dialog taken directly from the trial, although with dramatic embellishments such as Brady collapsing and dying on the courtroom floor. But it was instructive for the students to study how the film deviated from the trial history, and for most, this was the only time they have ever read the transcript of a court trial, particularly one as famous as this.

On Saturday that week, we chartered a bus and took the class to Dayton, Tennessee, where the trial took place. We went first to William Jennings Bryan College, a sectarian institution with a creation-based science curriculum. Here we listened to presentations by Dr. Richard Cornelius, a retired English professor who is a Scopes Trial archivist, and Dr. Kurt Wise, a creationist biology professor who, ironically, earned his doctorate under the evolutionary theorist Stephen Jay Gould. Following their presentations, we visited the original trial courtroom, the Scopes museum in the courthouse basement, and several sites around town with a connection to the trial. Our last stop was dinner at the boarding house where John Scopes lived in 1925, now operated as a bed and breakfast inn.

The Scopes Trial affords an opportune segue from the history to the legal issues of creationism. The week after the Dayton trip, we assigned readings on the impact that the Scopes Trial had on textbooks and science classes in the decades that followed (Grabiner & Miller, 1974; Larson, 1977). Our speaker was Christopher Coates, an attorney in the U.S. Department of Justice, who discussed First Amendment law. He explained the criteria that the federal courts use in deciding cases of church-state separation. With this background, students

were able to understand why creationism has failed all of its tests of constitutionality over the years. In connection with Mr. Coates's appearance, students read the Supreme Court decision in *Epperson v. Arkansas* (1968), overturning a statute left over from the 1920s that still banned the teaching of evolution. They also studied the U.S. District Court decision in *McLean v. Arkansas Board of Education* (1982), a challenge to a 1981 statute that required the teaching of "scientific creationism" in that state. In church-state law, there is a three-part test of constitutionality called the Lemon test (*Lemon v. Kurtzman*, 1971). In studying the Epperson and McLean cases, students were able to see how the Lemon test evolved over a 14-year history of First Amendment litigation and why creationism has been unable to meet its three tests of constitutionality. Students were also better equipped to understand the legal reasoning behind the many other church-state cases that arise in the news and federal courts, such as challenges to nativity scenes or the Ten Commandments on public property.

We then turned from law to philosophy and theology. Our next speaker was Dr. Michael Ruse, Professor of Philosophy at Florida State University, well known for his many books on the history and philosophy of science and particularly on evolution and creationism (Ruse, 1982, 1999). Ruse was an expert witness in *McLean v. Arkansas Board of Education*. He delivered a witty and trenchant exposition of how Darwinism itself evolved from a science to a philosophy and even, arguably, to a secular religion, and how this has fueled the growth of the anti-evolutionary movement and helped create these court cases.

Dr. Viau spoke next, on parallel themes found in the creation myths of many cultures, including similarities between the biblical creation narratives and the creation stories of several other religions. Students watched one of the interviews in the public television series, *Joseph Campbell and the Power of Myth* (Winstar, 1988), and studied

creation myths of a wide variety of world cultures (Leeming & Leeming, 1994).

A Jesuit theologian and geologist followed Dr. Viau from Boston College, Dr. James Skehan. Speaking as a man of both science and faith, Skehan spoke of his trust in the evidence of science where earth history is concerned, and in the inspiration of scripture where faith is concerned (Skehan, 1986). He strongly argued that the creationists are doing great harm to both science and faith. He argued that it is a profound mistake to think that the findings of science in any way diminish the spiritual message of the Bible. The students, by now wondering what kind of relationship to forge between their own faith and their knowledge of science, found Skehan's talk to be a great relief and an almost epiphanic insight. He served as an example of how one can personally harmonize the two—how an acceptance of evolution does not require a rejection of God.

When bad weather caused his flight home to Boston to be cancelled, Skehan spent an additional day with the class in the small Tuesday roundtable discussion. Here, students were able to talk with him on a more intimate level about their own questions of faith and science. A distinguished and genteel speaker, Father Skehan tied with Michael Ruse in votes for favorite speaker at the end of the term. He remarked that he was very impressed that here in the Bible Belt, students could discuss such an emotionally charged issue with such rationality and civility—certainly an indication that we were accomplishing one of the goals of our seminar.

Next was Dr. Michael Gass, a philosopher from Athens, Georgia, who spoke to the class on the nature of evidence in science and religion. He provided insights into how people from different perspectives, notably science and religion, can differ so greatly in how they deem a proposition to be true or false.

I had wanted to include a creationist in the speaker lineup, because I didn't want

students to hear only from me that creationism was scientifically bankrupt. They could and should suspect bias if the only thing they were told about the arguments for creationism came from a biologist known to oppose creationist politics. I felt it would be more credible if we could arrange for them to hear the arguments directly from a believer, and judge for themselves. The person I had in mind was Dr. Duane Gish from the Institute for Creation Research, located near San Diego. I publicly debated Gish twice in the 1980s, so I invited him to come to Milledgeville. His secretary said he was unavailable, however, so I cast about for an alternative and found a willing speaker in Dr. Russell Carlson, a Professor of Biochemistry at the University of Georgia. He is an outspoken advocate of the "Intelligent Design" variety of creationism.

Inadvertently, we wound up with four creationists on the agenda, because when I confirmed my arrangements with Dr. Carlson, I had not anticipated the two lectures at William Jennings Bryan College; and then in addition, Dr. Gish and I spoke directly to each other and he accepted my invitation. I couldn't diplomatically cancel Dr. Carlson at that point, so I worked them both in. Dr. Carlson didn't want to debate, so I scheduled him for a regular lecture and Dr. Gish for a debate. Dr. Carlson gave the class a basic overview of intelligent design theory, mainly reviewing the ideas of William Dembski and Michael Behe, two well-known proponents of Intelligent Design (Behe, 1996; Dembski, 1999).

During spring break, the students finalized their preparations for their own debates, which were held during the first two weeks after their return. In the course evaluation, students said they were apprehensive about these debates at first. Few of them were science majors, and they did not look forward to having to speak intelligently, before an audience and against an opposing team, on topics such as fossils, genetics, radiometric dating, comparative

anatomy, the origin of the universe, and the laws of physics. But they rose admirably to the challenge. Through a team effort, they prepared voluminous briefing books and file boxes stuffed with index cards, summarizing key evolutionary and creationist arguments and their weaknesses. They amassed an impressive amount of information and taught themselves a great deal of science without hearing a single science lecture all semester. At the end of the course, they rated these debates as one of the two most enjoyable components of the course.

The component that tied with these was my debate with Gish, which was held the week after the final student debates. Gish's name had already appeared in a lot of the literature they had read, especially when they studied the post-Scopes creationist movement and the McLean trial, where Gish, along with Michael Ruse and Stephen Jay Gould, was called as a witness. His writings also came up frequently in the literature that the students researched for their debates. So they were anxious to meet him. I felt what better way could there be to expose students to creationist thought than by bringing its best-known spokesman?

He stayed as a guest at my home for two nights, and I gave a reception for him, as I did for the other out-of-state speakers. Students attended with special curiosity, wanting to see if he and I would explode, like matter and antimatter, when we shook hands. But notwithstanding our adversarial relationship on stage, Gish and I have long been on cordial terms. The subtext to having him as a house guest and giving this reception was to show students that people can disagree diametrically on an emotionally charged issue without going for each other's throats. You can debate the issue without attacking the person.

