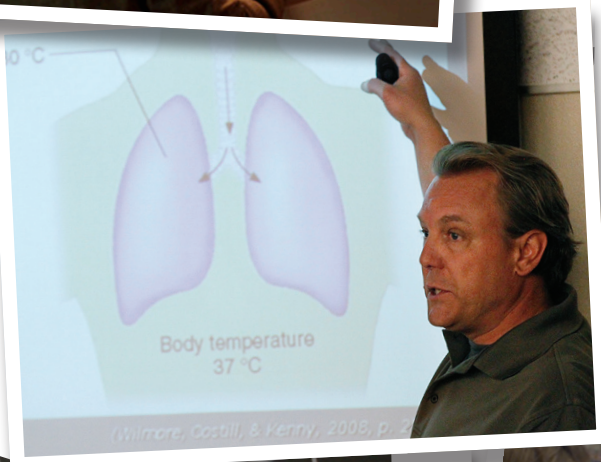
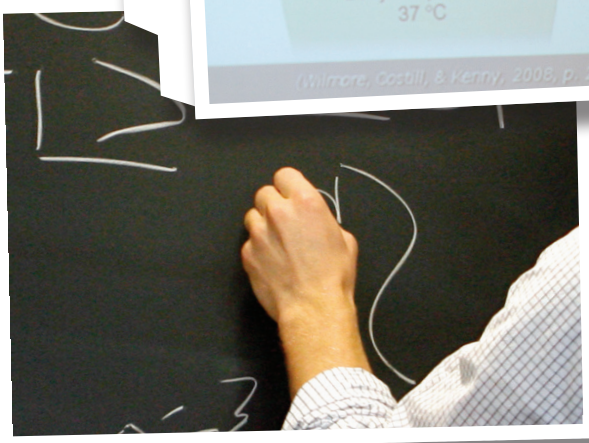
FACULTY VOICES

Sharing Our Philosophies of Teaching





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Faculty Voices

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Volume IX

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Introduction

In the broadest sense, personal narratives are natural gifts that unite cultures locally, nationally, and internationally. Narratives are generated in positive understanding of our identity, experiences, or our traditions. In order to continuously renew a better awareness of the present, and imagine a meaningful future, narratives are the communal bridges between people.

Those elements are true for any educational community, also. Narratives unveil who we are as faculty in relation to students, to our university colleagues, and to people in general. Each narrative that was gathered reflects a voice in the broader community of learners we encourage and support as educators and scholars.

What is Faculty Voices?

The Faculty Voices publication is an anthology of teaching narratives gathered from faculty across the disciplines. The goal of this narrative writing project is to stimulate exploration and understanding of the varied philosophies of teaching and learning evident in the university community. These introspections, reflections and recollections create a body of knowledge and a sustainable way of assessing our teaching and learning.

Writing, revising, and discussing the content of these narratives with like-minded faculty fosters meaningful metacognition about the roles that listening, speaking, reading, writing, problem-solving, research, assessment and technology play in advancing higher education.

Often, the stories about a faculty member's philosophy and beliefs about teaching and learning are guided by the larger mission of the university and those of the individual colleges. They emerge in connection with course catalogue descriptions, instructional goals and objectives as evidenced in the course syllabi, instructional strategies, integrated assessment efforts, and assignments that engage and involve students in a wide-range of projects, interactions and activities inside and outside the college classroom.

These narratives are our stories. They reflect who we are, what we believe about learning and student engagement, and how we perceive the vast opportunities that await us within the walls of the university classroom.

Acknowledgments

Deep thanks go to the ten faculty members involved in this ninth year of this project related to telling our teaching stories. The many workshop hours spent together talking, creating, sharing, editing, revising and critiquing the collaborative work by this cluster of writers was a wonderful community building experience.

Special thanks are extended to Betsy Eudey, Molly Winter-Crumpton and Paula Barrington-Schmidt for serving as final manuscript reviewers. Their tireless efforts and salient comments helped make the publication and the individual stories even stronger and more compelling.

The unfailing support and professional assistance of Ms. Ximena García, Administrative Coordinator of the Faculty Center for Excellence in Teaching and Learning, is especially appreciated.

Since the publication of the first volume, this project has become an outreach of the Faculty Center for Excellence in Teaching and Learning. The purpose of the project is to extend and expand the scholarship of teaching and learning reflected in the 1990 writing of Ernest Boyer (*Scholarship Reconsidered: Priorities of the Professorate*) through the process of writing and dialogue within a meaningful and supportive learning community.

An Overview to FACULTY VOICES

As we journey through life, each of us carries within us a composite of experiences that become a part of who we are, what we are, and how we respond. Those experiences comprise the "stories" of our life and of our profession as well. Each of us has a story to tell. The collection that follows is a volume of faculty "stories" about teaching, learning, assessment, engagement, and reflection about what makes a "teacher."

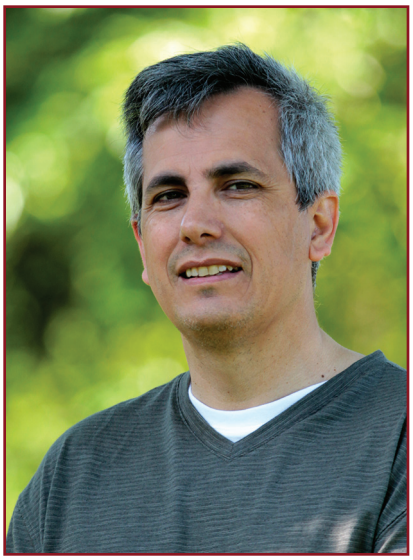
The stories you will read are diverse, as are the individuals who crafted them and refined them for your reading pleasure. Some stories are abstract and philosophical, while others are concrete and based on events, experiences, interactions, or metaphors that fit our roles as teachers. Each type of writing, and each individual composition, has a purpose in helping us explore the vast intricacies of honoring teaching as both an art and a science.

We hope this Ninth volume of ***Faculty Voices*** will be followed by many more. It is important to develop a culture for telling our teaching "stories" in order to stimulate each of us on the university campus to further explore and examine the vital role we play in helping learning grow and blossom in our students.

Special thanks are offered to the ten faculty story "tellers" - reflecting a variety of disciplines from across the campus learning community - who, with vigor, passion, humor and collegial sharing, have extended this **qualitative approach** to examining their teaching methods, insights, and outcomes by sharing their *faculty voices*.

Dr. Betsy Eudey, Director
Faculty Center for Excellence in Teaching and Learning

Table of Contents



Dr. Carlos Andrés
Department of Modern Languages

Grading with Heisenberg

In the 1930's, Werner Heisenberg made the crucial discovery for Modern Physics that it is impossible to probe a system in order to find out information without somehow modifying that system. In the process of measuring the speed of an electron, the location of that electron is necessarily changed. In a similar way, every time students are given a test, a quiz, or an assignment with the purpose of measuring their level of proficiency in the subject matter, the state of the student is inevitably altered.

Clearly one of the important objectives of student assessment is to determine who has achieved an acceptable level of knowledge to pass a class and who has not. Another objective is to evaluate the relative level of achievement of those passing the class. However, even the most "objective" quiz (i.e. a multiple choice test) is prone to have some impact on any minimally motivated student. That impact would come in the form of a coded message to the student. Just to give a couple of examples of two extreme cases: a grade of A achieved without much effort on the part of the student could be equivalent of a message of "you don't have to do much to get a good grade," while a grade of F for a student who spent a reasonable amount of time and effort could be equivalent to "you must drop the class before it is too late." The peculiarity of these messages is that only the student is able to formulate them. The instructor provides part for the construction of that message (type and level of difficulty of the assignment and grade) while the student is the one who knows the assignment and the grade but also knows how much effort has been put forth and how much more he/she is able and ready to give to the class in the future. Even a statement in the syllabus stipulating the number, type, and dates of assignments will trigger a unique response on the part of the student.

The first principle of Assessment of Student Learning at California State University, Stanislaus emphasizes that "the primary purpose of assessment at California State University, Stanislaus is improving student learning." The main objective of assessment is, according to this principle, "to improve program structure," and the assessment is assessment "for learning rather than assessment of learning." However, it is important to notice than when we prepare and grade assignments of our students in order to assign a grade in the class, we as instructors do not have the luxury of dismissing the "assessment of learning," since it is one of the fundamental purposes of grading. However, taking into account the inevitable effect that grading[1] has

1. with the general label of "grading," I refer not only to the relatively simple task of assigning a letter or a number, but also to the more elaborate tasks of providing comments, feed-back, recommendations, post-assignment interviews with students, possibility of re-writing the assignment, etc.

on a student, the assessment that is necessarily assessment of learning could also be used as assessment for learning.

Exploring and bringing attention to the ways in which the alteration of the student state can be (and should be) kept in mind when assessing would be the best way of turning our assessment of student learning into assessment for student learning, so the grading process is seen as an opportunity to interact with students in a productive way.

It is important to recognize that not all classes offer the same opportunities for such productive interaction. Subject matter and number of students enrolled in a course are fundamental constrictions which cannot be overlooked. Nevertheless, I believe it is crucial to recognize the different types of effects that the instructor should seek to have on a student according to the different intellectual tasks that the student is expected to perform. I believe the well-known Bloom's taxonomy could prove very useful in this realm. While simply giving a grade could suffice for a quiz in which only the lowest level task (according to Bloom's taxonomy) is required (i.e. fundamental definitions and simple recognition or recollection of facts), providing more complex and elaborate feedback is essential as the student is required to perform at increasingly more abstract and complex mental levels.

I will discuss now a couple of examples of grading for different types of assignments that test different cognitive levels, that keep at the forefront the goal of maximizing the opportunity to interact positively with students and with their learning process.

For quizzes testing the knowledge of students (memorizing, recognizing, defining and identifying), marks on the wrong answers and clear information on how points were lost is probably sufficient, provided that the students have been given appropriate information on how to find the correct responses.

For assignments that require descriptions in the student's own words, translation from one medium to another, or organization and selection of facts and ideas (level of comprehension), in addition to assigning a grade, some tips on how to better organize, describe, or translate would be necessary, as well as an opportunity to redo the work incorporating the comments, if the assignment is given early enough in the semester, since the potential for these comments to reach and influence the student will be enhanced if there is an option to revise the work to improve the grade.

In sum, what I have tried to show is that what could easily be seen as an unpleasant yet unavoidable activity, alien to the learning process, has the potential to become a powerful tool that could positively enhance that process. Since each time we assess, we inevitably affect the student in many ways, this fact should be an explicit object of reflection when laying down the methods of evaluation in a class.

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2. The opportunities and types of interactions which are possible in a Spanish composition class with fifteen students are obviously different from those in a General Chemistry class with an enrollment of one hundred.

3. In 1956, Benjamin Bloom lead a group of education psychologists, that classified the different levels of intellectual tasks performed by students. From lowest level to highest, these tasks were: Knowledge, Understanding, Application, Analysis, Synthesis, Evaluation.

4. This very recommendation for assignments at the comprehension cognitive level would apply to the other cognitive levels: application (problem solving, applying information to produce some result, use of facts, rules and principles); analysis (separating a whole into dividing parts, finding underlying structures); synthesis (creating an original product such as a paper or a physical object); and evaluation (taking a stand when there are differences of opinion or judgment, and/or making educated decisions about issues.)

Dr. Heather Coughlin
Department of Mathematics

Give Me a Minute

Every term since I started teaching (as a graduate student at the University of Oregon in Fall 1997), I've dealt with students crying or freaking out in my office because they have performed less than expected on their first exam. I, like many professors, have heard a myriad of reasons (some genuine, some not) for poor performances. Most often, I hear a variation of: "I'm just not good at math—I have test anxiety." The students referred to in this article do not suffer from a diagnosed anxiety disorder; I want to focus only on those students who use the term anxiety as a desperate attempt to summarize the inner chaos they feel during mathematics exams. I also do not want to consider students for whom the phrase "I'm not good at math" is a socially acceptable norm—an excuse for laziness—but rather restrict my focus to students who truly want to succeed.

Over the years, my discussions with these stressed-out students have become more sophisticated. They began as basic pep-talks—I pride myself in being able to find a metaphor for something mathematical from any given subject. (I once proudly spent 30 minutes discussing with a football player how taking a math exam is similar to playing a football game.) Then the discussions developed into explorations of study techniques for exams. However, for the past five years or so, these post-exam discussions very rarely focus on studying for exams but focus on how students attempt homework. More often than not, it is the approach to homework where the true problem lies. In particular, the students were excellent mimickers, but not experienced mathematical thinkers.

Four Stages of Mathematical Thinking Maturity

Allow me to digress into the difference between mimickers and thinkers by altering M. Scott Pecks' Four Stages of Spiritual Development [1](loosely summarized as chaos, blind acceptance, scientific skepticism and questioning, and "mystic"-genuine belief) into four stages of mathematical thinking maturity, which can easily be translated to most any discipline.

1. **Random/Recklessness.** Students in this stage, when stuck on a problem (homework or exam), writes down anything they think is remotely relevant, often leaving the professor wondering, "Where did that come from?"
2. **Blind Acceptance/Rote Memorization.** When stuck on homework, students in this stage find an example from the text or notes that closely matches their problem and copies the process line for line (changing only numbers) without thinking about what

1. Peck, M. Scott; The Different Drum: Community Making and Peace; Simon & Schuster, 1987

steps are occurring. Students in this stage are mimickers. Most do not realize they are only copying but not thinking about the problem.

3. **Basic Questioning.** When stuck on homework, students in this stage reference a similar example from the text/notes but write a solution to their homework problem without copying the example. Student in this stage tend to ask questions about particular steps but not necessarily about unifying themes.
4. **Sophisticated Questioning.** In this stage, students may approach problems as in stage three, but now the students ask in-depth questions, consciously trying to master the material on a thematic level. The students are unafraid to attempt solutions (even if they have errors).

I have spent a lot of time pondering the Four Stages of Spiritual Development and their relationship to mathematics because many of my struggling students are stuck in blind acceptance—desiring a simple formula instead of a thought-process approach. As described above, they copy solutions. Worse yet, if they cannot find a problem "like" the one being asked, they will, more often than not, skip the question. Finally, stage two does not prepare students for exams. They have not trained themselves to work on a problem without a safety net. They have not trained themselves to think through a problem, to try. In my opinion, this is where most students' test anxiety comes from.

A Minute to Think

Now, once a root of the problem has been discovered, the trick is to help students move from stages one or two to stage three—to move them from mimicry to thinking (stage three to stage four is outside the scope of this article). I need to "make them think." However, the pace of most math courses is such that much of in-class time is used for exposure to the material, and the absorption/thinking process occurs outside the class. Therefore, my struggling students need to develop an approach to homework which allows them to think.

This is where the dedication of the struggling students comes in. I ask the students to alter their homework strategy as follows: 1) Study the notes and text as the student normally does, if at all, before starting the homework problems; 2) Put the notes/textbook away and begin working; 3) When stuck, instead of immediately going for the instant gratification promised in stage two, take one minute to make attempts at solving the problem on a scratch sheet of paper. Students need to write out their thoughts. What gets written on the paper is between them and the paper—no one need know what is attempted. I ask them to write out their thoughts, without fear of needing to erase.

I warn the students that this precious minute can be a very difficult span of time. As the maxim goes: how long a minute is depends on what side of the bathroom door you are on. If the students are stuck after one full minute (which they are asked to time if needed), then they may look for a reference, study the problem, put the reference away, and go back to work. Notice I am guiding the students to stage three. Based upon the experiences of my formerly struggling students who tried this method, it takes about four weeks to get used to this process and move toward stage three. However, after dedicating themselves to this process, the students have expressed less anxiety and greater confidence on exams—and, ultimately, earned better grades. Over time, some students reported that they were able to complete their homework faster than before. I can not prove causality, but most formerly struggling students who dedicated themselves to this minute process have been successful in my classes.

Putting the pieces together

Described above is actually just a first step in guiding students to progress from stages one or two to stage three in developing their mathematical thinking. While this process has been tremendously successful with my students, there is no one-size-fits all approach to studying. It has been my experience that many of my students enter classes not knowing how to study

mathematics. They are not coming to college with highly developed study skills. They need guidance. Academics are professionals at studying, but our successful practices are not obvious to all.