Gish is rather inflexible about his debate format, insisting on a four-hour show, so we debated in a campus auditorium from about 7:00 to 11:00 that Monday evening. We did not open the debate to the general public, because in my experience

this results in area churches bringing people by the busload, more to demonstrate their hostility to evolution than to respectfully hear and weigh both sides of an argument. We did open it to the university community; anyone with a student, faculty, or staff ID could attend and bring one guest. About 200 people came to the debate and 140 remained for the entire 4 hours.

Although I allowed Dr. Gish to have his way as to the length and format of the debate, I did exercise the prerogative to do one thing that he and his sponsors normally disallow. That is to give the audience a form on which to write their comments and to vote for a winner—2 points for a decisive win and 1 point for a marginal win. Only 32 audience members turned in a form, but after the debate, Dr. Gish and I went to a nearby lounge and read these. He was noticeably disappointed. Only 4 people cast votes for creationism and 26 for evolution. On the 1- and 2-point system, creationism scored 7 points and evolution scored 45. Most interestingly, however, some people wrote that they were creationists, yet they felt that Dr. Gish had done a disappointing job of defending it and that they had to vote for the evolution argument in spite of themselves.

We then ended the course, the following week, with a plenary session in which the students discussed the debate and the course in general.

Outcomes

One measure of the outcome of this course is the students' own impressions and votes for their favorite aspects of the seminar. The student debates and Gish debate tied for first place, with the trip to Dayton coming in next. Of the speakers, their clear favorites were Michael Ruse and James Skehan—Ruse, I think, for not only the incisive intelligence of his talk but also for his earthy and humorous style of presentation; and Skehan for the gentleman

and scholar that he is, making students feel comfortable with both science and faith.

Of particular interest was their reaction to the four creationist speakers. At the beginning of the semester, nearly everyone in the class described themselves as conservative Christians. Only two professed to be on the agnostic end of the spectrum. There were no students of Muslim, Jewish, or other faiths in the class. But despite their conservative religion, and despite our efforts to be as even-handed as possible and give the creationists ample speaking opportunities, not one student found any of them to have made a convincing case.

Two of the most unshakably fundamentalist and creationist students, in fact, mildly insinuated that we had deliberately chosen poor speakers for the creationist cause, contending that we should have brought in some who could defend it better. But in fact, Dr. Gish is widely touted as the most effective and influential creationist speaker of the 20th century (Numbers, 1982); Dr. Wise at Bryan College is certainly one of the best-educated biologists among the creationists, having a Ph.D. from Harvard and from no less than Gould; and Dr. Carlson from UGA is a distinguished biochemist. So I certainly feel we brought in some of the very best representatives for the creationist cause that we could have. I optimistically speculate that the reason students found them unconvincing, even students who were predisposed to believe them, is that we did indeed effectively teach some effective critical thinking skills. That is certainly one of the most worthy things we could have achieved in such a course.

The following are some of the take-home lessons from this teaching experience:

1. *Teamwork.* The subject of creationism and evolution is so broad that no one could hope to research it very well, single-handedly, in one semester. To be prepared for whatever argument the opposing team might throw at them,

and to have arguments in store that the other team might not anticipate, each debate team had to undertake a very thorough research effort to gather facts, organize their arguments, and effectively express their case. This required a division of labor in which the teams typically designated one member to be their expert on biology and paleontology, another to be their expert on historical and legal issues, and so forth. Success in debate required a well-coordinated team effort.

2. *Self-expression.* The debating experience, as well as our discussions in class, gave students valuable practice in speaking before an audience and building a convincing argument, even when defending something they did not personally believe. Each student was required not only to participate in the research effort but also to take a speaking part during the debates.
3. *Civility.* Students learned to debate a volatile issue with mutual respect and civility—not only in their formal debates at the end of the semester, but even more in ordinary, relatively unstructured classroom discussions where, sometimes, everyone wants to talk at once.
4. *Examining both sides.* Students learned the value of hearing out both sides of an issue and carefully considering the opposing arguments. Even if they are not persuaded, this can lead to a deeper understanding of their own position. Studying the opposition in such depth changes one's "gut feeling" that the opponent is wrong, to a well-informed opinion of exactly why he is wrong. Darwin himself was a model of anticipating the

objections to a point of view and amassing evidence that would head off the foreseeable criticisms.

5. *Getting wise to pseudoscience.* The creationist case sounds quite plausible to people who have had little background in science. Creationists can talk about thermodynamics, moon dust, Siberian mammoths, and radiometric dating in a way that sounds scientific unless one has the background to recognize where their science is either fabricated or misrepresented. To critically examine that case, our students had to study the literature on a vast range of topics from biology to astronomy. They had to examine the creationist arguments in depth, not just accept them at face value. They learned that just because something sounds scientific or plausible at first, it does not mean it is correct. This is a lesson that I hope made a deep impression on them and foster the habit of skepticism—something that will stay with them and make them more skeptical about a broad range of other pseudoscientific claims, whether it is UFOs, prehistoric astronauts, or medical quackery.
6. *Harmonizing science and religion.* Most students came to see that there is no necessary contradiction between science and religious faith. Contrary to what so many creationist authors and speakers say, they do not have to choose between God and evolution. Students left this course realizing that science and religion address two very different issues—the physical nature of the universe versus the spiritual purpose or needs of humanity. Most students seemed to leave the course thinking about evolution like Pope John Paul II:

that religion teaches how to go to heaven; science teaches how the heavens go.

The Budget Version

There are ways of teaching such a seminar without needing a dozen guest speakers, a chartered bus, and a \$5,000 budget. For many years from the late 1970s to the early 1990s, I taught this topic in a simpler fashion, single-handedly, as a senior seminar in the Biology Department, and on a shorter, 10-week schedule before the State University System of Georgia converted to the semester calendar.

Our senior seminar in biology is meant to ensure that every student receiving a B.S. in our department has had at least one course that involved both a research paper and an oral presentation. The subject matter and format vary greatly from one professor to another. When I was assigned the seminar early in my career, I felt that the creationism controversy could be a fruitful way of teaching literature research, writing, and speaking skills. At the same time, I felt, I could teach something about the interface between science and society, and focus on a subject in which most students would have a lively personal interest. I centered most of our weekly sessions around assigned readings much like the ones described for our honors seminar. Then as now, we covered American history, constitutional law, philosophy and theology, and finally the science and pseudoscience itself. We concluded that course with similar student debates. The only outside speaker I had was state representative Tommy Smith, who sponsored the “creation-science” bills in the Georgia legislature in the early 1980s, and who gladly came to Milledgeville to find an audience for his views. So it is possible to teach such a seminar on a smaller scale, have nearly as much fun, and achieve much the same learning outcomes.

Conclusion

In conclusion, I highly recommend this approach for all the aforesaid reasons. It is far more effective than a traditional didactic approach. It exposes students to a wide range of opinions. Their assigned readings, but even more importantly their debate preparation, leads them down the road of self-education. We did not teach them what they ended up knowing about evolution; we gave not a single lecture that laid out the theory or evidence of evolution. They learned that on their own, through the research that they deemed necessary to avoid embarrassment and defeat in debate. We on the faculty called ourselves *facilitators*, and indeed that is what we did—we did not dispense information, but facilitated and guided their learning. I think we succeeded in producing students who were scientifically and historically better informed, and spiritually more self-aware.⁴

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Footnotes

¹ The approved statement reads: “It is the educational philosophy of the Cobb County School District to provide a broad based curriculum; therefore, the Cobb County School District believes that discussion of disputed views of academic subjects is a necessary element of providing a balanced education, including the study of the origin of the species. This subject remains an area of intense interest, research and discussion among scholars. As a result, the study of this subject shall be handled in accordance with this policy and with objectivity and good judgment on the part of teachers, taking into account the age and maturity level of their students.