Professors can not assume their students know optimal study habits or even adequate study habits. Every professor has in mind a way (or several ways) students should approach/study for the class. The most recent version of my study tips is appended to this article. My experience with struggling mathematics students has taught me that we, the professors, should not keep this secret. We must share our study advice. Part of our job is to guide students to be thinkers, but that guidance must include how to incorporate thinking, not mimicry, into their approach to the class. Today students, and people in general, do not have to think to answer questions or solve problems. There are internet searches, Wikipedia, even web sites on which one can post questions and have others answer. We need to explain appropriate uses of these tools or any tools we expect them to use. If we want students to learn to think, we have to give them a context in which to do it. Sometimes, it only takes a minute.

Study Tips

It is good to have a plan on how to study for any given course. The following are suggestions to help you develop such a plan. Many come from observations of students who have successfully passed my courses. Others stem from conversations I've had with and suggestions I have made to struggling students. Each of those struggling students who honestly put in effort to implementing my suggestions passed the courses they were in.

The following lists include more suggestions than one should implement on a first try. Pick one or two from each section to focus on. Be honest with yourself about your study habits and use strategies which closely match your approach to learning. Also be honest with yourself about your perceived level of effort. A word of warning: those who do not work/study for this class most likely will not pass. You need to put in time outside of class; for it is outside of class where most of your learning will occur. In-class time is time for exposure to material and time for you to get your questions answered and clarified—this means that you must be active and ask questions.

Two final notes: (1) the following suggestions are broken into three main areas; however, many suggestions will overlap areas; (2) the suggestions in bold are the ones I make most often to struggling students.

Be responsible for your own learning.

Before Each Class/ In Each Class Period

- Pre-read the section(s) covered—assigned. If you are assigned to read material before a class period, actually read the material.
- Pre-read the section(s) covered—not assigned. Take five minutes before class (even if it's right before the class starts) to skim the section(s). You will, thus, have a preview of the lecture, and will have at least seen the words/concepts once before lecture.
- Be awake and attentive during class. Turn off distracting devices such as cell-phones and MP3 players. In my classes, attendance is not taken; if you'd rather read the newspaper, I don't want you attending the class that day. If you need to bring a snack or a beverage, do so in a manner that will not disrupt the other students in the course (e.g. no smelly food or containers that open loudly).
- Take notes. I assume you are taking more than one class this semester. It is unlikely that anyone can remember most of what was covered in a class period with everything else that happens in a day.
- Reread previous day's notes before class.
- Examine your attitude for the day and/or for the class. If you are upbeat and happy, you are more likely to be attentive and open to absorbing material presented in class. If you are stressed or have negative feelings then you

might be less attentive and less open to the material presented. If you are in the latter situation, be honest about it and try to take more detailed notes to review in-depth later. Or compare your notes with someone else's (not the instructor's).

After Class/ Homework

- Read your notes. (Each day or at least before attempting a homework assignment.)
- Read the relevant sections of the book. Do not expect the lectures to cover every type of example or every nuance of a concept you must master. In a math course, reading a text is akin to transcribing the text.
- Comprehensive Concept List (CCL): Make a list which summarizes the definitions, theorems, main concepts from the course. You may even include examples (very few should be included) of types of problems (with clear, correct solutions) you struggle with. This list should be very concise—about two sides of a page or less per 5 weeks of class.
- Start homework early, so that you can have your questions answered. If possible, have one class period between when you start the assignment and when the assignment is due. This way you can ask questions in class.
- Before writing out a homework assignment:
  - skim the assigned questions. This will give you an idea of what to review.
  - review your notes; review the relevant book sections.
  - contribute to a CCL, and then review the entire list.
  - attempt non-assigned problems. As stated in the syllabus, the assigned problems constitute a bare minimum of what you should be attempting/contemplating. Many books will have the answers to some questions in the back, so work on those.
  - write a rough draft. This way you can be messy.
- While writing a final version of a homework assignment:
  - close your notes and leave the book open to the questions only. This will make the homework into mini practice quizzes.
  - when stuck, wait one full minute before referring to notes/book for help. Spend this minute trying different things, talk out the problem.
  - make it neat. This way you can study from it.
- Use/attend office hours. Ask questions.
- After getting a homework assignment back: correct your mistakes. This will be of the utmost importance when studying for exams.

Studying For a Quiz or Exam

- Reread previous exams/ quizzes/ homework. Focus on problems that were difficult for you.
- Make a Comprehensive Concept List (CCL) (see above).
- Read your CCL immediately before a quiz or exam—mimicking how you attempted your homework.
- Start studying (even if it's just making a CCL) at least five days before any exam, and have at least one class period between the start of your studying and the quiz/exam for you to ask questions in class.
- Focus on problems/concepts which caused you to struggle.
- Do review/practice questions. Warning: If you are given a review, compare the topics covered in the review with your CCL. Make up your own problems for any concepts not covered on the review.

Dr. Betsy Eudey
Department of Ethnic and Gender Studies

I've Got an IDEA

"An idea that is not dangerous is unworthy of being called an idea at all"
- Oscar Wilde [i]

"A mediocre idea that generates enthusiasm will go further than a great idea that inspires no one"
– Mary Kay Ash [ii]

There it was, sitting on my desk. A big yellow-brown envelope addressed to "Eudey, Ethnic and Gender Studies, Confidential." I hadn't expected to get this today, but I knew right away what it contained. During office hours I had planned to review and respond to student posts to the discussion board for the online class I had just begun teaching, and to answer student emails, and to prepare the next course unit and assignments. Instead I was a bit paralyzed. I wanted to get my work done, but the contents of the envelope called to me. I wanted to assume that it brought good and helpful news, but still I had anxiety. Could opening the envelope ruin my day? Could it undermine the progress on my current course? Would I get a temporary rush of pleasure before my sensible side reclaimed control?

The arrival of the IDEA (Individual Development and Educational Assessment) reports always causes me stress. Working at a campus where teaching proficiency (however difficult that may be to define) is now named as the primary qualification for promotion and tenure, instruments that claim to report on the quality of my teaching effectiveness and student self-reports of achievement of learning objectives carry great weight. Indeed, my institution has identified IDEA as the default instrument to use to quantitatively evaluate my teaching in satisfaction of contract requirements. Yet, at the same time, I know that the IDEA form has many limitations and should only count for a small portion of the evidence of the quality of my teaching. So there I sat, unwilling to open the envelope, yet unable to ignore its call. I've worked at Stanislaus since 2003, and only really had one course rated below my own standards, but I honestly would have rated it lower than the students did. However, even with a history of good to excellent evaluations, I viewed the envelope with trepidation.

After half-heartedly reading some emails, I gave in. I opened the envelope, knowing in advance the mix of documents I'd find about my fall section of Women's and Feminist Activism. On top would be a summary form with quantitative scores telling me whether or not students perceive me as an "excellent teacher" and if I had facilitated an "excellent course." I'd also be told whether students felt they made progress on "relevant objectives" for the course, and how my students' ratings compare with the ratings made on the courses my colleagues decided to have evaluated. There would be some information about the students themselves, including their level of effort and interest in the topic. And after all the summary data, I'd find the actual forms the

students completed, with the possibility that they included narrative comments.

This year I tried a new strategy, and, instead of looking at the summary form, I began with the student forms, turning to the back side on which the students' comments might be found. I have always found the comments to be instructive, and generally more developmentally useful than the quantitative ratings. Out of 35 surveys, eight included comments (more on this low response rate later). Thankfully, these comments were all positive, offering appreciation for the selection of course readings, the openness of the learning environment, the range of course assignments/activities, the depth of new knowledge acquired, and general appreciation of my teaching. Since this was an evaluation of a general education course covering controversial topics, even in a class that I might feel was successful, it would not be surprising to have students unhappy with the content or facilitation of the course. That no concerns were raised made me less apprehensive about the quantitative summary. Yet I still didn't want to look at the scores.

So I didn't. Instead, I thought some more about the class itself. The general course content was new to most students, as was the expectation to address openly the intersections of sex, gender, sexual orientation, ethnicity, nationality, economic class, religion, age, able-bodiedness, and other identities and characteristics. Even so, or perhaps because of this, it was a very interactive group of 39 students, primarily enrolled for general education credit although a handful intend to pursue a major or minor in gender studies. Among the students there were some very politically/socially liberal and politically/socially conservative students in the course, and we were all called upon to share respectfully our opinions and analyses, listen to others' perspectives, and consider the impacts of divergent views in a broader social/cultural context. Over the term, we engaged in several activities that called upon students to apply course content to specific situations. We engaged in a community service project related to reproductive justice,[iii] with students working in self-selected groups to address topics they had chosen. And we engaged in lots of small and large group discussion about women's and feminist issues from the 1800's to the present.

I then pulled out my folder from the course and located several assessment activities I had used to gauge student learning and to obtain feedback on my teaching. I had been diligent this term not to rely upon IDEA as the only or primary means to assess the quality of this educational experience. I was also careful to obtain feedback during the term and not simply at the end of the term. I engaged in activities that allowed me to control when and how feedback would be obtained and constructed questions that would allow me to make needed adjustments. By gathering this information on my own, I have a choice about if or how to include it in personnel processes, whereas I am required to include all IDEA data in my personnel file (at least two mandatory evaluations per year).

One of the guides I use to support my on-going inquiry into the quality of the learning environment is Angelo and Cross' 1993 book Classroom Assessment Techniques: A Handbook for College Teachers. This book offers suggestions for a range of activities to utilize to better understand what students are learning and how well they are learning it even before formal assignments are submitted for grades. By using these assessment strategies, faculty can better understand student needs and can work with students to develop strategies for supporting learning. What I like most about Angelo and Cross' work is that it helps me to understand more about what and how my students are learning, but does not place on me sole responsibility for improving their ability to learn. They suggest that by engaging in classroom assessment techniques (CATS) and discussing the findings with students, students can better understand how to assess and improve their own progress even as instructors make adjustments in a course. The process of continuous assessment is therefore "mutually beneficial" as all parties can

see areas of strength and needed growth and can work together to enact improvements. Further, Angelo and Cross indicate that by engaging in continuous assessment and acting upon the findings, students' needs are more likely to be met, learning increases, satisfaction with the course increases, and student ratings of faculty are higher at end-of-term. Clearly a win-win.

So what did I do this term to assess learning and satisfaction? I developed a mix of formal course activities and more informal processes to obtain feedback throughout the course. For over a decade I have utilized "quick writes" at the start or end of classes to get a quick check on student comprehension of core course topics and their ability to analyze or apply this information.[iv] When I review the quick write responses, in addition to celebrating the positive demonstrations of learning, I watch for common areas of misunderstanding or misapplication of theories or concepts. In addition to providing individual feedback on their papers I also often discuss with the entire class comments that were particularly insightful and clarify areas where problems may have arisen. When reading student work I also watch for what is unsaid – the readings or topics that are avoided – and talk to the class about why these absences may have occurred. At times I have learned that assigned readings were inaccessible – literally or figuratively – or that students were not able to articulate their understanding or even their questions. When students see me utilizing the quick writes as an opening to a conversation, they engage in them seriously, and over time not only tell me what they know but directly indicate what they think they don't yet understand well. Because I have monitored student learning and areas of concern on a regular basis, I find that students are more prepared to complete the higher-stakes assignments at a high level of quality.

Periodically I asked for anonymous feedback on specific class discussions, activities, or assignments, and I used this information to determine which activities and practices should be continued, modified, or replaced. While much of the focus is on student learning, at other times I am more interested in the classroom climate. For example, we had one class period in which a student expressed concern with our attention to lesbian, gay, bisexual and transgender (LGBT) issues in this course and in a specific extra-credit assignment, believing that we were not addressing "true women" and therefore wasting valuable class time. I provided a rationale to the student for the inclusion of LGBT issues, as many who identify as such also identify as women, and because most comprehensive feminist activist groups include sexual orientation issues in their charge. The student continued to argue her case, and I engaged in discussion with her for a few minutes and then asked her to continue the conversation with me outside of class, so that we could continue with the rest of the day's planned activities that needed to be completed to prepare students for a project deadline. During our exchange, I wasn't fully comfortable with the non-verbals I was seeing from other students in the class, and I wasn't sure how all students had experienced the conversation. At the start of the next class, I solicited written feedback on both the assignment and the tone of the class during the discussion as a way to see if others were as uncomfortable as I was. I used this feedback to engage in a discussion of appropriate ways to express differences of opinion and feelings of exclusion.

At mid-term, students were asked to submit a portfolio of all work submitted to date. This included a compilation of their quick writes and some unit activities and surveys. They needed to directly cite examples from their own work that demonstrated their growth in understanding in specific areas tied to course learning outcomes. They were also asked to indicate what they had done to support their own success in the course and what new actions/behaviors/strategies they might engage in to further enhance their success in the remainder of the course. On the day the portfolio was submitted, students anonymously answered two questions – one that indicated what they liked best about the class so far, and the

other what could be done by me and the student teaching assistant to better support their success in the course.

During the next class period I provided the students with an anonymous compilation of the types of activities students were doing to support their own success and offered some feedback on their own self-support comments. I also shared what students liked most about the class (small and large group discussions, the range of readings, the service project, openness, etc) and their recommendations for ways their learning could be better supported. Some of their suggestions asked me to do things that were already being done – i.e. asking me to provide outlines for the readings, even though these were already available via Blackboard – but that not all students remembered were available. This provided me with the opportunity to remind students of the resources I had posted and how to best access them. As we discussed these resources in class students who had used them shared their perspectives on how they utilized them. Other suggestions were things that I would not do – i.e. eliminate attention to lesbian issues or use only one text instead of a couple of books supplemented with online texts – but I provided a rationale for why I would not make this change. And further, we discussed changes that seemed reasonable and could and would be enacted. Through the reflection and these activities, the students and instructors became more aware of student progress on course goals and had a better understanding of what to do to continue or enhance progress for the remainder of the term and future offerings of the course.

The course concluded with a portfolio reflection covering the entire term that again had the students identify evidence of their own achievement of course learning outcomes. They also completed an anonymous course feedback survey that asked the following questions:

1. What is the most interesting or important thing that you learned in this class (or multiple things if you wish)?
2. What did you like best about the course (this could be related to such issues as the topics we addressed, the kinds of assignments we had, how the course was facilitated, etc)?
3. For next time I expect to either eliminate or differently prepare folks for the research paper, and will likely replace [a book] with [an online magazine]. What's your perspective on these changes? Are there other changes you'd recommend?
4. What do you understand differently because of this course?
5. What do you care about differently because of this course?
6. Is there anything that you learned from this course that can assist you in your personal and/or work life?

The responses to these questions help me understand what students feel they achieved in the course, which, when coupled with my own assessment of student learning outcomes, can help me to maintain or improve the delivery of a course. I also get a sense of the range of activities that students find helpful to their success and see if there are themes in the recommended changes that can inform future sections of this or other courses. Because we talked throughout the semester about the course learning outcomes and the ways in which we could achieve these through assignments and class activities, there is a degree of thoughtfulness to the student comments that surpasses those offered in classes in which I'm much less intentional about addressing this. The recommendations for improvements/changes are excellent, with many encouraging me to keep the research paper but with some modifications that would improve their quality. This is much more formative information that I obtain from the quantitative and qualitative portions of the IDEA forms, and in large part accounts for why I get minimal narrative comments on IDEA (the volume of comments dropped drastically when I supplemented IDEA with my own questions).

Without even looking at IDEA, I know what

progress the students made on the actual learning outcomes of the course, rather than on the possible learning objectives generically named on the IDEA form. I know some of the ways in which the course has better prepared them to engage in future coursework, to participate in families and communities, and to advocate on their own behalf, regardless of their initial desire to be in the course or the amount of effort they claimed to put into the class.