“The purpose of this policy is to foster critical thinking among students, to allow academic freedom consistent with legal requirements, to promote tolerance and acceptance of diversity of opinion, and to ensure a posture of neutrality toward religion. It is the intent of the Cobb County Board of Education that this policy not be

interpreted to restrict the teaching of evolution; to promote or require the teaching of creationism; or to discriminate for or against a particular set of religious beliefs; religion in general, or non-religion.”

² Bruce Alberts, 18 September 2002, A Request to Help Counter the Cobb County, Ga., School Board's Actions on the Teaching of Evolution in Public Schools. Letter to Georgia members of the National Academic of Sciences, <www4.nationalacademies.org/nas/nashome

[.nsf/urllinks/NAS-5E4MM4?OpenDocument](http://www4.nationalacademies.org/nas/nashome.nsf/urllinks/NAS-5E4MM4?OpenDocument)>.

³ AAAS Board Resolution on Intelligent Design Theory, passed 18 October 2002, released at www.aaas.org/news/releases/2002/1106id2.shtml

⁴A copy of the syllabus for this course and a partial transcript of my debate with Dr. Gish can be obtained by request to ksaladin@gsu.edu

Enhanced Student Learning of Chemistry in a Computer Assisted Environment

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Abstract

This study focuses on the implementation of instructional tools (computer assisted instruction, peer tutoring, and instructor-led help sessions) in general and organic chemistry courses, and the evaluation of student outcomes over the past four years and using 1998 as the baseline year when these instructional aids were not utilized. The data show progressive and significant improvement in student performance over the course of the study. The percentage of students receiving a grade of C or better increased from 27% in 1998 to 67 % in 2002 in general chemistry. In organic chemistry the percentage of students receiving C or better increased from 31% in 1998 to 61 % in 2002. Of the students responding to a course survey, most perceive the additional course tools to be beneficial in understanding the subject matter for the course.

Introduction

Over the past decade, reform documents such as the National Science Education Standards have promoted systemic changes to the way science courses are taught in order to provide students with a high quality science education and to enhance student learning. This has been fueled by studies that suggest that the traditional modes of delivery or instruction in science courses are not very effective. While these methods may be effective in covering large amounts of material, they do not ensure that students learn or understand the material. Among the strategies that have been proposed and are being assessed by the scientific community are inquiry based learning (1, 2, 3), cooperative learning (4, 5), active learning (6), critical thinking (7) and classroom assessment (8).

The hierarchal nature of chemistry and the requirement of basic math skills in order to do well have led to the general and organic chemistry courses being viewed as difficult and demanding. As a result, many strategies have been described for increasing retention rate in these courses. Use of peer tutors, active learning, team learning, and grade/performance contracts are some examples. The American Chemical Society and the National Science Foundation proposed a series of guidelines and recommendations aimed at revitalizing the chemistry curriculum in undergraduate institutions (9). Many chemistry educators are utilizing computer-assisted instruction, including the use of Web resources to supplement traditional course instruction (lecture, text, audio-visuals) (10-14). The advantages of the Web format are that it provides a different venue for providing and presenting information, and increases the instructor's ability to present and the students' ability to grasp abstract and difficult concepts. This is achieved primarily through animations, user manipulated representations of chemistry phenomena, and drill and practice tutorials, which provide instant feedback.

Purpose

The purpose of this study was to increase the number of students successfully completing the general and organic chemistry courses without decreasing the course content, by implementing computer-assisted instruction (CAI), peer tutors, and instructor-led help sessions as instructional tools that could be utilized by students to enhance learning. Prior to 1999, these courses were delivered in the traditional lecture format. During 1999-2002, the courses were revised to include computer-

assisted instruction, peer tutors and a weekly instructor led help session. To measure the effectiveness of the added components, the passing rates and students' use of the resources were monitored. For comparison purposes, 1998 was used as a baseline year.

Method

Class Description and Demographics

General Chemistry. The general chemistry course, CHEM 1211, is a study in basic chemistry concepts that include matter, stoichiometry, atomic and molecular structure, solution chemistry and chemical equilibrium. This general chemistry course is the first required for students interested in pursuing degrees in math, biology, chemistry, pre-engineering and technology. The majority of students take this course in their freshman or sophomore year. While students are encouraged to take college algebra prior to taking the general chemistry course, it is not a requirement. The majority of the students (>95%) indicated taking chemistry in high school. Less than 2% had taken Advanced Placement Chemistry. During the period of this study students could take the chemistry course once admitted to the university if no remediation course in mathematics was required. The number of students enrolled in the general chemistry course during the study period ranged from 45 to 59 students with an average class size of 52 ± 7 students.

Organic Chemistry. The organic chemistry course, CHEM 2301, is an introduction to the chemistry of carbon compounds and covers topics such as nucleophilic substitution, electrophilic aromatic substitution, aromaticity, stereochemistry, and spectroscopy. The students enrolled in this course are either Biology or Chemistry majors. Students taking the organic chemistry course must have completed the general chemistry course with a grade of 'C' or better. These

students included students who took the general chemistry course in the computer assisted environment as well as students who did not, and to which the computer environment used in this study was unfamiliar. The number of students enrolled in the organic chemistry course during the study period ranged from 29 to 42 students with an average class size of 35 ± 5 students.

Period of Study, Instrumentation and Procedures

The first semester general and organic chemistry classes from Fall Semester 1998 to the Fall Semester 2002 were utilized in this study. The baseline year of the study was 1998. In 1998, the class content was delivered in a strictly lecture format. Development of computer assisted environments in the general and organic chemistry classes began in 1999, with the use of computerized tutorials, drill and practice exercises, a class Web site via WebCT with online class notes, email, bulletin boards, online grade access, animation links, and online quizzes. The same instructor throughout the course of the study taught each course. The textbook and course content covered also remained the same.

To determine the readiness of students for the general chemistry course, the American Chemical Society (ACS) Toledo examination was administered at the beginning of each semester. The ACS Toledo Examination tests basic math and chemistry background of students prior to taking a college level chemistry course. The examination comprises of a total of 60 questions in basic math and chemistry. A score of 51% (31 correct responses) is generally used as a cut-off score.

Students were evaluated using objective tests of student knowledge and content (in class exams 40% and final exam 15%), quizzes (15%), assignments (10%), and laboratory exercises (20%). For each year of the study the exams were not identical,

however, the exams covered the same content and had the same format. Questions were generated from the American Chemical Society Test Bank and the test bank for the course text. Students grades were assigned A = 90-100; B = 80-89; C = 70-79, D = 60-69, F = below 60. Pass percentages for the courses were determined from the percentage of student in each course receiving a grade of 'C' or higher.

The number of students who used CAI materials was determined from the WebCT log of student access to the course Web site. Using this log, student use of the course content and the online bulletin board were determined. All students who accessed the home page only were not counted as accessing the course materials, which were on secondary pages.

In addition to objective assessments, a subjective student survey was given to evaluate the course during the 13th week of class. Survey questions are shown in Table 1. The evaluation asked students to rate the class on a variety of items, including the usefulness and ease of use of various components of the course. Most students answer choices involved 'yes' or 'no'

response on a 5-point rating scale with 1 indicating *strong agreement*, 3 indicating *neutral* and 5 indicating *strong disagreement*.

Instructor-Led Help Sessions

Each week an instructor-led help session was conducted. This was mandatory for students. These sessions were held during the first hour of each lab section for the general chemistry and organic chemistry classes. Because lab sessions were limited to 24-28 students, this provided a smaller group interaction in each session. The activities consisted of problem solving sessions and computer assisted software. Students were required to work through a series of problems utilizing chemistry software from Falcon. There was immediate feedback and the instructor was available to give additional help if needed. The instructor was present at all times and was able to lend individual assistance to students. After an hour, the students proceeded to the laboratory where they conducted the experiment/lab exercise for that class period.

Table 1.
Student Survey Items

Have you had previous experience with a course that had a Web site?
Have you had previous experience with a course that used WebCT?
How would you rate your expertise with computer technology?
How often did you use the course Web site?
From what location did you most often access the course Web site?
I have found the Web format used in this course preferable to other Web-based courses.
The computer-assisted instructional tools available for the class were valuable and improved my learning.
It is important to have experience using the latest technology applied to my field of study.
Access to my grade information and performance measures such as quizzes, prompted me to take action (such as visiting my instructor or tutor).
Which component of the course was least useful to you?
Which component of the course did you find most beneficial?
I spent too much time learning technology.
In general, I am very satisfied with my overall experience with the course.
If a choice exists, I'd prefer a course with a Web component to one without.
Instructor-led help sessions were helpful in understanding the subject matter.
Peer tutors were helpful in understanding the subject matter.

Peer Tutors

Peer tutors were made available for both courses. The tutors were selected from outstanding students who had recently completed the course and had obtained a B (80-89) or A (90-100) in the general chemistry sequence courses, CHEM 1211 and CHEM 1212. The tutors were available at various hours during the week. Tutors schedules and location were posted and given to students during the 2nd week of class. Students who did poorly on the first exams were encouraged by the instructor to work with a tutor. The use of peer tutors was monitored.

Technology Integration

Technology integration began with the introduction of chemistry software that provided drill and practice exercises in general chemistry and organic chemistry concepts. With the adoption of WebCT by the University System of Georgia, the capabilities of WebCT were utilized to provide a computer-assisted environment in chemistry. The tools used included the following:

Online Course Notes. Notes for each topic covered in the course, were placed on WebCT. Students could access the course Web site at any time to review or print copies of the notes.

Bulletin board/email. Bulletin board and e-mail were used in several ways:

- a) to stimulate student to student communication
- b) to stimulate student to instructor communication
- c) to facilitate integration of writing across the curriculum in general chemistry. Small writing assignments were given throughout the course. The assignments were based on topics that required students to understand some content

as well as for students to gain insight into the applications of chemistry in the real world. Typical topics included applications of chemistry and chemical reactions in the students' life, and exploration of the chemical processes involved in acid rain formation, the green house effect, global warming, and ozone depletion. Students' grades for these assignments were based on content and understanding as well as proper use of English, grammar, and paragraph development.

- d) to enhance oral communication skills in organic chemistry. To help students to research and formulate an effective presentation the online bulletin board was used. Each student in the organic chemistry class was required to give an oral presentation at the end of the semester on a particular topic. Students were required to describe, analyze, interpret, and explore the topic as it related to chemistry. During the first 2 weeks of the semester, students were randomly assigned to groups and topics. To prepare for the oral presentation, students were required to post relevant information to the bulletin board on a weekly basis for a period of 8 weeks. Topics included, but were not limited to, chemical warfare agents, artificial sweeteners, digitalis, tamoxifen, okadaic acid, red tides, lycopene, Phen-Fen, Chitosan, Viagra, Prozac and DEET.

Quizzes. The quizzes were used as a tool to focus students on the important concepts, and the subject matter that had to be mastered in the course. Students were given a quiz at the end of each topic. The students were given the option of taking the quiz twice, and the average score of the two trials taken. The use of WebCT calculated

questions allowed a variety of questions to be prepared, so that each student attempted a different quiz each time.

Grades online. Grades were posted online and updated immediately after a quiz or exam had been graded. Students were therefore able to obtain grades for all assignments, as well as their average grade in the class at all times during the course by accessing the course Web site.

Animations. Computer projection and animation were utilized in the classroom to enhance lectures that involved concepts that tend to be difficult for students to understand.

Results and Discussion

The mean scores and standard deviations for the ACS Toledo examination for General Chemistry I from 1998 to 2002 are shown in Table 2. The results are slightly below the scores compiled by the ACS Division of Chemical Education (DivChemED) Examination Institute (31 ± 7.12). The mean Toledo score in the baseline year (1998) was 28.6 with a standard deviation of 7.2. When scores are compared for each class during the study period (1999-2002), the results show that the average performance of entering students during the study period was fairly consistent.

Table 2.
Mean ACS Toledo Exam Scores, General Chemistry

	1998	1999	2001	2002
Mean Score	28.6	30.2	25.4	27.7
Standard Deviation	7.17	7.13	7.12	7.09
American Chemical Society Data ¹	31.5 ± 7.12			

¹Data obtained from the ACS DivCHED Examination Institute Web site, collected in 1998-1999. 2000 data not available

Pass Percentages and Correlations

Students passing the course received grades of 'C' or higher. The results show higher algebraic means for student performance in both general and organic chemistry courses following implementation of course instructional aides in each year of the study (Figures 1 and 2). For general chemistry, a 14 percent increase or greater pass percentage above base year was observed. Except for 2000, the pass percentage increased steadily from 46% in

1999 to 67.8% in 2002. In 2000 the pass percentage of 41 is above the baseline year pass percentage or 27, however, the 2000 pass percentage is five points below the pass percentage in 1999 (46%). The larger number of students involved in the study, $N = 117$ in 2000 compared to $N = 54$ in 1999, may have provided a more statistically significant pass percentage. Pass percentage in organic chemistry increased in each year of the study, from 31% in the baseline year to 61% in 2002.