With this understanding of my students' experiences and opinions, I can review the IDEA quantitative scores as a supplemental source of information, rather than as the primary source, which finally gives me the confidence (or perhaps courage is a more honest term) to look at the IDEA summaries. So what were my scores? They were in a range that won't raise concerns in a personnel review and seem to support my own sense of the high quality of our learning experience. I will not reveal the actual numbers, because doing so gives them more weight than I want them to have. I believe my own on-going assessments provide useful feedback that not only helped me to improve the course throughout the term, but will improve courses I will teach in the future. While there is some benefit to knowing whether students think I'm an excellent teacher or offered an excellent course, I'm less convinced that there is benefit to the rest of the statistical information or to comparing my score with colleagues in my institution. This course was a lower-division general education course with mostly freshmen but quite a few juniors and seniors. I would hope that the juniors and seniors experienced less progress than first year students in the areas of critical thinking, analytical skills, and ability to express oneself orally and in writing – the assignments and activities targeted these outcomes at an entry/emerging developmental level, and the upper division students were not as challenged at the level they should be capable of. Based on coursework, I can affirm that nearly all students achieved the intended course learning outcomes at a competent or advanced level even if they didn't report "exceptional progress" on any of these skills outcomes named on the IDEA form.

Although I must engage in course evaluation to satisfy contractual obligations for performance review, I have many choices as to how this evaluation is conducted. When I fail to obtain information from multiple sources, IDEA obtains greater influence by default. Fortunately, my program's retention, promotion and tenure (RPT) elaborations require consideration of multiple measures of teaching effectiveness, not simply the data from the IDEA reports. However, those considering the quality of my teaching during RPT or other processes may consciously or unconsciously value IDEA over other forms of evaluation. Therefore, I must artfully and consistently present an array of information that offers a complete picture of what I understand about teaching and learning in my courses, and how I use this understanding for continuous improvement. When I thoughtfully engage in course evaluation throughout the semester, there are few surprises in end-of-term summative evaluations, and often students provide feedback of higher quality because they are accustomed to reflecting upon their learning and the modes of instruction. It is only when I fail to engage in continuous assessment that the IDEA evaluations carry greater weight and may offer unexpected data.

I have finally designed a useful process for obtaining feedback throughout the term and that, upon its conclusion, allows me to be well-informed about student learning and the quality of the course and instruction. If I engage in this process in all of my courses, the IDEA reports no longer will be a cause of stress, but can be re-framed as supplemental measures of student learning and satisfaction that provide additional, less-specific but still interesting, information about the courses I teach. IDEA scores in isolation – whether quite high, quite low, or average – mean very little. Students can like me and a class and have learned very little. Students can have learned a lot but not value me or the course as highly as others they have taken. Without comparison to other course-related

data I obtained, the IDEA scores don't help me determine how best to support student success in the future. Through direct measures, consistent formative and summative feedback, and course-specific inquiry, I obtain a more useful and valid evaluation of my teaching proficiency. And most importantly, I obtain information that allows me to improve my teaching and better support student learning.

i. This quote is from Oscar Wilde's The Critic As Artist; at times it is mistakenly attributed to Elbert Hubbard and to Don Marquis.

ii. Cited in Cynthia Kersey's (1998) Unstoppable: 45 powerful stories of perseverance and triumph from people just like you. Naperville, IL: Sourcebooks, p. 89.

iii. We drew SisterSong's conception of reproductive justice for this course. They assert "The reproductive justice framework – the right to have children, not have children, and to parent the children we have in safe and healthy environments -- is based on the human right to make personal decisions about one's life, and the obligation of government and society to ensure that the conditions are suitable for implementing one's decisions is important for women of color. It represents a shift for women advocating for control of their bodies, from a narrower focus on legal access and individual choice (the focus of mainstream organizations) to a broader analysis of racial, economic, cultural, and structural constraints on our power. Reproductive Justice addresses the social reality of inequality, specifically, the inequality of opportunities that we have to control our reproductive destiny. Our options for making choices have to be safe, affordable and accessible, three minimal cornerstones of government support for all individual life decisions." http://www.sistersong.net/index.php?option=com_content&view=article&id=141&Itemid=65

iv. These are low-stakes assignments, worth a maximum of three points each (one for putting your name on the page, up to two more for the quality of the answer) out of 400 points in the course. Further, I set the maximum points possible to apply to their course grade about 20 points below the points they could earn if they obtained 3 points per day – this allows them to earn 100% on quick writes even if they missed some days or earned less than 3 points on some days.

Angry Birds vs. Angry Professor

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I saw a student using her phone in my class. I walked towards her, and asked her to answer a question. Her thumbs were still busy playing Angry Birds. Her eyes were fixed on her iPhone screen. She said: "what did you say?"

I later asked the class how many of them have ever texted/played games in the class. More than two thirds of the students raised their hands. I then asked how many of them turned off their phones as I requested as a class policy. Two hands went up. I was angry and frustrated. But how to respond? I've never been good at saying, "leave the room now!" or "give your phone to me!". Was there any way I could prohibit these annoying occurrences and ensure the best possible learning environment for the whole of my class?

Cell Phone Protocols

To answer the above question, I reflected on my cell phone policy in class. The policy I have in my syllabus is: "Cell phones must be turned off or placed in the silent mode when in class." It is a clear statement; however, it clearly is not working. I have looked at syllabi online to examine cell phone policies implemented by other professors, and found most do not have a cell phone policy. For the ones that listed a cell phone policy, the general message is the same: No cell phone use in the class. Here are some statements used in their syllabi:

A cell phone ring always brings class lecture to a screeching halt. Avoid bringing cell phones to class. At the minimum, silence your phone before class begins. Receiving cell phone calls or text messages during the class period is an overt act of selfishness. Your instructor reserves the right to dismiss from the course any student who repeatedly ignores this directive (Goy, Harding University, 2007).

Before class begins, you must turn your cell phone/PDA/pager/gizmo off or put it on silent mode. NOT VIBRATE - SILENT OR OFF! Cell phones cause a distraction to other students and disrupt the class. Sending and receiving text messages in class is unacceptable. This is disrespectful to the class and instructor (Beckham, University of Texas, 2011).

Students, parents, donors, and taxpayers have all incurred costs to make sure that students and teachers can have uninterrupted, productive class time to work together. In order to minimize disruption, **telephones and audible beepers are not invited to class**. Please turn such devices off before entering the classroom. If you must have your phone on for emergency reasons, please set it to vibrate and wear it on your belt. If it vibrates, quietly get up and go out of the classroom; when you have completed your business, return to class quietly without disrupting the learning process for others (Hackney, Lake-Sumter Community College, 2010).

Cell phones should not be visible during class, and should be turned off during class. If a cell phone is visible during a test, exam, or other type of graded assignment, the student will automatically receive a **"0" score** on that test, exam, or other type of graded assignment (Trader, McDaniel College, 2011).

Students **MAY NOT** use cell phones in class. This especially includes texting. Phones should be set to silent mode and put away during class time. **I will confiscate your cell phone for the duration of the class period if I see you use it during class.** (Long, Stephen F. Austin State University, 2011).

Cell phones must be turned off or placed in the silent mode when in class. In the rare case of a family emergency please contact me prior to class to make arrangements (Morgan, Arkansas State University, 2011).

Based on comparisons with the other professors' policies, my current cell phone policy--Cell phones must be turned off or placed in the silent mode when in class—is appropriate. There may be emergency situations that need immediate attention. However, most students use their cell phones to text, access Facebook, or to play games. Cell phones are a distraction to instructors and students. Banning cell phones in the classroom facilitates a class environment that can promote student learning. The issue is how to implement this policy. I talked to my colleagues, did some research, and found interesting strategies.

Pizza, Quiz, or "This is Professor C."

A colleague simply does an instant pop quiz for everyone when he sees a student using a phone. Another instructor uses fines: $20 cash fine payable on the spot if a phone rings during class, and $100 fine if it rings or audibly vibrates during an exam. All funds go to a general scholarship fund for the department. The department Chair supported her. She raised about $400 in five years.

A professor at Valparaiso University has an innovative way of dealing with cell phones in his classroom. If someone's phone rings, he or she has to provide the class with food. A history professor described his way of dealing with cell phone rings in an online discussion forum of the *Chronicle of Higher Education* (Larryc, 2006):

In my classes if a phone rings I cry out "that's for me!" and make the student hand it over. "Hello, history hotline!" I answer. "Professor C. here. What is your history question? What? Is John here? Well yeah, but don't you have a history question? I mean, you called a history class. C'mon, ask me anything, I have a PhD! No? Well tell me this then, what is the most embarrassing thing you have seen John do? [Pause, pretend to be listening to a story] Holy cow! I'll bet you can never go back there together, huh? OK, before I let you go, how should I punish John for leaving his cell phone on during class? Flunk him? That seems a little harsh. He does it in his other classes too? Well I'll think about it. OK, John will call you when class is over, bye."

Who Shall Change?

Of these interesting strategies, I especially like the quiz idea. For economically challenged students, providing food for 30 students or paying a $20 fine might be a burden. I plan to use the quiz treatment for my future classes. I talked to a young friend about my plans. She hesitated for a moment and then asked, " May I ask why you make such a big deal about students using cell phones? Accessing cell phones anytime anywhere is their social norm. I think it is fine to let them use their cell phones in the class." I was stunned when I first heard her comment. But the more I thought about it, the more I began to see her point.

As a junior professor, I have never considered that there are generation gaps between my students and myself. However, we are from different generations. Most of my students are in the iGeneration (born 1990-1999), while I am Generation X (born 1965-1979). I can see the different media-use patterns between these two generations. For example, I send two or three

text messages every month, while my students love texting every hour, everyday! I always forget to bring my cell phone or charge the battery, while my students have their cell phones with them 24 hours a day. Their cell phones are like their electronic pets. They take their pets out constantly, stroking their keys, and handling them with care. Cell phones are a part of their culture and norms. Like my young friend, they cannot understand why texting during class would be considered rude. Therefore, who should adopt?

In his keynote speech at the Instructional Institute Day, Dr. Larry Rosen started with this citation, "One hundred years ago children traveled to schools to sit in rows and be instructed by a teacher. Today, they still do the same. Why is education so resistant to change?" (Rosen, 2011). The follow up questions I would ask are: What are the directions of the change? Does the change improve their learning or reward their inability to focus? If the change means we bring new formats and new technology, such as online classes, blogs and wikis, to facilitate learning, I welcome these changes. However, I will be skeptical if the change directs me to let students freely access cell phones in the class.

Studies have found that multitasking handicaps learning. Hembrooke and Gay conducted an experiment to examine the effects of multitasking. Students were divided into two groups. One group of students was allowed to use their laptops to engage in browsing, searching, and/or social computing behaviors during the lecture. Students in the second group were asked to keep their laptops closed for the duration of the lecture. After hearing the same lecture, students were tested immediately. The study found that students in the open laptop group suffered decrements on traditional measures of memory for lecture content (Hembrooke & Gay, 2003).

When multitasking, students are not actually performing tasks simultaneously but making decisions about what to turn their attention to next, then executing that decision. This "evaluate, choose, and move" process consumes time and energy and encourages the pursuit of more instantly pleasurable inputs. The boring lecture gets fewer and fewer slices of the time pie. Habitual multitasking may condition a student's brain to an overexcited state, making it difficult to focus, even when they want to (Wallis, 2006). Ophir, Nass and Wagner from Stanford University examined heavy media multitaskers, people who are regularly bombarded with several streams of electronic information, and found that those multitaskers do not pay attention, control their memory or switch from one job to another as well as those who prefer to complete one task at a time. They said, "They're suckers for irrelevancy. Everything distracts them " (Ophir, Nass, & Wagner, 2009).

One role of education is to prepare students for their future careers. Will these short-attention-span, need to be entertained, and multitasking students fit the needs of organizations? Or will organizations make changes to accommodate the iGeneration? These are questions educators need to contemplate as we determine electronic device policies, implementations, and enforcement.

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Content Knowledge; How Much Material Is Enough?

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Content Overload, Critical Thinking, & Entertainment?

I just don't feel right. There were two more topics I wanted to cover before the exam, but if I try to cover the material any faster all I would see is the "deer in the headlights" glaze that I'm so accustomed to late in the semester. Faculty talk about student-centered teaching approaches to enhance critical thinking, but these techniques are not always feasible when there is a significant volume of content to cover during a semester. Additionally, how do we get students to make meaningful connections to the material in fifteen weeks or less to enhance its application in the future? Are we teaching or are we merely content distributors? As if teaching all this content and making the connections for the students weren't enough, it has been suggested that college faculty learn to entertain as well as to educate (Zakrajsek, 2011). As my colleague in Psychology would say, "oy vey!" Philosophically, does making class fun necessarily equate to enhancing the joy of learning and/or teaching? Most importantly, how can I possibly entertain these 'overloaded' troops and lead them to their personal "ah – ha!" moments while trying to cover a 600 page textbook? Let's see, I'm pragmatic, there are fifteen weeks in a semester, minus two weeks for testing and reviewing, and at least another for Spring Break or Thanksgiving holidays which leaves close to ten weeks to teach. That's easy enough, all I need the students to read, and me to cover, is an average of 60 pages per week. Oh, and make it fun, dang it! Therefore, the problem I wrestle with, and I'm sure many of my colleagues wrestle with, is "too much content, not enough thinking, and too little fun" (DiCarlo, 2009). One way I have approached this dilemma of content overload is to establish a set of "core concepts" that outlines a framework of what students should remember once the semester is over. It is my hope that this will lead to sufficient content, just enough thinking, and a good dose of fun.

Developing Core Concepts within the Discipline

Recently, Michael and colleagues (2009) have addressed the problem of what set of "core principles" should serve as the primary focus of an undergraduate human physiology course that is overloaded with content. These authors point out the difficulties a student faces in learning a large volume of content in a topic area with an ongoing knowledge explosion; recent discoveries and innovations continually change and expand our field of study. Thus, students can only be exposed to a fraction (and retain even less) of the content in their current textbook (Michael et al., 2009). When searching the top four book publishers in the exercise science content area, there were 103 textbooks covering a wide array of course content aimed at undergraduate and/or graduate students from introductory courses to highly specialized topic areas. Within Exercise

Physiology, there were 23 textbooks available with an average length of 508 pages (range: 96 – 1104) and a cost of $79.^{00}$ ± $30.^{00}$ (± SD); there were an additional ten lab manuals also available.

Within the physiology sub-discipline of exercise physiology, our students are asked to learn and/or review many of the critical concepts taught in human physiology, and then adapt these homeostatic mechanisms to the stress of exercise and/or disease states. Core concepts should be "big ideas …that are central to the discipline" (Michael et al., 2009) and ideas that we want students to retain long after they graduate. If there were agreement on these core concepts in physiology this would help students transition from human physiology to an advanced exercise physiology class. The development of a core set of concepts within exercise physiology could further help focus students' learning of essential topics that could hopefully stimulate their interest in critical thinking and advancing their degrees without overwhelming them with the vast amount of information presented in the textbook.

Before a set of core concepts in exercise physiology can be developed, it is important to recognize that core values might vary depending upon the institution and road map the majority of the students are pursing following graduation. If an institution has exercise physiology, advanced exercise physiology, environmental physiology, and/or a combination with clinical exercise physiology, then the difficulties are diminished as content can be distributed across several primary classes. However in smaller liberal studies programs students may only be exposed to the overall discipline of Exercise Physiology in a single fifteen-week semester class. The undergraduate exercise physiology class I teach at California State University Stanislaus is composed of a combination of students focusing on acquiring a teaching credential in physical education and "health and wellness promotion" students, many of whom hope to attend graduate studies in exercise science or physical therapy. Although at my institution we do not have either advanced exercise physiology or environmental physiology, I have been able to distribute some of the content I would like to teach in my primary course across a pair of elective classes that focus on special populations and nutrition. Therefore, establishing a set of core concepts might serve as an outline for other similar programs with a less directed physiology focus and more diverse students.