Figure 1.
General Chemistry Pass Frequency

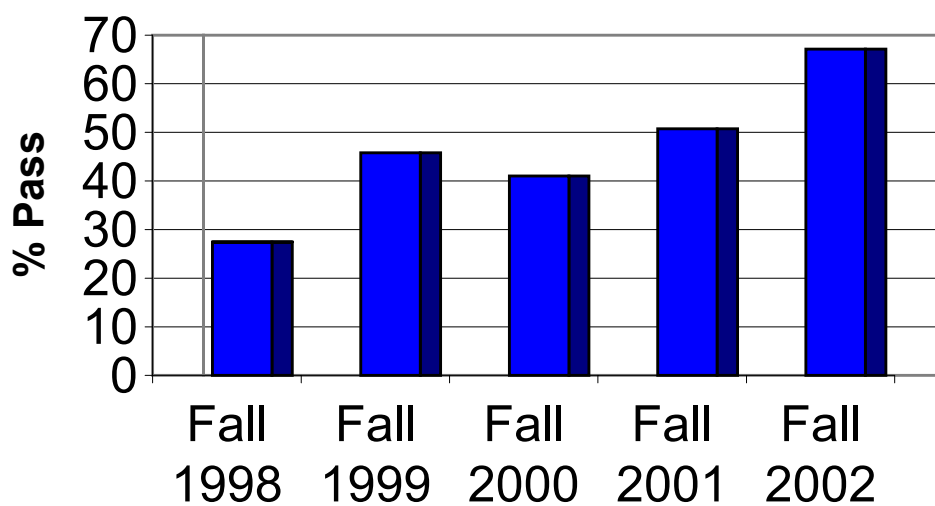
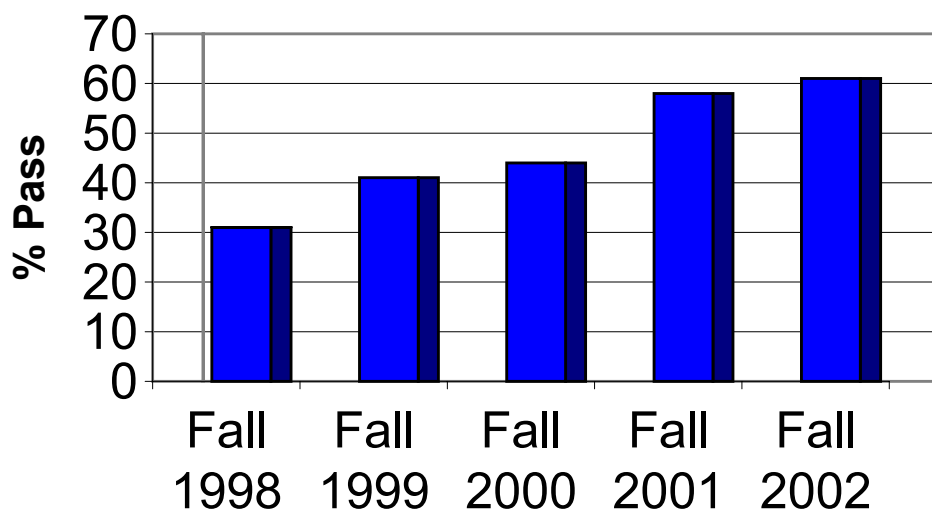


Figure 2.
Organic Chemistry Pass Frequency



In the general and organic chemistry courses the frequency of usage of the course Web site was determined. When this was compared to students grades, in both general

and organic chemistry courses, the pass percentage was higher for students that utilized the Web site compared to those students who did not use the Web site

regularly, that is, less than three times a week, (Tables 3 and 4). In 2001 and 2002, the correlation of Web site usage to course grade is significant for general chemistry at the 95% confidence level, ($p = 0.019$ in

2001 and $p = 0.002$ in 2002). For organic chemistry, $p = 0.109$ in 2001 and $p = 0.263$ in 2002, at the 95% confidence interval, indicating that the correlation was not significant for this course (Table 5).

Table 3.
Utilization of CAI in General Chemistry I¹

	1998 $N^1 = 90$	1999 $N = 54$	2000 $N = 117$	2001 $N = 43$	2002 $N = 55$
Number of students utilizing CAI ²	0	5	64	27	50
Pass rate for students utilizing CAI	-	ND	61	67	72
Pass rate for students not utilizing CAI	-	ND	7.5	31	20
Class Pass %	27	46	41	51	67

¹The large variation in N values ($N = 43$ to $N = 117$) for this course reflects the fact that the instructor taught an additional general chemistry section in 2001

²Students utilizing CAI an average of three times per week or more.

ND - Not Determined

Table 4.
Utilization of CAI in Organic Chemistry I

	1998 $N = 32$	1999 $N = 29$	2000 $N = 32$	2001 $N = 42$	2002 $N = 38$
Number of students utilizing CAI ¹	0	6	30	39	35
Pass rate for students utilizing CAI	-	ND	47	59	66
Pass rate for students not utilizing CAI	-	ND	0	0	0
Class Pass rate	31	41	44	58	61

¹Students utilizing CAI an average of three times per week or more

ND - Not Determined

Table 5.
Correlations of Grades to Use of CAI

Course	Pearson Correlation Coefficient	<i>p</i>	<i>N</i>
Fall 2001			
General Chemistry I	0.343	0.019	43
Organic Chemistry I	0.217	0.109	42
Fall 2002			
General Chemistry I	0.397	0.002	51
Organic Chemistry I	0.112	0.263	34
Significance level = 0.05			

Students' Attitudes

CHEM 1211, Fall 2001. Twenty-eight students returned surveys (Table 6). When questioned on the online component of the course, on a scale of 1(*strongly agree*) to 5(*strongly disagree*) student results were positive. Students found the computer assisted instructional tools improved their learning (Mean = 1.94); access to their grade information and performance measures such as quizzes prompted them to take action (Mean = 1.96); and found the WebCT format preferable to other Web based courses (Mean = 2.11) (50% had experience with other Web-based courses). When asked if too much time was spent in learning the

technology, the mean score was 3.59 (1 = *strongly agree* and 5 = *strongly disagree*). This indicated a neutral to slight disagreement that too much time was taken learning the technology. This may be attributed to the fact that students needed to input some time and effort in getting familiar with and navigating the online materials, but that students already had familiarity with using computers. The fact that 75% of the students indicated that they preferred a class with a Web-based component to one without showed that learning to use the technology did not distract from the advantages of having the computer environment as a part of the course.

Table 6.		
Student Survey Responses, General Chemistry		
Statement	Mean Response	
	Fall 2001 <i>N</i> = 28	Fall 2002 <i>N</i> = 38
I have found the Web format used in this course preferable to other Web-based courses.	2.11	2.05
The computer-assisted instructional tools available, for the class, were valuable and improved my learning.	1.94	1.82
It is important to have experience using the latest technology applied to my field of study.	1.65	1.34
Access to my grade information and performance measures such as quizzes, prompted me to take action (such as visiting my instructor or tutor).	1.96	1.42
I spent too much time learning technology.	3.59	4.11
In general, I am very satisfied with my overall experience with the course.	1.74	1.45
Instructor-led help sessions were helpful in understanding the subject matter.	3.45	1.50
Peer tutors were helpful in understanding the subject matter.	3.42	2.84
<i>Above questions were rated on a scale of 1 (strongly agree) to 5 (strongly disagree)</i>		
I have had previous experience with a Web-based course.	50%	53%
If a choice exists, I'd prefer a class with a Web component to one without.	75%	84%

Students indicated that the most useful components of the course were the class notes (50%) and grades online (39%), in 2001. The least useful components for this course were e-mail/bulletin (32%) and calendar (43%). This can be attributed to the fact that these tools were used mainly for back-up announcements and to provide information already provided in class. The attendance policy at the university is

enforced and most students attend classes regularly and are aware of announcements made in-class.

Fall 2002. Thirty-eight surveys were returned. All evaluation categories improved compared to 2001 surveys. Students chose having grades online (42.1 %) and class notes (36.8%) as the most useful aspects of the Web site. Online quizzes were reported

to be most useful by 18.4 % of students. Table 7 shows the utilization of tutors in both organic chemistry and general chemistry was consistently low throughout the course of this study. While students agreed that tutors were useful, very few saw tutors at least one per week. Most students saw tutors less than 5 times throughout the semester in each year of this study. When asked, the majority of students indicated that other obligations (mainly jobs) made it difficult to interact with the tutor, or that

they tried to work through the course materials on their own. Most of the students who saw a tutor at least once per week passed the course (Table 7), though the sample pool for this data is small due to the poor utilization of this service and may not be statistically significant.

Students found the CAI materials (Mean = 1.94) more useful than the peer tutoring (Mean = 3.45) or the instructor-led help session (Mean = 3.43).