General "core concepts" should be universal principles that inform our teaching and serve as a foundation to student success and assessment (Michael et al., 2009). It is important to recognize that core concepts are not course objectives; they are just an outline of important and/or critical ideas that students should acquire. Furthermore, each core concept proposed can be unwrapped to reveal a set of component ideas, thus adding to the complexity of a class heavy in content. The general concepts I propose for a basic one-semester exercise physiology class would include covering historical figures, metabolism (i.e., how energy is derived), neuromuscular physiology (interaction of muscles and nerves to cause movement), cardiorespiratory physiology (the fitness of our heart and lungs), and the adaptations that occur as a result of chronic exercise training. Most textbooks in the field of exercise physiology cover a great number of additional topics, but if teaching this material is limited to a single semester class, then decisions must be made on what "not to teach." When possible, some important concepts not covered can be diverted to co-requisite classes including; other important topics I do not have time to cover include thermoregulation (how one adjusts body temperature and maintains homeostasis), endocrinology (the hormone regulation of the body), environmental physiology (exercise in the summer or winter, effects of diving or exercise at high altitudes), and special populations (causes of disease states [called pathophysiology] like cardiovascular disease, diabetes, obesity, aging, women's health, etc).

One advantage in teaching physiology-based classes is that they often have a concurrent laboratory experience; these class hours can be

used to supplement the teaching of core concepts. Within a discussion of these core concepts key points need to be discussed and common misconceptions need to be dispelled. Overall, in a single fifteen week semester only a portion of the available material can be adequately covered, and it is then left up to the students to learn other important topics that cannot be covered.

Core Concepts in Exercise Physiology: What Should Students Know?

Historical Figures: Sir Isaac Newton said "if I have seen further it is only by standing on the shoulders of giants," therefore it is important to have an appreciation of where knowledge comes from and how our contributions are always extensions of those innovations that have come before us. What students may consider new and novel are often an assimilation of previous research findings and the study of physiology by scientists long since forgotten. Therefore, it is important to teach students about some of the pivotal scientific findings and the investigators that helped make significant leaps in our knowledge of the physiological responses to physical activity (Wilmore et al., 2008). During the semester, I have enough time to dedicate one 3-hour lab to this topic.

Metabolism & Energetics: Metabolism is the most important core concept in Exercise Physiology because it is the process by which food is combined with oxygen within the body to produce energy to perform work. In this context, work is any and all bodily functions from breathing, digesting, and thinking to moving the body (e.g., from typing this essay to running a marathon). When teaching metabolism to undergraduates a goal is to simplify this concept into three systems that are integrated and related to activities familiar to students. As an example, exercise or movement can be separated into three important categories based on the intensity and duration of the activity. First is intense and short duration activity (100% effort for 10 – 15 seconds) such as jumping or lifting weights, next is moderately intense (85% effort) activities lasting 2 – 5 minutes such as sprinting, and lastly is moderate intensity exercise (50 – 65% effort) for long-durations up to several hours, as in running a marathon. The differences in these exercises are their intensity and duration. As I often tell my students in class, "work is energy, energy is metabolism!"

However, students face two important issues when studying metabolism: 1) they often lack a background in chemistry that is the foundation of metabolism (most undergraduate students are not required to complete basic chemistry classes that would result in greater understanding and success); and 2) when unwrapping the topic of metabolism, its own complexities and key component ideas become exposed. Thus, many university Exercise Science programs will often offer metabolism as a stand alone fifteen week course. To deal with these potential shortcomings I dedicate four to five weeks of my semester to properly cover this topic.

Muscle & Nerve Physiology: Understanding the relationship between nerve function and muscle action is essential in unlocking the mysteries of human movement. The goal in teaching neuromuscular physiology is to enhance the connection between how things work at the cellular and tissue level and the different adaptations we can expect from various exercises (i.e., muscle's hypertrophy following weight lifting but not after running). It is common for introductory physiology students to learn the differences between the central (brain and spinal cord) and peripheral nervous system, and to understand that some of our actions are under our control (voluntary) while others are automatic (involuntary). However, within exercise physiology it is important to understand the complexities of the central nervous system to dispel misconceptions that can arise if students do not understand how the nervous system operates. As an example, the notion of "muscle memory" is incorrect as there are no "memory" cells in the muscle; instead when we perform a task (i.e., playing the piano or shooting a free-throw

in basketball) it is the playback of a complex stored program from the brain that controls the muscle function in a precise pattern of time, space, frequency, and amplitude. Furthermore, the neuromuscular system is amazing in that someone can lift a light piece of paper then immediately turn around and lift a heavy weight with the same muscles due to the integration of the nervous system that controls the amount of force generated from the muscular system.

As for the muscle tissue itself, many important discoveries have been made in the past 20 years as a result of better imaging techniques and complex genetic studies. As an example, understanding the subtle differences in our muscle composition (fiber types) and how genes are expressed can help explain why some individuals are well-suited for running marathons while others are better at jumping and sprinting. Developing critical knowledge of these systems can help the student develop an ability to not just exercise, but to understand how exercise can affect function and health. This leads back to my central concern of too much content; recent discoveries often change our understanding of theories resulting in re-teaching topics previously learned or just adding greater complexity to those ideas previously thought of as "simple". Therefore, the neuromuscular system is an important topic and core concept to teach that I try to cover in four weeks during the semester.

Cardiorespiratory Physiology: Next to metabolism, cardiorespiratory physiology is another important concept in exercise physiology. Interestingly, cardiorespiratory physiology should be quite simple in that the heart is just a pump that moves blood around the body, while the lungs (a crummy bag filled with holes, as my mentor would say) are a means of oxygenating the blood. The integration of these two systems supplies the working muscles with nutrients (oxygen and food) so the muscles can do their job: which is metabolism. While it is difficult to measure metabolism directly (i.e., production of heat), it is feasible to measure oxygen use at the mouth; a concept in physiology termed indirect calorimetry. I share with students that carbohydrates (sugar) are stored in the muscle or liver, protein is stored in the muscles, and fat (unfortunately for some of us) is stored in the adipose tissue, but oxygen is not stored in the body (try holding your breath). Thus, any increase in oxygen intake by the body is indirectly related to metabolism. Furthermore, the cardiorespiratory system buffers the blood and the rest of the body from changes in acidity (pH) that occurs during exercise. Thus, we can calculate how hard the body is working (i.e., how many calories you are burning) by measuring oxygen use at the mouth by placing a scuba mouthpiece in and analyzing O_2. This leads us back to why the cardiorespiratory system is so important; someone who can use more oxygen is more fit. This is called your maximal aerobic capacity or VO_2 max. Unpacking this important concept can tell you how many calories you are burning during exercise and how long it will take you to lose a pound of weight, approximately 3500 calories per pound of weight loss assuming you need to lose weight. The difficulties in teaching students about the cardiorespiratory system in about three weeks are similar to those within the course as a whole; there is an ever expanding base of knowledge with changing opinions and views of how systems control and integrate leading to greater complexity. However, in my best homage to Spider Man, "with great complexity comes great knowledge!"

Training Adaptations: Lastly, what truly separates exercise physiology from human physiology is understanding how changes that occur because of chronic exercise (and I am not inferring what Snoop Dogg and Dr Dre are doing!) lead to improved fitness and decreased risk of premature mortality (death). Chronic adaptations are those changes in metabolism, neuromuscular function, and cardiorespiratory physiology that occur as a result of regular physical exercise. People who adhere to the Centers for Disease Control, American College of Sports Medicine, and the Surgeon General's recommendation of 30 minutes of moderately

intense exercise most days of the week can expect an improvement in general health (e.g., reduced blood pressure, lowered cholesterol, improved glucose control) and improved fitness. However, if your goal is to lose weight, this will require considerably more activity such as 60 – 90 minutes per day of exercise (Donnelly et al., 2009). Training adaptations are a core concept to Exercise Physiology explaining both why and how these physiological changes occur and how health-related and fitness-related goals are different. Training adaptations can be taught as a separate concept; however I integrate these changes within the discussion of the topics listed above and find that the students make better overall connections to the material.

Avoiding Misconceptions & Pitfalls

The core concepts discussed in this article are important; however it is equally important to point out common misconceptions often perpetuated within exercise physiology (Morton et al., 2008; Kay, 2008). In my experience, only nutrition has more misconceptions associated with its discussion than exercise prescription for fitness or weight loss; just stay up late one evening and watch all the commercials for health or weight loss products sold on TV.

One important misconception I deal with regularly is the concept that when exercise becomes difficult the body goes anaerobic due to a lack of oxygen. In fact, the body never runs out of oxygen, even during intense exercise (Robergs et al., 2004). When exercise becomes intense there is a large demand for energy and the metabolic system that can supply the energy fast enough is the "anaerobic" system. This is a subtle, but important difference. Another misconception relates to the question of how hard one has to work out to burn fat. Commonly, people are told that a low-intensity long-duration activity such as walking is better than running to lose weight. In fact, exercise at higher intensity such as running burns considerably more calories and thus will lead to more weight loss in the long "run." Yet another misconception is that fatigue is due to a build up of lactic acid; in fact lactate is just a sugar by-product and actually helps muscles "buffer" a build-up of acid to maintain exercise. Within my discipline there are ongoing debates as to why some athletes can perform better than others, yet there is no simple answer to present here (although to maintain FTE's I recommend you all take my class!).

Role of Social Media/Wiki/Blogs (alternative means of delivery)

One option I have introduced this semester to enhance learning is to include a Facebook page [*CSU-Stan Exercise Physiology Lab*] so my students can interact outside of normal classroom hours. Although I do not yet have data to present as to whether this has improved retention, Taradi and Taradi (2004) have investigated its effects; they demonstrated that students who utilized other means of communication outside of class did considerably better overall. On-line forums provide an opportunity for "thoughtful reflection, which allows for clarification and gives a voice to those silent students who may not normally speak up in class" (75). However, a major disadvantage is that students often desire "credit" for their time outside of class and those students who generally participate were more motivated to begin with. This type of on-line communication also takes considerably more effort on the part of the instructor to facilitate interactions (Taradi & Taradi, 2004). Thus, the jury is still out; I will report my personal findings in the future.

Conclusion

In conclusion, faculty from many disciplines deals with content overload. I suggest that a set of "core concepts" is one way to deal with an ever expanding set of knowledge and to clarify what is most important and why, thus enhancing critical thinking. In addition, once the voluminous material has been paired down by establishing core concepts, it will be easier for the instructor to enhance connections between the material and make the learning process more enjoyable. My hope is this essay will stimulate debate among my

colleagues so we can further enhance the learning of our students.

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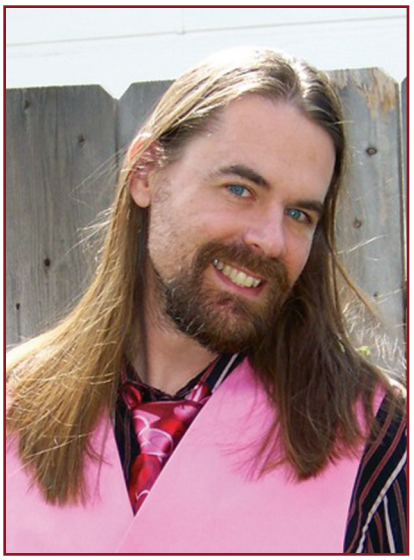

Dr. Chris Nagel
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Seeking Joy

Part 1

This is not the essay I planned to write. My goal in reflecting on teaching was to regain some of the joy that has gone out of it. I wanted to focus on why I love teaching.

I also wanted to get away from the concerns that have weighed on me the last two years – my precarious employment status, the loss of over 100 lecturers in fall 2009 due to campus budget decisions, the continuous stream of bad news about the CSU and about higher education across the United States. I wanted, however briefly, to forget about being a lecturer, about lecturer rights, and about trying to fight for them. I wanted to think about my work and my life in simplified terms: myself, in my classroom, with my students. I wanted to remember why there isn't a job I'd rather have, instead of trying to imagine what other kind of job I might possibly be able to get.

The fact is, by the time my department chair told me in October 2009 to start looking for work elsewhere, a lot of the joy had already gone out of it. It was still enjoyable to walk into a classroom and talk with my students about ethics or epistemology, but so much of my time and energy were spent in confrontation, that I was getting depleted. I had no choice but to apply for teaching positions elsewhere, and I felt I had no choice but to continue to fight any way I knew how against proposals to cut back still further on instructional budgets.

My whole orientation had shifted. Everywhere I went, I was prepared for confrontation. In classrooms or my office, on campus walkways, even just passing by on Geer or Monte Vista, my entire body tensed up and I narrowed my eyes, looking out for trouble on the way, preparing to fight. There was never any escape from it. I brought the campus home with me, and every student paper I read, and everything I did to get ready for class, I felt like I was battling.

I applied for as many teaching positions as I could find that I was remotely feasibly qualified for. There were fewer than 20, nationwide. I had one interview, for the job I least wanted, in a state I didn't want to move to. They scheduled a phone interview for 7 am – the latest time of day they had available. It went badly. That morning, I walked into my Professional Ethics classroom with every reason to believe my job would end in May, and that I had no workable plan to continue my academic career the following September. I had exactly zero prospects.

As my anxiety deepened over the fall, it built into a habit I couldn't shake. Everything was colored, as though under a storm cloud. I started having panic attacks for the first time in six years, most dramatically after the end of Spring, on a plane bound for JFK, when my heart pounded and my chest tightened to the point I thought I was having a heart attack. (I learned something from that experience. When you complain of

chest pain while flying, you become a celebrity. Your presence onboard is announced, and you are escorted to a private seat, away from the crowd. On the way, people turn and stare and whisper about you to their traveling companions, or to strangers. Once in your secluded space, you are treated with special attention and provided all the compliments of the house. I even got a free cookie.)

During the spring 2010 semester, I found out that two faculty in my department were leaving for another university, and that because of this, there would probably be work for me, barring still further or targeted budget cuts. My contractually-mandated 3-year appointment was ending, though, and I knew that I had no expectation of employment until the day I received and signed a new appointment letter – a day that would eventually come in mid-August, a week before classes started.

So, I survived, both medically and academically, to return this year. I spent the summer reading and writing about what I liked, to try to restore myself to health. I'm happy to be able to report that I did. I also got into better aerobic condition.

This year I am trying to pick my battles, to avoid exhausting myself or giving myself another fit of heebie-jeebies. That's going fairly well. In November I participated in National Novel Writing Month, writing an absurd and ridiculous fictional autobiography with two unreliable narrators — a project that was in its weird way salubrious. I have projects under way that now appear to lead somewhere, to have a future, which is something that had collapsed last year.

The joy, however, is not really back. I hate to admit this, and I wish I could write an essay on how I was able to regain joy, but it would be a lie. And so far, this project, which I started in order to help me restore joy, and to focus on something other than the tumult and despair, just keeps me in mind of it.

Part 2

It might reasonably be asked why it matters whether teaching is joyful, or why it's right to advance my interest in joy while teaching. Isn't it selfish of me to want, let alone to expect, to experience joy while teaching? If budget cuts, withdrawal of public support for the university, the demise of humanities education, the perma-temping of the majority of college faculty across the US, the exhausting effort to resist these political trends — if all that has taken the joy out of teaching for me, well, so what? Don't I still get paid to explain ideas and train students to think critically? Shouldn't I be grateful, or at least pleased at my good fortune, to have a modicum of nominal job security and a reasonable living wage in an economy and an industry where this is increasingly rare?

Of course, I am pleased to still be teaching here — more than I expected to be, in fact. And I am grateful to have among the best terms and conditions of employment of any "temporary" faculty in the US. But it doesn't say very much

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1. In 2008, according to data gathered through the auspices of the US Department of Education and the American Association of University Professors, part-time faculty reached and surpassed majority status among all US college and university faculty. The vast majority of this majority-part-time faculty receive wages a miniscule fraction of tenure-track faculty, and are ineligible for benefits. In addition, in many states and in many universities, faculty labor unions are either prohibited by law, or do not represent these faculty, whom I sometimes call, affectionately, the tenuous-track faculty.

2. The Collective Bargaining Agreement between the CSU and the California Faculty Association is in many respects the gold standard for salary, benefits, and job security of tenuous-track faculty. At nationwide and international meetings of tenuous-track faculty, and at AAUP institutes, the CSU-CFA contract is often held up as a model for advancing the interests of all faculty as a cohesive bargaining unit with a recognized community of interests.

3. I have been a "temporary" faculty member of CSU Stanislaus since 1998. Among my CSU lecturer colleagues are many who have had decades-long careers as "temporary" faculty. Some of them even settle down, raise families, and send their children to the CSU.

about me, or about what goes on at a university, to acknowledge that it's better to have a decent job than not to have a job at all. Because the work of a university is essentially different from the work of a factory or a firm, working at a university, teaching here, is not reducible to holding down a job.

I would say that joy is not merely a job perk of working at a university, not merely a fringe benefit. I would not compare the joy of teaching to comprehensive dental insurance, for instance. On the contrary, I would insist that joy is necessary for teaching, necessary for genuine education, and further, that where there is no joy, there cannot be genuine education. I would hazard still further, that where there is no joy in education, moral harm has been inflicted.

I *would* say all this, but I hesitate to, because I realize how embarrassingly Platonic it all is. In our contemporary context, my reasoning is probably heretical, but certainly ridiculous, and if I could afford to be ashamed, I'm sure I would be.

To make any of this plausible, I'd have to explain what I think is the purpose of a university and of teaching at a university, and why I think joy is necessary to these purposes. I'd also have to try to justify the claim that the loss of joy is a moral harm. I wish I had very good reasons for my beliefs, reasons that would pass the most rigorous and clinical examination. Instead, I'm going to tell you a story.

I never intended to go to college. When I graduated from high school, my life plan was not to have a life plan. This plan was foiled one early summer day when my father brought home an application to the local branch of the state university, and told me I was going to fill it out. I started college that fall, with no plan for my education, other than to follow, fairly randomly, the recommendations for completing some of the general education requirements, as well as to pick up some electives that, fairly randomly, caught my eye. Early in January, starting my second semester, an acquaintance goaded me into going to a student media open house. While there, I wandered into the office of the student literary and art publication and instantly fell in love with the editor — as one does. We embarked on a tumultuous star-crossed love affair, replete with grandiose artistic experiments, endless late-night metaphysical conversations, terrible personal conflicts and emotional melodramas, ex-husbands, insane estranged but currently legally wedded husbands, young children, homeless cats, and illegal rental agreements. It was an oppressive love, beautiful, fevered, and awful.

One day, in the middle of March, in that raw seasonless time between Winter and Spring, under a bright chill sun, I sat on the bank of a campus lake, trying to recover from yet another attack of this love. Eventually I started reading Charles Sanders Peirce's letters to Lady Welby.

> Firstness is the mode of being of that which is such as it is, positively and without reference to anything else. Secondness is the mode of being of that which is such as it is, with respect to a second but regardless of any third. Thirdness is the mode of being of that which is such as it is, in bringing a second and third into relation to each other.

An unfamiliar calm came over me. As I read the whole thing over again, my haze of pain lifted. I felt that I had understood something — not Peirce's notions of firstness, secondness, and thirdness, but an understanding of Peirce himself, of what he was going on about, or at least why. There could really be only one reason why anyone would bother about speculative ontology, or about philosophy generally, or about literature, art, physics, mathematics, or any kind of knowledge that focused on anything beyond the range of my next meal: if you have some idea that your next meal will take care of itself, the only concern you can have in life is the condition of your soul.

4. Peirce, Charles Sanders. Selected Writings. New York: Dover, 1958. P. 383.

This was truly shocking. Unaccustomed as I was to believing in the existence of my next meal, the notion that I even had a soul, or that its condition could be a concern, was completely alien. Yet there I was, reclined on the damp ground, contemplating. It started to rain lightly. I walked into the Philosophy Department office and filled out a major declaration form. I felt relieved of some overwhelming burden. I felt light, cool, compact, and ready.

In class the next day, my professor and I discovered that we were the only ones who had read the passages from Peirce's letters to Lady Welby, so our discussion of firstness, secondness, and thirdness was abbreviated, though suitably hilarious. I tried to explain what I thought the ideas meant, how they fit into Peirce's semiotics, and why he hated them so much. My professor – not a Peirce expert – admitted he wasn't sure he understood them, but he was sure why Lady Welby would have been so keenly interested, even if neither of us was. Peirce's ontology didn't matter much to me, but what did matter to me was that it mattered to them, and I undertook to grasp these concepts for that reason, and in a sort of kindred spirit, not to serve my own interest, but because it seemed like a good thing to do. It felt ecstatically freeing and uplifting.

Not all of philosophy is as funny as Peirce's, of course, but the feeling of being let loose, of soaring – that was constant. I spent six hours sitting at a campus picnic table re-reading four pages of Immanuel Kant's *Prolegomena to Any Future Metaphysics*, motionless, spellbound by the thought of it. In almost every way, it profoundly does not matter at all what Kant was doing in the *Prolegomena*, or whether he was "right." We don't read Kant because he was right or because his philosophy is necessary. We read Kant because it's right to read Kant and because philosophy is necessary.

I didn't think about these experiences in those terms at the time. When I was reading Kant that day, I did a lot of talking back and cursing, because his writing was frustrating and his arguments were worse. The next class I demanded my professor explain and defend Kant's use of the term *apodictic*, and we worked on that for three sessions, to my ultimate dissatisfaction. I couldn't have been happier.

I had the same feeling in my statistics class, which I had taken under the delusional belief that I was going to be a psych major. Halfway through the semester, I had had my Peirce-influenced conversion moment, so stats class suddenly became useless to my official academic goals. It was wonderful, at least, for me it was wonderful. For most of the social science majors in the class, it seemed to be horribly painful.

All over campus, most of the students seemed to be in similar straits to the psych and sociology majors in stats. They seemed burdened by their studies or despondent about classes. Almost all were worried about their grades. I realized what I was doing right, and what they were doing wrong, had to do with what I'd discovered reading Peirce pond-side. They were all here for the wrong reason: to get a degree, in order to get a job. I was here for the right reason: to experience joy.

I would say, now, that what makes a reason to be in college right or wrong has to do with the relationship between motivation, education, and the soul. The institutional arrangement that results in a person in the role of a faculty member being placed before a group of people in the role of students is not equal to education, because education doesn't depend on this arrangement. Education depends on being motivated to be concerned about what is truly good, not about what is instrumentally good. For the vast majority of the people I met on campus, what mattered, and what wrongly motivated how they treated those institutional arrangements, were grades and

5. That's only a slight exaggeration, and Peirce would be far from the only philosopher to disdain his or her own concepts.

jobs. They suffered through school, not realizing they had any other options, many of them not realizing how little they were getting from school. It must have been a soul-crushing experience; I hope not preparatory to soul-crushing careers.

So, while a large group of students attended Dr. Toenjes' Existentialism class in order to fulfill a general education requirement, my friend Jim and I, in the same room, went to what we called Uncle Dickie's Fun House. My poli-sci buddy Kevin and I spent our Tuesday nights one semester going to watch our young political theory prof be brilliant; others in the class sat taking notes.

I had the vague notion that teaching needed that same joyful spirit, because it needed the same motivation. It was obvious which of my professors had it, and which didn't.

Here I am, making what looks like an empirical claim, or at least an intuitive observation, when in fact I know that the obviousness and truth of my claim is moral, rather than a matter of fact. It might even turn out to be empirically false, but I will continue to insist on it anyway, because I believe that believing it makes me a better person. (This would be the embarrassing part of the argument.)

If we assume that every specialized field of knowledge advances constantly, and if we assume that it is impossible, therefore, for anyone to provide anyone else absolutely current information about the state of knowledge in any field, then the purpose of education has to be something else. If we assume that the skill demands of every specialized field of endeavor change constantly, and, therefore, that no transfer of any skill set could suffice, then the purpose of education has to be something else. It seems to me there is only one possible purpose of education left, and it has to do with the condition of our souls. If *joy* is the name we give to the best condition of the soul, and if education can have no other proper purpose, then the proper measure of education is joy.

My teaching might lack joy, and yet not lack a certain amount of skill. It might lack concern for the souls of my students, and yet not lack concern for outcomes. By empirical measures of what a college graduate gains from college, it might make no difference whether knowledge, or at least information, is imparted in joyful spirit. Even my IDEA scores might not be measurably different in those classes where I was able to be joyful versus those where I was not. Nonetheless, I insist on believing that joy is necessary to genuine education, and its loss is a moral harm. Apparently, too, I insist on telling a story instead of doing the sensible thing and arguing on the basis of evidence.

I taught a glorious Professional Ethics class, just a few semesters ago, before the worst of our troubles. Every essay we read, every discussion we had, the whole class loved to pieces — by which I mean, we broke down arguments, scrutinized reasons, doubted assumptions, and best of all, lived with ethical paradoxes. One day in class, I realized all of a sudden that I was smiling. I looked around, and everyone else was smiling, too. I didn't know how long we had been smiling, or when or why it started, but as soon as I saw it, it seemed that everyone else did too, and the room broke into laughter. It certainly wasn't about the topic — Professional Ethics tends to deal with such cheerful fare as the ethics of end-of-life decisions or how to deal with the ethical and personal ramifications of whistle-blowing. I knew immediately, and knew everyone else knew, that we were laughing out of joy, out of the delight we had in thinking through these ideas together. We were soaring.

6. Like most undergraduates, I had almost no idea there was anyone teaching at the university who wasn't a professor.

Minority Student Retention: Culture and Class Sensitivity One Professor's Reflections

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This paper looks at minority student retention from my perspective. One example is from Alaska Pacific University (APU) in Anchorage, Alaska and a second example is from California State University, Stanislaus (CSUS) in Turlock, California. In each case the minority students are described and institutional organizational responses and agents relating to retention are presented. This is followed by my somewhat idiosyncratic view of how I went about and go about doing what I can to encourage minority student retention.

Alaska Pacific University

Alaska Pacific University is a private Liberal Arts University located in the middle of Anchorage, Alaska. I taught Anthropology and Sociology and directed a Master's Program in Pacific Rim Studies there from 1986 through 1994. Then, it was a very small University with only around 600 full-time equivalent students (1500 individuals) and 35 full-time faculty. Alaska Natives were just slightly below 20 percent of the student population (Alaska Pacific University 1990-1992:9).

Peter Gordon Gould, an Aleut Alaska Native, founded the University in 1957 as Alaska Methodist University, later changing its name. Gould grew up in the Jesse Lee Home, a Methodist orphanage in Unalaska, a town in the Aleutians. From the beginning, this University was concerned with educating all Alaskans, but emphasized educating Alaska Natives. Of essential importance to Gould was that "...the most significant need of Alaska is for indigenous leadership--leadership reared, educated, and trained in Alaska for Alaska" (Alaska Pacific University 1990-1992:8), and he intended for a portion of these leaders to be Alaska Natives.

In Alaska there are different types of Alaska Natives. The Aleuts reside on the Aleutian Islands. The Sugpiaq/Alutiiq are Pacific Eskimos living on the Pacific coastal area of Alaska from Prince William Sound to the beginning of the Aleutian Islands. Yupiit or Bering Sea Eskimos live on the West coast of Alaska by the Bering Sea. The Inupiat are Northern Eskimos residing on the coastal area at the northern boundary of the state. Athabaskans are Indians who live in the interior of the state. And finally, the Tlingit, Haida, and Tsimshian are residents of the southeastern coastal strip running approximately from the Copper River down to the Canadian Border. Each of these cultures has its own unique history, language, and culture. Though each group has villages and small towns in their regions, some of the Alaska Natives live in the larger urban areas of Fairbanks, Juneau, and Anchorage (Langdon 2002). When I was teaching there, the statewide population of Alaskan Natives was around 54,000.

The major institutional program to support the Alaska Native students at APU was the Alaska Native Institute, staffed with a Director, a counselor, and support personnel. Although the program no longer exists, at that time the Institute provided academic and personal counseling, peer counseling and tutoring. Certain courses applying to Alaska Natives were included in the University curriculum. Also, the Institute supported the Student Organization for Native Americans (SONA). The Alaska Native Institute and SONA sponsored, organized and provided many special and cultural events directed at serving the Alaska Native Students, as well as the larger Alaska Native community. These included events and issues such as Spirit Days, Native Youth Olympics, alcohol and drug abuse awareness and prevention, Native Spirituality, Native Corporation issues, and appreciation for Alaska Native heritage.

When I was teaching at APU there were several issues confronting Alaska Native students that worked against their success and degree completion.

Small Village/Town vs. Large Urban Center

Many of the rural, or bush, villages and towns are very small, isolated, and tightly integrated socially and culturally. That "everyone knows everyone" is a quite accurate statement. And for most, these villages and towns are safe places where people look out for each other. The only exception would be when alcohol periodically devastates social relations. Raised in such an environment, some college students are naïve as to the rules of big city living. Some of these Alaska Natives were, unfortunately, often taken advantage of by urban dwellers. Their money would be stolen and some of the young girls were raped. It became such a problem that some of the Native Corporations held classes for recent arrivals so they could learn urban rules and protect themselves.

Isolation and Loneliness

The stress of starting college, being in a totally new environment with different norms, rules, values, pace, etc., often overwhelmed the young students. As well, downtown Anchorage had several bars that were frequented mainly by Alaska Natives. Here the young students could feel more comfortable, surrounded by people like themselves, sometimes finding friends or relatives from their own or nearby village. The problem here is that the bar becomes a safe, friendly and familiar place in contrast to the unfamiliar, challenging, and alien culture of the University. The tendency to spend more and more time in the comfortable environs of the bar can spell disaster for class attendance, grades and retention.

Young Male Cultural Expectations

One problem we had was with young men leaving our University in early spring. That is the time when the first fresh food comes to the north. Also, it is the time to start preparing for commercial or subsistence salmon fishing. The weather is changing, the days are longer, and the air is warmer. All these elements tell the young men it is time for them to do their manhood activities. This is what Native men do in the spring and these male students feel a fierce pull to participate in those activities. So, the University lost a few every spring. This, of course, created chaos with their grades and chances of completing their degrees. Another associated problem here was the imbalance between female and male Alaska Native students, with there being many more females than males.

Cultural Obligations Towards Relatives or Fellow Villagers

Another problem for these young students was that living in Anchorage they were expected to put up visitors (relatives/ fellow villagers) in their apartments when they came to Anchorage from the villages. Anchorage is for villagers an opportunity to take care of many necessities. Medical, dental, and optometrist visits can be accomplished. Food at the wholesale stores can be

bought, packed up, and delivered to the village. Legal obligations, visits to Native Corporations, and visits to friends/relatives living in Anchorage can be accomplished, when staying with the APU student.

The problem is that the Native student living in Anchorage is expected not only to provide housing, food, and entertainment, but also to drive the villagers wherever they need to go. This can mean missing several classes, not being able to study, and just generally falling behind in their educational progress. I had many Native students complain to me about how torn they felt in this situation. They knew that education was a lifeline to a better life for them, but their sense of cultural obligation was very strong because the same services would be provided to them when they returned to the village. Reciprocity, taking care of each other, is a very strong value in Native culture and these students were caught right in the middle. Most of the students who talked to me about this problem were young women or married couples. One young woman was so devastated by this bind that she solved it by transferring to a university in Oregon.

My Response

I had a certain advantage over other professors teaching classes that contained Alaska Native students. My M.A. and Ph.D. are in Anthropology and I did my Ph.D. research in Alaska. Though my research was not specifically on Alaska Natives, I attended to them, because I wanted to know about them and hoped one day to teach a course on Alaska Natives, which I subsequently did each semester for 8 years. In addition to my own research, reading and talking to Alaska Natives, my students wrote papers on aspects of Alaska Native culture, which I read. Also, I became involved with the Alaska Native Institute, earning a friendship with the Director. I completed several projects and activities with Native students through that organization.

Whenever I could, I would use Alaska Natives examples in my classes when making a point or providing an illustration. I felt this not only reinforced the validity of Native culture in the coursework, but also let Native students identify more with the coursework. It was also an advantage having Alaska Native students in my classes. For example, in one class I would go over Eskimo language. I would write out a series of words, all getting progressively longer, to explain what the person was saying about something. There is no way I could pronounce these words. Fortunately I usually had an Eskimo student who would volunteer to speak them, impressing the heck out of the other students. Also, having experts in your class is an advantage. Quite frequently, the Native students would add points or describe in more detail some example I had presented. There is, of course, always the concern that the experts are watching everything you are saying and critiquing it. However, I never found this to be a problem. The Native students were always very polite and helpful.