Table 7.
Utilization of Peer Tutors

	1998 <i>N</i> = 90	1999 <i>N</i> = 54	2000 <i>N</i> = 117	2001 <i>N</i> = 43	2002 <i>N</i> = 55
CHEM 1211 - <i>General Chemistry I</i>					
Number of students utilizing tutors	-	9	16	4	6
Pass % for students utilizing tutors	-	ND	63	80	83
CHEM 2301 - <i>Organic Chemistry I</i>	<i>N</i> = 32	<i>N</i> = 29	<i>N</i> = 32	<i>N</i> = 42	<i>N</i> = 38
Number of students utilizing tutors	-	8	13	17	10
Pass % for students utilizing tutors	-	ND	75	86	90

Although there was no statistical correlation of computer usage to student performance, for organic chemistry, the survey responses indicated that students perceive the online resources to be beneficial.

One of the most important lessons learned was that the use of the course materials on a voluntary basis resulted in poor utilization of resources, even when students were doing poorly in the class. Maximum utilization resulted when the instructor provided specific activities and assignments that required students to use resources.

It is evident that the varied classroom environment helped students' learning. The

number of students completing the courses successfully increased and the student surveys certainly show that students perceive that the tools enhanced their learning. Integrating the additional instructional modes, as done in this study, exposed students to different ways of learning the subject matter, an important consideration since different methods of course delivery may have different effectiveness.

Acknowledgements

The activities described in this article was supported in part by a University System of Georgia Teaching and Learning Grant, the

Department of Education Minority Science and Engineering Improvement Program, Health and Human Services Health Careers Opportunities Program and the National Science Foundation Historically Black Colleges and Universities Undergraduate Program

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Abstracts of Presentations

10th Annual Georgia Conference on College & University Teaching

KEYNOTE ADDRESS

What Really Matters About Effective Teachers and Effective Teaching

William Buskist, Distinguished Professor in the Teaching of Psychology, Alumni Professor, Auburn University
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What makes an effective teacher? What constitutes effective teaching? At some point in their academic careers all serious teachers will pose these questions to themselves. Genuine attempts to answer these questions often lead us to examine the literature on master teaching, discuss effective teaching with like-minded colleagues, attend teaching conferences, and perhaps tinker with different techniques of teaching. An additional, albeit more formal, approach to answering these questions involves research—actually collecting data on effective teaching practices. In this presentation, I blend answers from all four approaches to develop a comprehensive model of effective teachers and effective teaching.

Assessment

The Assessment CyberGuide: An Online Interactive Resource for Developing Effective Program Assessment

Bill Hill, Kennesaw State University
email: bhill@kennesaw.edu

This presentation introduced the Assessment CyberGuide, a new online resource for developing effective assessment programs. Elements of the Cyber Guide include a review and evaluation of different assessment techniques and strategies for enhancing student and faculty involvement in assessment efforts. The CyberGuide is available at <http://www.apa.org/ed/guidehomepage.html>

Collaborative Learning/Group Work

Collaborative and Cooperative Learning in the Classroom

Rebecca Rutherford, Southern Polytechnic State University
email: brutherf@spsu.edu

This workshop covered several aspects of Collaborative/Cooperative Learning in the Computer Science classroom. It will include 1) learning assumptions, 2) goals for education, 3) collaborative learning approaches, 4) from traditional to cooperative learning groups, 5) how to implement collaborative/cooperative learning in the classroom, and 6) commonly used cooperative learning techniques. Participants will create at least two collaborative exercises for their classes.

Seeing Others, Seeing Ourselves: Promoting Community Through Peer Grading

Tamara Shue & Valerie Crawford, Georgia Perimeter College
email: tshue@gpc.edu

The building of community in the classroom in an increasingly disfranchised academic environment presents quite a challenge. To allow students to know each other and learn more about themselves, our suggestions for community peer editing and rating of essays will promote the growth of writing abilities as well as foster open communication among the students.

Peer-Assessed Group Work: Lessons Learned (Poster)

Fiona Chrystall, Lees-McRae College
email: chrystall@lmc.edu

How do you manage group projects so that individual students feel they get a “fair deal” when assessed? A class of students taking a

General Education science course worked in groups to produce posters on chosen environmental issues. Individual students assessed the effort and participation of each member of their group and each group peer-assessed each poster. The process of creating the assessment and grading criteria and the lessons learned by both the students and the instructor from this project were presented.

Critical Thinking

What's the Score? Training Students to Apply Critical Thinking Skills Across Disciplines)

*Betty Oliver Seabolt, Southern Polytechnic State University
email: bseabolt@spsu.edu*

A 4-step method of critical thinking was used to transfer knowledge of the familiar to the unfamiliar. Participants evaluated the game of baseball and then transferred the evaluation process to the less familiar areas of music, art, and poetry in a demonstration of critical thinking across disciplines.

Diversity/Culture

Improving Learning Opportunities for Hispanic Students

Jorge Gaytan, State University of West Georgia

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The presenter discussed the Hispanic growth in the United States, including the State of Georgia; reviewed the reasons for the underachievement of Hispanics in the American school system, proposed the development of a State-funded program to alleviate this problem, and provide instructional strategies for teaching Hispanic students.

Gender Bias in Doctoral Programs in Economics: An Update

*Marsha R. Shelburn & Sanela Porca, University of South Carolina Aiken
email: marshas@aiken.sc.edu*

Using a scientific survey of doctorates in Economics, the authors tested whether doctoral student experiences have improved over the last two decades. The authors also used survey responses to identify areas with potential to further improve doctoral student success. In particular, the study investigates gender-based differences in success rates and whether certain measures help one gender more than the other.

Concrete Strategies for Faculty Incorporation of Diversity Into Courses

*Valerie Whittlesey, Kennesaw State University
email: vwhittle@kennesaw.edu*

This interactive session presented four strategies for incorporation of diversity into courses: 1) creating a classroom environment that is welcoming and supportive of diversity, 2) using course textbooks and readings that are inclusive and represent diverse perspectives, 3) using a variety of teaching methods that address multiple learning styles, and 4) enriching classroom experiences with on-campus and community presentations and guest speakers. A variety of activities, instruments, and readings were shared during this session.

Creating a Comfortable Campus Environment for Underrepresented Students

*Valerie Whittlesey, Martha Myers, & Teresa Joyce, Kennesaw State University
email: vwhittle@kennesaw.edu*

This session presented two strategies that create a comfortable campus environment for underrepresented students. 1) The establishment of a Gay, Lesbian, Bisexual, Transgender Advisory Board at Kennesaw State University (KSU) and planned educational activities to sustain a gay

friendly campus community were discussed.
2) The Outfitting Women for Leadership in the Sciences (OWLS) program at KSU was also discussed.

Interdisciplinary Teaching and Learning

Developing and Teaching a Linked Course Within a Learning Community

Laura Musselwhite & Carla Patterson, Floyd College

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Two professors - one history and one literature - discussed their experience instituting a linked course at their institution. The discussion centered on the basic building blocks necessary to create an interdisciplinary set of courses, such as logistics, materials, grading and evaluation.

Development of an Interdisciplinary Course Around a Set of Technical Skills

Terry D. Schwaner & Anne R. Gaillard, North Georgia College & State University

email: tdschwaner@ngcsu.edu

The ability to understand and apply bioinformatics training is now essential to any biologist, and it must begin to be taught at the undergraduate level. However, the interdisciplinary nature of the subject makes it difficult for any one instructor to teach, and the scarcity of bioinformatics in this rapidly growing area makes hiring a qualified person difficult or financially prohibitive. One possible solution is to pool the expertise of existing faculty to offer an interdisciplinary course.