Another example of what I did individually was in assigning papers. As mentioned, in the Alaska Native class, all papers were about Alaska Natives. But in other classes, many of the students also wanted to write on an Alaska Native topic. I served on the committees of several M.A. theses that were also on this topic. One paper in particular I had far reaching implications. A young, female Eskimo student wanted to do a Directed Study course where she could do something she was interested in under the guidance of a professor. However, she did not have an idea as to what to do. I talked to her for a while and found out that she was a mental health counselor at her Native Corporation Health Service in Anchorage. I suggested that she write a paper telling me, the white guy, what I needed to know about Eskimo culture in order to work with Eskimo mental health clients. This included understanding major events in their history, their supernatural world, their relationship to Christianity, the importance of subsistence, etc. And, perhaps of more immediate need for the clinical setting, were understandings of proxemics, kinesics, what sorts of things would be appreciated hanging on the walls or as odds and

ends around the office, and, very importantly how to handle silence. Eskimos can sit for a very long time quite comfortably in silence with another person. Other Americans become uncomfortable and tend to want to fill up the space with lots of words. Additionally, I encouraged her to consider if it would be important for the non-Native counselor to learn some words and phrases of the language, such as hello, goodbye, thank you, and please.

She produced a very good paper explaining much of what a non-Native therapist should know about Native culture in order to provide more effective treatment. But I was even more delighted when I found out that it became an official pamphlet handed to all non-Native personnel working at that facility.

I also did smaller things for my Native students in an attempt to encourage them to hang in there and graduate. For example, I ran across one of my Native students during the summer. I asked her how she was doing and she said not so well. It seems she and her daughter were living in her car without much food. She was an excellent student with the goal of becoming a village teacher, and later, when she did become a teacher, I heard she was truly excellent. However, here she was in deep water trying to get a few more credits to graduate, living with her daughter in her car. Well, this incensed me. I knew a contact who worked in student housing and cafeteria services. I made a beeline to him and pleaded that we should certainly be able to give her and her daughter a room and meal tickets for a couple of weeks. I argued that it wouldn't cost us much (many of the rooms were empty during summer), and that it was just plain good politics to do so. He agreed; she got the room, the food, and the degree!

In summary, here are a few simple items that I believe can assist the Professor in the Alaska Native situation. And I am aware that some of these points can also apply to non-Native students.

Learn about their culture. There are many fine books on the subject, an example is Steve Langdon's excellent *The Native People of Alaska.* It is relatively short, very well written and serves as the perfect starting point for more specific research.

Be well aware that these students have very different and distinct cultures. Some are more traditional than others; some more westernized than others. Do not underestimate them in terms of their political or current affairs awareness. They have a long tradition of playing the political game, not only in Alaska but also in Washington D.C. They are very sophisticated about the use of power and politics. And they know a great deal about non-Native American culture; they've had to deal with us for a long time.

Learn to listen. If you work at being a sensitive listener and learn to ask sensitive questions, you will learn an amazing amount.

Work with whatever agencies are in your institution to help promote Alaska Native retention.

And, most importantly, in your classroom, in your advising sessions, and outside the classroom, always be aware of the Native students. Watch them. Try and pick up any cues that they do not understand what you are saying, or they seem totally disinterested, which may signal that there is some sort of problem. Be open and available to them.

California State University Stanislaus

California State University, Stanislaus (CSUS) is located in the central valley of California, just south of Modesto and on the same latitude as San Jose. It has 8,305 undergraduate and graduate students (head count). There are 265 full-time faculty and 178 part-time faculty. Ethnic minority students outnumber white students by several percentage points (minority 51.1%; white 39.1%). However, the statistics do not convey the nature of the minority students. The largest block are Hispanics (Latinos) at 31.9 percent of total student population. Second are Asians at 10.3 percent, but this does not reflect the

nature of their population. A large portion of the Asian population is Hmong, followed by other Southeast Asian groups, and other Asians such as Chinese and Japanese. Sikhs and other East Indians are also prevalent, but are not specified by percentages. American Indians, African Americans, and Pacific Islanders are very limited in terms of percentage. Two strong ethnic groups that are classified as white are those students of Portuguese or Assyrian descent, groups with long and extensive histories in the region (CSU, Stanislaus Web Page; Quick Facts: 2011).

Institutionally CSUS has several formal programs for student retention. Since it is a public institution, it cannot have a program exclusively aimed at minority students. All students must be able to take advantage of student support services, including minorities. However, some of the criteria for admittance into some of these programs are conditions such as low-income and first generation to go to college. These conditions can weigh in favor for minority students in certain programs.

One excellent program, open to any student is the Faculty Mentor Program. Their mission statement reads:

The mission of the Faculty Mentor Program is to encourage mentoring relationships that improve academic achievement, increase student retention rates, and improve the graduation rates of educationally disadvantaged students (CSUS web site).

From my experience, this program is exceptional and does indeed heighten retention, achievement and graduation rates, as well as establish some very deep relationships between faculty and students.

There are other institutional efforts designed at increasing retention of all students, including minority students. These are: Associated Students Inc., the student government of the University, which provides many programs and services; the Career Service Center, which assists students in obtaining employment after graduation; Counseling Services, which provides psychological services; individual personal counseling; Tutoring Center services, which assists any student having problems with an academic subject; the Educational Opportunity Program (EOP), which works with low income students in assisting their ease of entry into the University and provides support services; Student Support Services, which assists low-income, first generation students; the Advising Resource Center, which provides a wide array of support services for all students; and finally, a recently acquired Title V Pace Program grant for encouraging academic and career excellence. As can be seen, though not aimed specifically at minority students, CSUS provides a wide array of services aimed specifically at student retention.

Relevant to minority success at CSUS, the campus is among the top 100 colleges for awarding B.A. degrees to Hispanic students. The U.S. Department of Education has designated the University as a Hispanic-Serving Institution. Also, the American Association of State Colleges and Universities sited CSUS as one of twelve universities nationwide that demonstrates exceptional performance in improving retention and graduation rates (California State University, Stanislaus web page).

I would like to begin my description of my interaction with the minority students at CSUS with a single story. I was teaching a class on the Sociology of Drugs, and there was one Hispanic male in the class who, in my opinion, seemed rather skeptical and almost hostile to my teaching. I did not know what to make of this. I thought maybe he believed I was some sort of privileged white guy who leisurely made it through college to the Ph.D. This went on for several weeks. Maybe I was misreading the situation. I just wasn't sure. Then in one lecture, I mentioned that I worked with an alcoholic in a dehydrator making plums into prunes. It's not easy to work with someone who has the shakes when you are trying to coordinate your activities. Well, all of a sudden the Hispanic student came up to me and was effervescent in

his desire to explain that he too had worked in a similar situation. It seemed that when he realized that I worked picking fruit, cutting apricots and working in the dehydrator I was more like him; coming from a working class background, which I do.

As with Alaska, I found certain actions on my part that perhaps assisted in retaining minority students in the University.

Learn and Validate the Cultures, and Share with other Students

For example, I make an attempt to use books for my courses that have relevancy both to the course and to the students. In my *Food and Culture in a Global Society* course, I use Epitaph for a Peach by David Mas Masumoto. The relevance here is that this book is about a Japanese-American peach and raisin farmer from Del Rey, California, not too far south of our community. It emphasizes ethnicity, it's local and it's about farming, core elements for many of my students. Another book I use in that class is Que Vivan Los Tamales, by Pilcher and Johnson. It is basically a history of Mexico as seen through food: a rather pleasant way of learning history! The book contains a great deal about ethnicity, class and gender roles in preserving traditional foods, and food and modernization. In my *Race and Ethnic Relations* class, I also use books that are germane to the topic but also relate to the students. For example, I use The Spirit Catches You and You Fall Down by Anne Fadiman, which describes a cross-cultural misunderstanding between a Hmong family with a sick child and the local medical establishment. Thus, the book pertains to the Hmong ethnic groups, cross-cultural problems, and it is local, set in Merced, which is just down the road from CSU, Stanislaus. And remember, there are Hmong students in the classes, so other students are learning about cultural experiences relevant to real live classmates, not some abstraction! I also use A Barrelful of Memories by Pauline Stonehill, which describes Portuguese history and culture in the Los Banos area, again located quite close to our University. And finally, I use The Barbary Plague by Marilyn Chase, which describes prejudice and discrimination against the Chinese in San Francisco around the turn of the century. Most of my students have been to San Francisco and to Chinatown. Again, the book addresses core issues for the course, but is also relevant to the students because it is relatively local and talks of discrimination against an Asian group.

Validating Cultures through Educational Films

I approach educational films from the same perspective of trying to make them both relevant to the students but also containing core course materials. These films can be very powerful teaching tools. For example, the film, The Armenian Genocide is relevant because it certainly contains race and ethnic relations—the theme of the course. However, it is also relevant because there are many Armenians in Fresno, just south of our campus. But more importantly, during this genocide, many Assyrians were lumped in with the Armenians and slaughtered. This is quite relevant to our Assyrian students. Another film that is relevant is Thirst, which discusses the privatization of public water resources. While the entire film is excellent for my food class, a large section is devoted to the privatization process in Stockton, California, about one hour north of our campus and home to some of our students. It makes the point that things happen locally, not just in the abstract far away. Finally, I show The Beautiful Country, a Hollywood-made, under-appreciated film about immigration from Southeast Asia, mostly Vietnam. This reflects the experiences of many of our students or their parents and grandparents who fled as "boat people" from Vietnam, or escaped "the Killing Fields" of Cambodia, or fled from Laos into Thailand and then to the U.S. It is also a very relevant film for the Assyrian population, which fled Iran and Iraq to countries in Europe and then to the U.S., many to Turlock, where our campus is located. And it certainly relates to Hispanic students who migrated here or

whose parents and grandparents came here legally or illegally.

Incorporating Themes of Locality, Ethnicity and Relevance to Class Exercises

I have one lecture showing the relationship between skin color and Valley Fever, a fungus in the soil of the Central Valley and other areas that can cause severe symptoms and even death for those who inhale it. The point is most fruit and vegetable workers are Hispanic with dark skin that makes them more vulnerable to Valley Fever than those with lighter skin. Hence, there is a correlation between ethnicity and potential workplace hazards. In another example, I lecture on a Japanese national woman who attempted to commit suicide with her two children because her husband had been unfaithful to her. This would have been an appropriate response in Japan, but not here. I have the students determine her guilt and punishment. But the point is that, though extreme, different cultures do things differently, and our university has many cultures. Of course, I always attempt to use local examples in my lectures whenever possible.

Incorporating Meaning into Class Assignments

As with the assigned texts, I attempt to make assignments meaningful to my students. Frequently a minority student will be stuck for a topic for the class research paper. I will suggest that perhaps he/she could do the paper on some aspect of his/her ethnicity. This has worked very well. I also stress to the students that, if possible, they should interview relatives or acquaintances about the topic. This has proved enlightening for many of the students. For example, when Hmong students interview their parents or others, they learn a great deal of the hardships their elders suffered in getting to the United States. For example, what was their life like in the jungle as they traveled to Thailand. And what was life like in the camps in Thailand and what were the hardships in getting to the United States. Hispanic students often interview parents, relatives or others about coming to the U.S. and the initial hardships of working and surviving here. My point is that while prejudice and discrimination occur in a wider context, there can be an interesting history about the topic at the local and very personal level. It also allows students to document a piece of their family history.

Effective Advising

And as in the Alaska case, I put a lot of effort into being as effective an advisor as I can. An example of this is when graduating students ask for letters of recommendation for the Master's of Social Work program on our campus. I advise them to make it clear in their personal statement that their parents did not have much education and that they are the first to attend and graduate from college. And to also encourage them to stress that they are bilingual and bicultural. These are important factors for the Program's evaluators that prospective students may not have thought important.

Discussion

There are many other points and examples I could discuss in elaborating this topic. However, space and time are limited. I have attempted to highlight those factors, which to me, seem to be effective in promoting minority retention by the individual professor. It is very important for the institution to have resources dedicated to his goal. However, the relationship between professor and student and professor and advisee can be just as influential, if not more so, than the organizational response. At best they should compliment each other.

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Is Anyone Paying Attention: Teaching, Learning, and the Distracted Generation

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It's official; I no longer know how to teach. This spring, I'll have been teaching at this university for 12 years, and for the first time I am at a complete loss as to how best to engage students in ways that would effectively facilitate their learning. It all started when I began investigating how technology, such as the Internet, social media and cell phones, might be influencing human behavior and interactions. As I read through the available literature, research on the impact of technology and social media on cognitive processes and learning kept catching my eye. I decided to look deeper. What I discovered has made me question whether what I do as a teacher is truly effective at supporting today's generation of tech-raised students. This is what I have found so far.

Internet Use and Learning

It turns out our students spend a lot of time online, on average more than 17 hours a week (Carrier, Cheever, Rosen, Benitez, & Chang, 2009) and often because we ask them to as part of course or assignment requirements. Most of us would agree that the Internet is a useful tool, although often overwhelming. Unlike my college days of perusing information through stacks of dusty old books at the library, students today can find almost any information at their fingertips on the web. Not only has online information become immediately accessible, it has also become highly interactive. Where we once had to read complete documents before checking related sources, students today can instantly hyperlink from one document to another. But does having access to all this information make our students smarter? A recent review of research (Niederhauser, Reynolds, Salmen, & Skolmoski, (2000) indicates that when students read documents with hyperlinks they, remember less of what they read. Cognitively, hypertexts distract students from the content because they have to decide whether or not to follow a hypertext link each time they come across one. This problem-solving process taxes students' working memory and essentially competes with students' ability to comprehend the reading. When students do decide to click the hyperlink and then return to the initial document, confusion about what was previously read ensues.

Not only does reading content on web pages interfere with comprehension, it also affects attention. Increasingly, heavy Internet users report a decreased ability to maintain their attention span. Not surprisingly, web-based companies are "unbundling" the content of their web pages into short snippets of "easy-to-read" information and adding to their pages numerous links to additional bite-sized pieces. Companies that monitor users' online behavior estimate that

Internet users spend little more than 20 seconds looking at a web page before moving to a new page. Because each webpage contains numerous hyperlinks, access to video and audio streams and side-bar advertisements, users are constantly tempted into distraction. If you give into the distraction, you reward the information seeking area of the brain, strengthening surface-level processing rather than deep-level processing. People, including our students, have switched from reading to scattered online browsing and scanning. Unfortunately, the structure of the Internet facilitates exploring superficially many different topics rather than thinking deeply about one. Just as practice makes perfect, students' lengthy time online may be perfecting quick fleeting bursts of attention, skimming, and multitasking. The downside is that large amounts of browsing may sharply reduce deep-level reading that requires sustained attention, dramatically impairing, ultimately, students' comprehension. If, as the research suggests, our students are spending a lot of time online, it is possible they are struggling even more with the traditional text-only reading that we assign them. Typically, students already don't read much of what we ask them anyway, but when they do they may be finding it increasingly difficult to keep their attention on the non-distracting, never ending, lifeless pages of text that require deep thinking.

As I think of the readings I assign students in my courses, I am beginning to question my choices. Is the best approach to insist that students read terminology-dense, non-interactive material found in books that they no longer have the attention span to make sense of, or should I direct students to web pages with easy-to-digest snippets of information accompanied by video and audio just because that is what they are used to? If I truly want my students to learn, does it make sense to require readings that will quickly dull their curiosity and send them running to Wikipedia? Should I be content with students' understanding little bits of course content because most of their world is structured that way? And what will their professional worlds be like? If the workplace norm for professionals is to browse the Internet as their primary source for informing their daily decisions, does expecting sustained attention and in-depth understanding from students still make sense? And then, there's the problem of multitasking.

Multitasking and Learning

Ask any of today's students, and they'll tell you they're great multitaskers. In 2009, surveyed students reported doing six different tasks at a time during their free time (Carrier, Cheever, Rosen, Benitez, Chang, 2009). A typical student, for example, follows a conversation on Facebook while texting, eating, watching tv, and listening to music. Oh, and doing homework. Even while seemingly focused at their computer, students multitask: work, check email, text, Twitter, watch a YouTube video, add something to Facebook, repeat. While this appears impressive, research clearly shows that people don't really multitask, they just quickly switch tasks. Further, the brain is unable to attend meaningfully to each piece of incoming information. Each time a student shifts their attention to a different task, the brain has to reorganize itself and recall what it needs to do with the new task at hand. Current investigations are beginning to show that heavy media multitaskers suffer cognitively. In a lab setting where participants, heavy and light multitaskers, were asked to attend to several streams of information, the high multitaskers were more likely to be distracted by irrelevant information compared to light multitaskers. Specifically, the heavy media multitasking group had a decreased ability to voluntarily focus their attention on specific information when faced with distractions (Ophir, Nass, & Wagner, 2009). In a sense, our students' desire to engage in many different things at once is ultimately training their brains to attend to everything, and, as a result, everything distracts them. By attending to multiple tasks – tv, texting, surfing, and homework – students sabotage their performance on the primary task at hand, which in most cases is probably their homework.

The technology facilitated practice of media multitasking among students forces me to question (and doubt) the impact I have being at the front of the class. If most of students' time is spent immersed in continuous task switching, so much so that they are becoming more easily distracted, and by mostly irrelevant information, do they have the capacity to tune into what we are trying to accomplish in class and tune out the distractions? Every student comes to class with a cell phone, some with a laptop. These devices immediately provide opportunities for distraction. As I look across the faces of the students during class, they are unaware that their eyes give them away. Once class starts, within a short amount of time, someone checks their phone, surfs the web on their laptop, or leaves to "use" the restroom. Even those who refrain from letting their eyes stray from the front of the class will at some point have an alarmed look on their face after they've just received a text and contemplate when and how to check their phone or how much class time is left. As I see students' focus wax and wane, I question my ability to engage students. Part of me is self-critical, telling myself I need to be more entertaining, lively, and keep them busy just to compete with their need to multitask during class. But other times I feel defiant and want to stand my ground. Why should I support this multitasking mindset when what I've read shows multitasking is detrimental to learning?

Texting, Self Control and Learning

It's pretty clear when you walk down the crowded halls between classes that there has been a huge jump in the frequency in which our students text. For example, 19% percent of our older students (the 25 to 34 year-olds, who did not have the luxury of growing up with a cell phone), report texting regularly, whereas 46% of our younger students (18 to 24 year-old) report regularly texting (Vorhaus, 2007). The data regarding our future students shows that of youth between 12-17 years-old who own cell phones, 30% send more than 100 texts a day. Texting has such a grip on today's generation of students that 49% of them strongly agreed or agreed that it was okay to text during class even though they are well aware that receiving texts during a lecture interferes with their learning (Rosen, 2011)! It turns out that the timing of when students chose to respond to text messages while in class may be what impacts student learning the most. This is where self-control comes into the picture. For example, research was conducted where students were asked to watch a video in class and were told they would be tested on the content of the video at the end of class. Students were also told they would receive text messages during the video and to respond to the texts when they wanted. The results demonstrated that students who chose to respond immediately did poorly on the test compared to students who waited at least 5 minutes to respond. The students who performed well on the test were those who engaged in enough self-control that they could wait for an appropriate point in the video to respond to the text. In other studies on self-control (not related to technology use), results have consistently shown that those who score high on self-control measures tend to be psychologically well-adjusted, get better grades, and have better interpersonal success (Tangey, Baumeister, & Luzio Boone, 2004).

Increasingly, I struggle with how to deal with texting in class. On the one hand, I feel strongly that students should have to refrain. As future professionals, I believe that students have to learn *now* how to control their compulsive need to check and send texts. Many of my students are headed into careers in which they will work directly with or supervise young children. Imagine your childcare provider unable to resist texting while caring for your infant, toddler, or preschooler. If students can't find the mental resources to put off texting now, then how can they out in the real world? On the other hand, the real world texts all the time. I've been to countless meetings in which faculty frequently check their phones, text or respond to emails in full view of their colleagues— at least students try to hide it. Adults have even admitted to texting and Tweeting during funerals, during

sex, and while in labor. How can we expect our students to control their texting impulses if many professionals can't? And can we expect them to stop? Interestingly, sending and, more importantly, receiving texts may actually have addictive properties. Receiving a text is rewarding. The buzz or ping of a students' phone tells them they are needed, they are worthy of someone's attention and that brings about feelings of pleasure, like getting a piece of candy. What is even more powerful about texting is the unpredictability of it. It is well known in the field of behavioral analysis that if you want to dramatically increase the rate of a certain behavior, reinforce that behavior randomly or unpredictably. Once a behavior has been randomly reinforced, it is extremely difficult to inhibit. So because, on occasion, a student receives a really good text (like a juicy bit of gossip), they feel compelled to check all texts, and find it difficult not to check even if they tell themselves not to or you tell them not to.

So where does all this leave me? My teaching? Student learning? I'm really not sure. I'm even less sure I have a choice. With children gaining access to technology and the media it provides at younger and younger ages (the iPad was the 2010 Toy of the Year), the impact technology has on the developing brain is still relatively unknown. What the research presented here suggests is that things are changing fast, and what is changing most is how the brain learns. Every day I wrestle with where I stand in terms of facilitating student learning. Many days I feel archaic, like the old professors I used to have who read from the same crumpled sheets of paper semester after semester. Like generations of instructors before me, I can't seem to let go of the teaching practices and learning methods *I* think most benefit student learning. Yet, as I watch toddlers deftly operating iphones and Wii games while unable to sit still when read to, I wonder how helpful it is to stick to my principles of expecting long, focused attention-spans, deep thinking, and self-control, and how, or even *if*, these principles will prepare the next generation of students for the future.

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Passport to Creative Scholarship How to be a Research Scholar at a Teaching University

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ACT I : Setting the Stage

Let me begin this essay with an introduction about myself. I need to do this to convey why I am so passionate about mathematics education and to give context to my career productivity.

Dreams are what get you started.

Discipline is what keeps you going.
Jim Ryan

Like many foreign students, I came to the U.S. seeking the best graduate education in the world and I was not disappointed. After obtaining a Ph.D. Degree from the University of Illinois, joined CSU Stanislaus in 1978 expecting to teach a few graduate level classes, and eventually guide math majors in their thesis projects. In my first year of teaching at CSU Stanislaus, I learnt that Calculus – which I taught as a graduate student to the freshman at the University of Illinois - is not an expected entry level college course. I did not want to acknowledge even to myself that I was teaching "Basic Skills" to post-secondary students. This was a shock. I needed my own answers to the question "How can a Nation which houses record number of Nobel Laureates in scientific field have its high school students showing such a dismal understanding of mathematics, which is the language of science?"

It did not take me long to find out that many of these students had successfully completed two to three years of mathematics in high school. However, what I did not know then was that a majority of them completed mathematics courses in high school but not "high school mathematics" courses. Some research and a few visits to local area classrooms revealed some answers – the educational system has somehow failed these students. How did I come to this connclusion? I reviewed the literature on the subject, talked to mathematics teachers, undergraduate students, and parents and even casually chatted with store clerks! Most of the stories had a common thread - "You see I always knew that I am no good at math." This led me to the second question – "What makes so many of them accept that they cannot do mathematics?" I knew that I had to study this in depth. *The students in my classes and the preservice and inservice teachers became my research laboratory*.

My first experiment was to assign a writing assignment in Math 1030: Elementary Foundations of Mathematics – a required course for students planning to teach Kindergarten through eighth grade levels. The students were asked to write their 'Mathematics Autobiography' (Appendix A). Here are a few excerpts from their writing:

> In A fear Overcome Rebecca recalled "... Whenever I think of MATH I get a chill that runs down my spine ... I want to feel good lost in mathematics classes.

> It was time to find resources to apply the outcomes of my research. I decided to set when I think about math. I've been trying to think back as to how this fear developed in me. ... My problems in math started in the sixth grade ... I had a conflict with my sixth grade teacher who was a young obnoxious man. I always wonder up to this day why he didn't like me? ... One evening he came over to my parents' home ... and he informed them that I was a hopeless case as a student. He said I was dumb ... Both my parents are not college graduates so they took his advice ... He recommended that I be placed in remedial classes and this is when my downfall began. ... in my Junior year I wanted to take an Algebra class ... I was never recommended by my counselor because … Hispanic women don't go to college."
>
> Michelle started off with "MATH! Just the word makes my skin crawl! I have been told for as long as I can remember that I am terrible in math. ... Every experience that I can remember in grammar school regarding mathematics was awful. ... my grammar school days in math were a joke. I could receive a F on every test, but somehow I always passed the class with a C."

To this day, in my Math 1030 classes (for non-math majors), about sixty percent of the students mention in their Math Autobiography a traumatic math experience between the ages of 8 and 12. At least twenty percent mention an experience similar to ones described above. Yet all of them as adults have chosen to become teachers, and because of their unfortunate episode have decided to make their classrooms a better place for their pupils. The result of this research told me that the students were short-changed by the educational system. It gave me a direction to my teaching - that is to provide the first and decisive step for the Rebeccas and Michelles to achieve their goals.

This project transformed my teaching goal. But there was more to follow. My anger and frustration translated into action when Mrs. J. came to see me with a request to add her name to my "full" class roster. Mrs. J. had completed almost all the requirements for the baccalaureate degree. The only course blocking her B.A. degree was the 3 units of General Education Mathematics. Mrs. J, a re-entry female in her late thirties, had a 3.67 GPA. She had aced every single course in her major. She was very articulate and seemed very confident- till I asked her about the math class. " Why did you wait so long to take this lower division math class?" She hesitated then said, "I knew that if I took math I will fail and that will lower my GPA and my chances of getting a scholarship." I was incredulous; so I had to ask, "How do you know you will fail the math class. You seem to have done very well in the 134 units you have completed." "Oh, that is not it. Math is different. You see I do not have *a mathematical mind*." I had never heard that phrase before. (since then I have heard plenty!!) In the next 30 minutes I learned much about the trauma of the "three-minute" timed basic skills test in third and fourth grades. I learnt about the IX grade Algebra teacher who "knew" that girls did not need math. Because of her slow (not incorrect!) performance she was placed in the below grade level group of students who "do not have a mathematical mind."

The Michelles, the Rebeccas, and finally Mrs. J galvanized me into taking action. *It is better to light a candle than to curse the darkness* says a famous proverb. I began coaching some of these students at the Burger King's and Carl's Jr.'s on Saturday mornings and Sunday afternoons. With a little timely academic help, and continual encouragement they broke out of the shell and passed mathematics classes. The more I coached the 'math anxious' the more convinced I was about devising a plan to circumvent the problem. This fueled me into further educational research. I wanted to reach these students before they came to college. I researched, attended special sessions in mathematics conferences, studied some of the NSF funded program proposals, and talked to colleagues. There is one more incidents which was the fire starter:

> Mrs. A. informed me that her fifteen-year old daughter, Tracy is "no good in mathematics." As we talk Mrs. A. added, "She has become just like me." It does not take long to gather that Tracy is a good student who enjoyed mathematics up to seventh grade. She had difficulty in understanding Algebra in eighth grade, was intimidated by the 'old and authoritative' male teacher, and has since felt lost in mathematics classes.

It was time to find resources to apply the outcomes of my research. I decided to set up programs to get the needed assistance to them when they were still in school. The implementation of these outcomes needed resources. Sustaining them called for relentless pursuit of every dollar available. Every grantor was looking for innovative and creative programs that will meet the grantors" objectives. All these led to my developing and directing numerous mathematics enrichment projects in the region that targeted pre-collegiate mathematics preparation, including:

- *Building Math Confidence* (funded by CSU Chancellor's Office in 1981-1982 and successfully transitioned to the University – Building Confidence through Competence));
- *High School Mathematics Access Program* (Math/Science Academy 1995 to present);
- *Pre-Freshman Enrichment Program* (Math/Science Summer Academy for all Junior High students 6/89 to present);
- *SMART – Science and Mathematics Achievement with the Right Techniques* (Math/Science Summer Academy Junior High girls 1996-98);
- *Alice in MathLogicLand -- Project AiM* (Math Enrichment Program for 3rd, 4th & 5th graders 1998-2000)
- *Communicating Mathematics* – Service Learning component funded by the Chancellor's Office. (2004 to present)
- *Preparing Women for Mathematical Modeling & Robotics (PWMMR)* Summer Institute for high school girls (2005-2008)
- *Financial Awareness Means Equity* (Money Management $ummer Camp for Girls seniors an graduating seniors (2010 – 2012)

ACT II: On Research Activity:

In Act II, I will strive to place my research in the context of Research, Scholarship and Creative Activity criterion. According to the Fall 2000 Academic Senate resolution:

> "research, scholarship and creative activity are considered those activities of an intellectual and professional nature which extend knowledge, understanding or appreciation of work within one's discipline or across disciplines, which include basic and applied investigation, as well as production of creative works."

During my first six years at CSU Stanislaus, I worked on pure mathematics research with my Ph.D. thesis advisor Professor John Walter, University of Illinois and was successful in getting some of my work published. In the past twenty-five years the focus of my research shifted to mathematics education - how mathematics is learned, how it should be taught. It was not an easy transition to move from *content research* to *educational research*, for every mathematician wants to pursue that abstract idea, and using nothing but pure logic to prove the *existence* of "the needle in the haystack." It never occurs to a mathematician that many need to *see* the needle to 'believe' the existence. In any event my daily teaching duties, the availability of CSU Stanislaus resources, and the mission of CSU System drew me into mathematics education.

Mathematicians – and all pure scientists for that matter – are comfortable with publications in their specific content area but are unsure of publications in the realm of pedagogy – scholarship of teaching. According to Valerie Dean O'Loughlin (Advances in Psychology of Education June 2006). " … educational

research is inherently *messy*. Unlike laboratory bench-based research, the variables (i.e. students, classrooms etc.) cannot be *controlled* as in laboratory setting. Unlike cells in a Petri dish, students are affected by many factors outside of the classroom." This difficulty should not deter educational researcher. On the contrary the researcher should think of this as an "advantage in that he/she is able to question the students about the perceived effectiveness of a teaching intervention."

This inherent attribute of educational research makes my own research in mathematics education look like an 'iceberg.' What one sees is typically only one-tenth of the volume of the research, which is the application or the pedagogy. The research that precedes the outcomes – like the shape of the underwater portion – is difficult to judge by looking at the visible portion surface above water. An example of this would be my talk at a 90-minute workshop at the Third International Conference on Science and Mathematics Education (CoSMEd) 2009 in Penang, Malaysia in November 2009. The workshop compiled my fifteen-year research on "My Experiences in Authentic Assessment in Pre-service Mathematics Courses". The attendees – being math education researchers knew the topic and shared with me many insights. Two of the faculty – one from Bangkok and another from Penang – are to collaborate with me in the publication of this work.

ACT III: Scholarly Activity

Ernest L. Boyer articulated a new paradigm for faculty scholarly activity in his 1990 Report *Scholarship Reconsidered: Priorities of the Professoriate.* He challenged the current views of faculty priorities and the true meaning of scholarship. Boyer classified four kinds of scholarship: discovery, integration, application, and teaching. (http://en.wikipedia.org/wiki/Ernest_L._Boyer). The University's Outstanding Research, Scholarship and Creative Activity Award criteria subsume Boyer's groundbreaking meaning of scholarship. My published papers and presentations well meet the RSCA criteria as they each fall in one of the categories of Boyer's Faculty Scholarly activity.