A Team-Taught Interdisciplinary Honors Seminar That Links Mathematics, Philosophy and Spanish

Judy Holzman, Dewi Wilson & Mary Garner, Kennesaw State University

email: jholzman@kennesaw.edu

Jorge Luis Borges is the author who has had the most significant influence on Latin American literature in the last thirty years.

His dense but extremely rewarding works give off sparks in many directions, including mathematics and philosophy. In the Spring of 2002, Kennesaw State University offered an interdisciplinary honors seminar centered around the works of Borges. The course was designed to study the interplay of literature, mathematics, and philosophy in Borges' writings. Three instructors led the course, one with expertise in Spanish literature and in Borges' writings in particular, another in Mathematics, and a third in Philosophy. In this session, they shared course routines, materials, and students' impressions of the course and examples of their work.

Motivating Students

Humor for Motivating Students Learning in the Classroom (Poster)

Peter Hesketh, Georgia Institute of Technology

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Cartoons, humorous assignments and games were used as motivational tools in an undergraduate class Fall 2002. Although these techniques were applied to an Introduction to Heat Transfer, they are generally applicable to other subjects to increase student learning. There were 49 student enrolled in the class. On the teaching evaluations, students' comments included: "The only laid back class I took this semester and was able to learn a lot" and "I particularly enjoyed the games." The student learning was reflected in the overall grades, with a class average of 60% and one student obtained a grade of 100% on the final exam.

Online Teaching/e-Learning/Technology-Enhanced Learning

Journey from Traditional to Online Classes: One Trios Saga

*Mary Dwyer Wolfe, Barry Monk & Steve Davis, Macon State College
email: mdwolfe@nsm.maconstate.edu*

In this session the presenters discussed their personal journey from e-Learning non-believers, to actively developing and using Web assisted instruction, to teaching and developing online courses. Along that journey, they discovered many tools that already existing available for the taking, and also developed materials of our including an interactive video based tutorials. They demonstrated those tools found and developed, and also shared lessons learned during their journey.

From Silent to Rousing: Using WebCT-VISTA Tools to Improve Learning

*David Strickland, Matthew Eberhart & Kimberly Wrightson, East Georgia College
email: dstrick@ega.peachnet.edu*

This workshop was designed for faculty who wish to know how they can use Web-based technology to improve teaching and learning in their courses. The presentation described specific WebCT-VISTA tools with particular attention given to pedagogical issues. Participants left with a list of proven teaching strategies designed to increase interaction, discussion, and critical thinking in both online and hybrid courses.

An Effective Classroom Strategy for Integrating Small Group Learning using WebCT Discussion Forums

*Marko Horn & Gary Roberts, Kennesaw State University
email: mhorn68@msn.com*

The process of creating small discussion groups and managing those groups was discussed, along with lessons learned and suggestions for future classes. The assessment process was also described and

specific examples of community formation were presented. It was their contention that the appropriate use of these e-Forums allows significant leverage and results in increased interest and learning on the part of participants.

Creating and Grading WebCT Questions

*Karen Watson, Fort Valley State University
email: kwatson9@juno.com*

This workshop/tutorial session demonstrated how to create a question database in WebCT and how to grade short answer and paragraph questions. Participants began to create a question database for a course they are teaching or planning to teach using WebCT.

Teaching Social Science Research Skills with WebCT Labs

*Sandy Harrison, Clayton College & State University
email: sharrison@mail.clayton.edu*

Online learning labs can reduce student passivity and dependency on instructors and librarians, help students located and interpret both primary and secondary source material, and build research skills useful in variety of disciplines and vocations. This workshop offered participants an opportunity to work through several social science research exercises formatted in WebCT. Afterward, they reviewed the procedures for developing library and Web-based research exercises and discussed the value of using them to supplement course lectures.

Using Electronic Technology to Enhance Teaching and Learning in Mathematics

*Karen Watson, Fort Valley State University
email: kwatson9@juno.com*

The use of electronic technology has made many changes over the years. This presentation discussed the pros and cons of using electronic technology to enhance the teaching and learning of mathematics. In particular, the presenter discussed video lectures, calculator and computer use in the

classroom setting and as additional help for the students.

Teaching Physics Online Using Mimio

*John Stanford, Georgia Perimeter College
email: jstanfor@gpc.peachnet.edu*

The presenter described his current experiences teaching calculus-based physics using the Mimio software package in a hybrid lecture/online course and discussed the results of a survey of student opinions regarding its usefulness. Several Mimio-derived Web pages were presented and the author demonstrated the creation of a Web page using Mimio.

Integration of Technology into the Foreign Language Classroom

Marianna Pomphile, North Georgia College & State University

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This workshop provided participants with ideas on the integration of technology into the FL environment. First, there was a short discussion of common problems of technology integration and then participants were presented with different examples of integration of video activities in the FL classroom.

Humanizing Online Instruction: The Final Frontier

Ulf Kirchdorfer & Alan Zhang, Darton College

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This workshop addressed the issue of humanizing online instruction. The presenters shared useful strategies and practices to increase faculty presence in and "out of" the class, and to shorten the distance between the instructor and the students inherent in a cyber classroom. Participants were asked to engage in activities to obtain firsthand experience of the scenarios where the discussed pedagogical strategies are applicable.

A Journey From Synchronous to Asynchronous Distance Learning

Marguerite J. Murphy & Kwanghee Davis, Medical College of Georgia

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This presentation described the transition of a two-course pathophysiology/pharmacology sequence from a synchronous delivery, using Georgia Statewide Academic & Medical System (GSAMS), to an asynchronous delivery, using online instruction. The presentation focused on the online course development and included discussion of the results of a pilot study and lessons learned over the two-year transition period. The pilot study outline, samples of learning activities, student surveys, online tests and course policies/expectations were distributed.

A Hybrid Course in Therapeutic Interventions: Development and Evaluation (Poster)

Erica Gannon & Antoinette Miller, Clayton College & State University

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This poster session presented the development of a hybrid class (both online and in-class components) in Introduction to Therapeutic Interventions. Examples of both Web-based presentations and various in-class demonstrations were offered. Preliminary findings regarding students' evaluations of such hybrid format classes were presented.

Part-Time Faculty Training

A Unified Force: Part-timers and Full-timers Working Toward a Common Goal

Maryann S. Errico, Kathy Allen & Ann Hardy, Georgia Perimeter College

email: merrico@gpc.edu

The presenters provided background information regarding the presence of part-timers in the college department. Results of an informal survey regarding the practices used in hiring part-timers were discussed.

The presenters also outlined ways in which full-timers and department chairs may successfully integrate part-timers into the daily workings of the department without compromising consistency of instruction.

Philosophy of Teaching

Developing, Implementing & Evaluating Your Philosophy of Teaching

Bill Buskist, Auburn University & Bill Hill, Kennesaw State University

email: buskiwf@auburn.edu

During this interactive workshop, participants began to develop and refine their philosophy of teaching. Particular attention was given to strategies for incorporating and evaluating your philosophy in the classroom.

Reflective Practice of Teaching and Learning

Brownbagging Our Way to Reflection

Peggy Ellington & Elizabeth Kuipers, Georgia Southwestern State University

email: mae@canes.gsw.edu

In this session, two professors explored how taking time for reflection actually makes time for better teaching, while fostering a community of learning that counterbalances professional burn-out. By sharing their experiences as reflective partners, the presenters stimulated discussion and creative thinking about teaching. Members of the audience were invited to join the partners in further reflective practicing.

Personalizing Instruction and Learning in the Classroom)

David J. Shook, Georgia Institute of Technology

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This session reports on survey results which attempted to describe how instructors in various academic fields relate their own research interests a) to the particular subject

matter of the classes they teach, as well as b) to the particular interests of the students they teach. Through presentation and discussion, the audience will learn new insights into personalizing their own instruction and enhancing the learning experience of their students.

Scholarship of Teaching and Learning

But Wait There's More!: Strategies for Transforming Scholarly Teaching Into the Scholarship of Teaching & Learning

Kim Loomis, Kennesaw State University

email: kloomis@kennesaw.edu

We all want to be good teachers. We all want our students to learn. We all want to produce scholarship. Are these mutually exclusive activities? No! You can enhance learning AND make scholarly contributions to your discipline and to the community of higher education. This workshop will address learning theory, assessment, and the scholarship of teaching and learning.

Student Portfolios

RACCE College Student Portfolio for First-Year Seminar (Poster)

Joan Dominick and Leigh Funk, Kennesaw State University

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RACCE College Student Portfolio Process in the First-Year Seminar is a five-stage process during which first-year seminar students "reflect + assess + collect + connect + express" their learning experiences. Through this process, students come to honor, understand, and connect their learning thereby empowering their college student success. Presenters will be available to share experiences from their innovative work with portfolios as well as to share samples of the Reflective and Best of Show portfolio process, hardcopy and online

resources, and student success stories from the portfolio development.

Using Adobe Acrobat to Create Electronic Portfolios (Poster)

Ellen Wiley and Larry Wiley, Valdosta State University

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This technology demonstration will include examples of portfolios from Masters' level Instructional Technology and Industrial/Organizational Psychology programs. Two approaches to formatting will be presented along with the rationale for each. The presenters will demonstrate the basic process for building a portfolio using Adobe Acrobat.

Student Success and Retention

Functional and Dysfunctional Mentoring of Minority Students

Kecia Thomas & Jimmy Davis, University of Georgia

email: kthomas@arches.uga.edu

This interactive session will focus on the successful mentoring of minority undergraduate and graduate students. The session facilitators will highlight important lessons on mentoring as found in the psychology literature and offer strategies for successful mentoring as well.

Helping Students Discover the Real Reasons for Poor Academic Performance

Dorothy J. Blais, Gainesville College
dblais@gc.peachnet.edu

The presenter will demonstrate how utilize a creative yet practical assessment instrument ("There's Gotta Be a Reason!") to help faltering students gain insight into the reasons behind their lackluster performance. With its non-threatening, humorous approach to gathering information about study habits and classroom skills, it provides specific, useful feedback for improvement and can be an invaluable aid in student/instructor conferences.

Comprehensive Student Services to Increase Student Success and Enhance Retention

Tina Butcher, Cynthia Benator and Pat Barnes, Columbus State University

email: butcher_tina@colstate.edu

This session will focus on how the College of Education (COE) at Columbus State University is working to provide undergraduate and graduate student needs for comprehensive advising and related services that are designed to support students throughout the academic program and to increase retention of COE students. This model is a collaborative effort among all departments within the college and with certain programs in the College of Arts and Letters. The discussion will outline the procedures and policies involved in the implementation of these services.

An Exploratory Analysis of Variables Affecting Retention at a Diverse, Technology-Focused, Commuter University

Michael H. Deis and Susan J. Sanner, Clayton College & State University

email: michaeldeis@mail.clayton.edu

The symposium will discuss the impact of several variables affecting student success and retention at a diverse, technology-focused, commuter university. Included will be descriptions of an Enrollment and Retention Variable Matrix, hypothesis felt relevant to retention, a longitudinal study currently being undertaken on student success in courses, and how retention has become an integral component of the Quality Enhancement Plan on the University.

Making the Grade: Achieving Better Student Retention Through Student Engagement

Jyotsna N. Kinnard and Fred Gano, Clayton College & State University

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The workshop takes a fresh look at ways to promote student engagement in learning.

Sources may be as diverse as cultural norms and practices in disciplines other than education.

Students Choose Responsible Retention Through Personal Change: An Alternative Course)

*Michele B. Hill, Nannette Commander and Bonnie Fritz, Georgia State University
email: mbhill@gsu.edu*

The students that enroll for the "Survival Skills for College" course are recruited to participate through academic advisement because they are in academic distress and demonstrate a propensity toward changing their performance. This course is specifically designed to increase awareness, knowledge, and skills in the complex life skills necessary to remain in college. Experiential learning has proven successful and in this presentation we will describe the course set-up, including break out sessions, the curriculum, the individual action plan, and student feedback through weekly journals.

The Wall of Ivy: Creating College Environments Through Multiple Intelligence

*Shane Blasko, Michele B. Hill, Greg Brack and Nannette Commander, Georgia State University
email: mbhill@gsu.edu*

Multiple Intelligence theory may help to ensure that best practices are being used when working with students in academic distress. Unique and creative activities that foster student success and the role that faculty play in promoting potential in students are a challenge. Strong emphasis will be placed on finding support for faculty that choose to create learning environments that offer innovative integrated modes for learning and grading for students with alternative strengths and deficits.

Undergraduate Research Skill Development

An Undergraduate Research Teaching Module: Enhancing Student Success and Retention

*Ardith Peters and Anne Hicks-Coolick, Kennesaw State University
apeters@kennesaw.edu*

In this workshop, two professors present a teaching module for undergraduate research in which students develop and implement a telephone survey to evaluate their major course of study. During a one-hour workshop, participants will experience the process of developing the variables, questionnaire, and final report using the research concepts learned by the students. The workshop leaders will provide the written teaching module and a PowerPoint/overhead presentation.

Writing Across Disciplines

Facilitating Successful Group Work in Writing Across Disciplines

*Irene Kokkala & Donna A. Gessell, North Georgia College & State University
email: ikokkala@ngcsu.edu*

Drawing on four years of experience with peer editing learning communities linking Biology and English students, the two presenters describe techniques to facilitate successful group work. After explaining their process, they discuss the adjustments they have made to optimize group performance through individual students' contributions. Central to group coherence are communication and evaluation, both of which encourage the students themselves to become better group facilitators.

Writing to Learn: Strategies for Constructing and Integrating Writing Assignments Across the Disciplines

Gwendolyn Jones, Georgia Southwestern State University & Amy Berke, Macon State College

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This session will address writing across the curriculum issues. Specifically, the session will look at writing assignments that can be easily constructed, integrated, and assessed in various disciplines for the purpose of enhancing student learning.

Why Dilbert Can't Write: Preparing the IT Workforce

Martha Myers and Jorge Perez, Kennesaw State University

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This tutorial explores the elements of writing that are critical and relevant for IT professionals now and in the future. The tutorial includes an exploration of media and communication channels that are becoming ubiquitous in the IT workplace. In addition, we describe writing exercises useful for graduate students in this discipline.

The Write Stuff: Teaching Students How to Answer Essay Questions

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What makes an effective teacher? What constitutes effective teaching? At some point in their academic careers all serious teachers will pose these questions to themselves. Genuine attempts to answer these questions often lead us to examine the literature on master teaching, discuss effective teaching with like-minded colleagues, attend teaching conferences, and perhaps tinker with different techniques of teaching. An additional, albeit more formal, approach to answering these questions involves research—actually collecting data on effective teaching practices. In this presentation, I blend answers from all four approaches to develop a comprehensive

model of effective teachers and effective teaching.

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