In fact all of my work meet more than one of the following categories:

- The Scholarship of Discovery
- The Scholarship of Integration
- The Scholarship of Application
- The Scholarship of Teaching

ACT IV: Creative Activity

I am finding this category a bit difficult to compartmentalize. I am not sure which of my research, scholarly activity and/or grants should be labeled as Creative Activity. Each of these activities was born out of a need. It is while looking for ways and means to meet the need that I was directed to a solution that called for an action or a study. This action/study lead the way to look for resources. The resources, as we know are scarce and one needs to have an innovative, yet doable project design to be successful in procuring it. As such I would list my ability to sustain a project that I start as the seed of creativity in me.

If I have to pick one of my projects from all of my creative academic endeavors, I will have to select the publication of the *Journal of the Central California Mathematics Project.* The first volume of the journal, published in Fall 2008 is the culmination of last ten years' of RSCA activities. The third volume (Fall 2010 issue) is being proofed as I write this. The plans are for this Journal to be published twice a year beginning 2011. By Fall 2011, the full editorial board will be in place and the journal will invite writers from outside the CSU System. I expect this to be an international journal for math educators in grades K-16.

Dr. William Covino, the then Provost wrote in the foreword to the first volume. " … the publication of a Journal for the Central California Mathematics Project that contained articles written by local teachers on innovations they have

brought to the mathematics classroom. …. The range of topics in this collection is impressive, and is designed to appeal to a number of teachers in our region. In addition, it exemplifies collaborative energy, provides a valuable look at effective approaches to pedagogy and curricular development … " (Vol. 1 page 7)

Dr. Susie Hakanson, Professor of Mathematics Education at UCLA wrote the introduction to the Journal. " … This inaugural CCMP journal is the result of years of effort, discovering what works for teachers. To prepare for the writing of this journal, …. Consultants with expertise in mathematics and/or writing supported the participants, reading many drafts and providing technical assistance. I had the privilege of visiting CCMP during this institute and fit right in since I had a writing task to complete that week. … From elementary classroom activities to overviews of university coursework, this journal has something for all mathematics educators and teachers of all grade levels. It is a credit to Dr. Viji Sundar, Director and Faculty Advisory of CCMP, for her vision to accomplish this work." (Vol. 1 page 6)

Finale: I do not think I have one major project. I always had one major focus. My goal in every program, every activity including teaching has been to empower my students with quantitative reasoning or mathematical power. In my desire to move towards this goal I have done a number of things, ventured many programs each dove tailing the other. What prompts me to start a program is precisely the reason that forces me to give everything I can to sustain it. I have been very fortunate in being able to get a stellar crew of students, staff, administrators and faculty to share in my dream. As I write this essay I realize that these programs have taken a place in the overall spectrum of the mission of CSU Stanislaus.

Knowing is not enough; we must apply.

Willing is not enough; we must do.

John Wilfgang von Goethe

Appendix A

Math 1030: Elementary Foundations of Mathematics

Written Assignments: The objective of these is to show your understanding of mathematics principles and current issues in mathematics education. You will read Everybody Counts and mathematical journals and select articles for commentary. These are due as assigned.

Written Assignment #1

Due On Monday, September 28th (20 points)

Math Autobiography if you have never written one in a college math class

or

Math Biography if you have already written a math autobiography in a college class.

This assignment should

- be typed - double spaced with 1" margins, 12 point font
- use this page as the cover sheet
- include your name, course, title, and date as shown below.
- be assembled with a single staple at the top left corner (no folders or binders)
- be at least 700 words.
- be submitted in duplicate.

Math Autobiography

Let your biography be a reflection of your growth and experience in mathematics. Your parents, siblings, friends can help you jog your memory. Your write up is to include- but not be limited to- the following.

- basic information about yourself (brief bio-data)
- the earliest memory you have of arithmetic/ mathematics
- your first math awareness
- your happy/ traumatic experiences in

mathematics- primary, Jr. high & High school

- an event or person most instrumental in your life to your pursuit of a college degree
- some of your experiences in mathematics courses in school/ college
- a teacher /friend/relative who helped or hindered your mathematics performance.
- your techniques to learn mathematics.
- what you should be doing this semester to obtain the grade you seek in this course. Outline a plan of action to excel in this class.

or

Math Biography

Interview a teacher, friend or faculty (but not a family member) and write a math biography of this person.

- Use the guidelines on *Math Autobiography* (above)
- You may pick the grade level (class) of your choice.
- Attach to your earlier math autobiography.

Dr. Anne W. Weisengerg
Department of Teacher Education

Transfer: From theory to practice in a methods course: Can We Make It Practical?

Before joining the CSU Stanislaus faculty, I spent many years in the field of teacher professional development and learned first-hand what the research suggests: that the heart of instructional reform is for teachers to be able to transfer instructional understandings gained from professional development opportunities into classroom practices that foster increased student achievement (Lyons and Pinnell, 2001). If this is true for instructional reform and K-12 educational settings, why would it not it be true for teacher candidates in a credential program who will ultimately be a part of this system and responsible for student achievement? It has been my quest over the past few years to test this theory and share the results with my colleagues.

The primary purpose of the Multiple Subject Credential Program (MSCP) at CSU Stanislaus is to prepare future teachers to work effectively with students from diverse backgrounds and to implement pedagogy that values the backgrounds of all students and allows them to succeed to their ultimate potential. The content, goals, and learner outcomes of the professional preparation programs are designed to prepare educators who can make thoughtful and effective choices as they prepare children and youth to meet the demands of today and the future.

The MSCP is a fairly short, fast-paced program. One can complete coursework, including student teaching, and be eligible for a preliminary credential in one year. Most students take four methods courses in one semester and then student teach the following term. This schedule leaves little time to make sure that the theory learned in methods courses transfers to applications in the classroom.

Each methods course in the MSCP requires a number of fieldwork hours, but there is not any standard way of implementing these hours. Most fieldwork done by the students is done on their own time, at locations of their choice, with no opportunity for the instructor of the methods course to observe or provide feedback. The main fieldwork component of the program is done during student teaching and is usually cited as the most important feature of the program, but it is very difficult for some novices. With a closer match between theory and pedagogy in the methods courses, I believe student teaching becomes easier and an opportunity to further practice on a grander scale what students have already practiced in their classes.

I was first asked to teach the Reading Methods course as part of the MSCP (on a part-time basis) during the Fall 2007 semester. During this time, I was still working in the elementary school setting training and coaching classroom teachers in a balanced language and literacy curriculum. I believed that teaching this course

would be a perfect complement and I would use the same strategies and ideas from that training for my methods course. I thought this was a great idea, and still do; however there is one major difference. I was going from working with current practitioners who were experienced teachers to working with novice teachers who were taking methodology courses in order to learn and move on to student teaching. There was a mismatch between what I wanted them to learn and what they needed to begin their teaching careers.

Teaching my first course was fun, and I felt my students learned a lot. But I felt that my "pie in the sky" ideas of what I wanted them to come away with were a little high. After so many years working in the schools, my expectations were a little unrealistic. Each semester since I struggled with what I wanted them to know how to do with what they could do realistically at their experience level. This struggle came into play on two different levels. The first level was the fact that these students did not have the theoretical background about how students learn to read and write to then be able to go to a deeper level. The second level was how were they going to be able to actually teach and practice this in order for there to be transfer from theory to practice.

I taught many semesters in a more traditional "college" course way. Class was held on campus, theory was presented, lessons were modeled and practiced with peers pretending to be elementary students. My results were successful: my students were learning, passing the Reading Instruction Competence Assessment (RICA), enjoying what they were doing and looking forward to being able to use it in the real classroom. Meanwhile, one of my colleagues, Mary Borba, who teaches the same course, taught her course during the day at one of the local elementary school sites. Her candidates were getting the best of both worlds, great instruction and the opportunity to put theory to practice immediately. After some thought and encouragement from her, I decided that I would teach my courses at an elementary school site too.

I did not really need a lot of convincing because I had done previous research and knew what was most effective. My earlier research on a peer-coaching model really reinforced the idea that in order for transfer to occur, theory presentation, modeling or demonstration, practice, feedback, and in-class assistance were needed. I understood that the best kind of professional development for teachers was being able to match theory to practice. I could share theory, but unless my students had the opportunity to practice it, there would probably be very little transfer to application in the classroom. Another theory that I have witnessed over time was what Wlodkowski (2003) stated, "Unless adults participate, they cannot learn, and without learning there is no possibility for transfer" (p. 40). I had to make sure my students had ample opportunities to participate in their own learning and work with students, not just simulate their work with each other.

I decided to take the leap during the Fall 2009 semester. I was teaching two sections of the methods course, so I needed to find two school sites. Two of the local schools agreed to help me. The fact that my class was offered after school from 4:00-9:30 was a concern and provided me with a challenge. I needed to find schools that had an afterschool program where we could work with students. Walnut and Crowell Elementary schools were the schools that agreed to allow me to teach my students (teacher candidates) on site and work with their afterschool program students.

My class began by assessing the elementary students' literacy levels and then each week the students planned instruction based on the data we collected. Each MSCP student was matched with one of the afterschool students, and then small groups were formed based on assessment data. This modeled how to group students in their own future classrooms to deliver differentiated instruction. The first hour of each class was spent working with the elementary students to practice lessons prepared specifically for them. After this fieldwork time the MSCP

students reviewed their lessons and reflected on them in groups.

Students used prompts from a reviewing guide based on Costa and Garmston's (2002) work and reviewed each lesson taught. In this way, the students had the opportunity to collaborate and take on the roles of either coach or teacher reflecting on their own lessons. This created two very powerful roles needed by teachers: coach and reflective practitioner. From my earlier research I knew that coaching was an effective strategy to help teachers transfer theory to practice (Joyce & Showers, 1996; Kohler, McCullough-Crilly, Shearer, & Good, 1997; Lyons & Pinnell, 2001; Showers & Joyce, 1996) and that by working in groups they would have some coaching experiences. Wlodkowski (2003) perceived transfer as part of a logical triangle including participation, learning, and transfer to the classroom. This triangulation was what I sought for my methods course. Our own College of Education's mission reinforces this by stating, "The mission of the College of Education is to engage faculty and students in instruction, scholarship, and professional experiences that provide subject-specific, pedagogical, and practical knowledge essential for planning, implementing, and assessing educationally-related activities" (2011).

Just as I want my students to collect feedback to improve their practice, I surveyed the students over a few semesters and asked what they valued about the course and/or what they gained from it to inform my own instruction and use of this new delivery model. What follows are some examples of my students' feedback based on the fieldwork experience. I have grouped them by themes that emerged: transfer from theory to practice, practical applications, and feedback.

Transfer from theory to practice

"This was an excellent course. I feel it has prepared me to teach reading. I am using the strategies and techniques I am learning with my own students the very next day. I love the fact that we are at a school site working with real kids!"

"I really enjoyed this course in general because of the massive amount of information I have learned. I enjoyed the fact that the course met on an actual school site and worked with real students. This helped in me in comprehension of the material and how to apply it."

"Really enjoyed working with students. Got to put to practice what we learned in the classroom. It was a great experience."

"Working with real live humans was very fun. It gave us a chance to apply our knowledge."

"The opportunity to work with real live children because it has allowed us to see how a lesson will go and make adaptations quickly as needed. It has allowed us to experience various situations and learn from our mistakes."

Practical applications

"Dr. Weisenberg has been an excellent instructor. She has pushed me, and challenged me, to be a better ELA teacher. This is one of the only classes that I feel has prepared me for RICA, TPAs, and student teaching. Getting to work with 'real live humans' is great. My only desire would be to have more hands-on practice."

"I've valued the opportunity I've been given to be in this class, to work with real live children, and to come away from every class with knowledge that I can and will use in my own classroom."

"Working with the children. Interaction is the best tool to learn from"

"I love that you took the initiative and were able to get our class moved to the after school program at Crowell School. I really value the time that we had to work with the students at Crowell. I feel that I am learning so much more than I would have if we would have simply sat in a classroom and lectured. Working with the students helps the material come to life for me and makes sense."

"Working with live children that are so precious and I am so appreciative of the chance

to practice with them, hands-on is always a plus!"

"I have really enjoyed working with the real live humans. I believe it made the experience more meaningful and comprehensible when we were able to "experiment" what we had learned on children versus just reading about it in a text book."

"Thanks for letting us work with real live kids. It's good learning."

"What I have valued most is the time spent at Walnut Elementary School. There is no comparison to what I have learned from class and incorporating it into these children."

"I've valued the experience working with real live humans. I think learning these concepts and tests abstractly would not have made as much of an impact on the learning practice."

"I am so happy I got to work with actual children with these lessons because it made me feel much more confident in my lesson planning and instruction."

"Using assessment information to work with real students and adapt lessons to fit real student's needs was so helpful."

"Working with real live humans gave us first hand experience."

Feedback

"I Valued the peer feedback on lessons demonstrated."

"I valued the time with the real live students and the opportunity to assess them. Feedback from my peers and professor was very helpful."

"Being with the rest of the class and learning together and from each other has been something I have really valued."

"The feedback and constructive criticism received by peers and professor."

"I valued working with students within our class hours. Immediate feedback, taking turns teaching lessons to see each other was very helpful."

"I think the fact that our working with a student time was integrated was the best part. Getting immediate feedback while the lessons were fresh helped in editing and rethinking the lessons."

Based on the overwhelming positive feedback from students, I am convinced that this delivery model is the best way to teach our students. Data from the MSCP end-of-program survey confirmed this positive impact of teaching the methods courses at an elementary school site. The Reading Methods courses were ranked highest of all MSCP courses. On the *Teacher Candidates' Perceptions of Preparation for Teaching* question, 96% of the students believed that they received excellent to good preparation from their Reading Methods course. The next highest course was 82%.

After my first semester experience at Crowell and Walnut, I was excited to continue teaching in this manner. One of the experiences that I felt could be improved was providing the opportunity for my methods students to work with a more ethnically diverse population. Walnut and Crowell had little diversity, and it was difficult to teach my students how to make accommodations for English learners and special needs students--an area in which students must be successful. I decided to teach the Reading Methods course at Wakefield Elementary, Turlock District's highest poverty, lowest- achieving school. The principal was ecstatic to have us, and I have continued to work with this school, its afterschool students, and other students whose parents have agreed for them to participate in our afterschool tutoring sessions for the past few semesters. After one semester, I was able to recruit another colleague, Noelle Won, to teach her Math Methods course at Wakefield, and we both continue to teach our courses at Wakefield.

In our first semester at Wakefield, in Spring 2010, the school's Academic Performance Index (API) had the second largest increase in the county. Of course, we cannot take full credit for this, but I think the partnership we have established and the "college for certain" attitude the school has adopted have done wonderful

things for the students at Wakefield School and increased student achievement.

I am convinced now, that this is THE WAY to teach a methods course in a teacher preparation program. We do not have the luxury of time for our students to practice before we send them out to student teaching. Aspiring teachers will be most successful when they are learning about theory and pedagogy and putting into practice what they learn immediately. They need to learn how to reflect and accept feedback from peers/coaches/teachers in order to improve their teaching practice.

The idea of school reform to foster student achievement has become an ongoing discussion in our MSCP faculty meetings, and even more professors in our department are moving to this model. We are now in the process of revising our multiple subject credential program to embed more practice and fieldwork in all coursework.

I cannot say exactly how this model might be applied to other fields at the University. However, I believe that to do our best job preparing the future workforce (in any career), all coursework must be relevant and allow students as many opportunities as possible for hands-on application of whatever theories we teach. This has made a difference in the way I teach. We can make it practical!

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Some Thoughts on Assessment

Most of the faculty stories that you have read were not intentionally written to explore and examine the role and place that assessment plays in learning. However, even if not explicitly mentioned, embedded within each individual piece readers can identify and see a faculty member's philosophical and pedagogical points of view and the inter-relationship that assessment plays in supporting and encouraging student growth and knowledge acquisition.

Although the essential knowledge to be learned in each discipline may differ, some very common aspects of assessment emerge. For example, student conversation and discussion on a topic being explored, commonly called classroom "talk," is a highly vital and valuable way of assessing the depth and degree of student learning. Whether we label the discussion as cooperative learning, problem solving, collaborative talk, or pair sharing, the goal and purpose is to have students negotiate the information presented in text, film, or lecture and build relevant meaning and personal understanding. Assessment is happening!

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