A CASE STUDY OF EXEMPLARY TEACHING PROFESSORS’ COGNITION, MOTIVATION, AND PRACTICES IN AGRICULTURE

Brandon N. Mitchell  
The University of Illinois at Urbana-Champaign

Neil A. Knobloch  
The University of Illinois at Urbana-Champaign

Anna L. Ball  
The University of Illinois at Urbana-Champaign

Abstract

The purpose of this collective case study was to understand the practices of exemplary teaching professors and theorize what they do as teachers in higher education. Twenty-seven tenure-track professors at a large Midwestern land-grant university participated in the study. The evidence was coded into cognitive, affective-motivational, and teaching practice themes. The themes that emerged regarding the cognitive aspects of exemplary professors included the use of context and relevance in teaching, application of knowledge, teaching of concepts, differentiation of instruction, and reflection. Affective and motivational themes included having a caring disposition, student affirmation, student success, having a positive regard for students, and professionalism. The teaching practices of exemplary professors emerged around the themes of planning skills, interpersonal skills, communication skills, and assessment skills.

Introduction and Theoretical Framework

Describing and defining exemplary teaching so that one can undoubtedly recognize excellent teachers is complex. Excellent teachers are those who motivate students, convey concepts, and help students overcome learning difficulties (Kreber, 2002). Exemplary teachers, who are experts, are excellent teachers, but excellent teachers are not necessarily exemplary (Kreber). Although exemplary teachers have been described as clear in their systematic delivery of material, enthusiastic about their subject, prepared in providing organization, stimulating students’ emotion, and building
interpersonal rapport (Lancelot, 1929; Lowman, 1995; Menges, 2001; Sherman, 1987; Spafford, 1998), their expertise developed from reflection and self-regulation make them exemplars (Kreber). The problem in identifying exemplary teachers continues to exist. Students who experience exemplary college teaching can describe so with detailed personal stories, but there is paucity among empirical studies in objectively identifying exemplary college teachers (Lowman).

The theoretical framework for this study was derived from an extensive review of the literature on exemplary teaching and learning in higher education. Exemplary teaching has been “defined as the relationship between instructional activities of the instructor (the process of teaching), and the educational changes that occurs in students (the outcomes of teaching). The types of outcomes are those of a cognitive nature (e.g., gains in knowledge and improvement in problem solving skills), as well as those of an affective of attitudinal nature (e.g., increased motivation to learn, change in self-concept)” (Murray, 1997, p. 171). Exemplary teachers “continuously seek out new opportunities to further their understanding of problems” (Kreber, 2002, p. 13). Exemplars identify, analyze, and solve problems of practice through strategies that make their efforts more effective. The desire to become more effective is underpinned by motivation of experts.

Many of the problems that teachers face are derived from interactions with others. Teaching is based on interpersonal relations between teachers and students. As such, it was assumed that exemplary teaching professors employ autonomous prosocial behaviors in the process of teaching and interactions with their students that result in positive outcomes. Drawing upon a typological approach of explaining fundamental functional psychological processes that interdependently produce moral behavior (Solomon, Watson, & Battistich, 2001), four factors served as antecedents to our understanding of exemplary teachers. In doing so, professors enact these four antecedent factors that impact students: (a) cognitive facets, such as how teachers think about their subject matter and how they think students should learn it; (b) affective-motivational facets, such as concern for others, what they value, and what motivates them to teach; (c) teaching practices, such as the tasks that teachers do to prepare a teaching plan, create a positive learning environment, engage learners to think critically, and assess learning outcomes; and, (d) personality factors, such as personal characteristics, personality type, teaching style, and self-efficacy. These four factors served as the model to understand and interpret what exemplary teaching professors do as exemplary teachers.

Land-grant universities have played a critical role in educating students to be productive citizens in a rapidly changing society. Although teaching is a cornerstone function of a university, stakeholders are concerned that graduates are not adequately prepared for their careers and to be engaged citizens. The Kellogg Commission on the Future of State and Land-Grant Universities (National Association of State Agriculture and Land Grant Colleges [NASULGC], 1999) called for land grant-institutions to be the architects of change and create student-centered learning communities that develop students’ higher-order reasoning abilities, create communities of active, life-long learners, and become engaged with solving the ill-structured problems of a complex society.
It is not uncommon for college graduates to express disappointment about their educational experience after they enter the professional world. For example, stakeholders at Babson College criticized their education for its rigidly structured curriculum, a disconnection with the real world of work, and a tendency to teach skills in isolation; faculty were disappointed in students’ lack of engagement, and employers gave lukewarm reviews of the graduates’ performances (Zemesky, 1988). The current literature base on teaching and learning in colleges of agriculture reflects similar findings. Studies indicate that students in colleges of agriculture possess limited abilities to think at higher levels of cognition (Rudd, Baker, & Hoover, 2000; Torres & Cano, 1995; Torres, 1999). Further, professors have been found to teach at the lower order levels of knowledge and comprehension (Birkenholz & Johnson, 1990; Gibbs, 1985; McCormick & Whittington, 2000; Miller, 1989; Miller & Newcomb; 1990; Whittington, 1995; Whittington, & Bowman, 1994; Whittington, Lopez, Schley, & Fischer, 2000; Whittington & Newcomb, 1993; Whittington, Stup, Bish, & Allen, 1997), regardless of class size, course level, and progression across the semester (Whittington et al., 1997).

Because teachers are the single most important variable influencing student achievement (Darling-Hammond, 1997), professors play a key role in the quality of instruction in higher education. Higher education needs professors who skillfully explore the frontiers of knowledge, integrate ideas, connect thought to action, and inspire students (Boyer, 1990). Higher education must provide students with effective instruction as American universities strive to “become great student universities” (NASULGC, 2001, p. 31). A greater emphasis on the student experience, effective teaching and learning is high on the agenda of most universities and colleges. According to the Kellogg Commission (NASULGC), “we need to encourage research on the learning process itself, with the goal of creating a science and a methodology to discover how we can most effectively present knowledge to the human senses” (p. 22). An understanding of the practices of exemplary professors in colleges of agriculture could serve to inform college teaching faculty regarding more effective ways to solve problems associated with practice, and thereby enhance the learning experience for undergraduates.

Purpose and Objectives

This study focused on understanding what exemplary teaching professors do as teachers to motivate students and engage them in the learning process. The purpose of this study was to understand how professors describe themselves as exemplary teachers based upon: (a) cognitive facets, (b) affective-motivational facets, and (c) teaching practices they employ to motivate students and make them think critically.

Methods and Procedures

An interpretivist, collective case study (Stake, 2000) served as the design of the study to understand the professional practices of exemplary teaching professors and theorize what exemplars do as teachers in higher education. Thirty-two tenure-track professors were purposively identified through student nominations, instructional ratings, and teaching awards. College administrators, who were experts on teaching and learning, verified the list of exemplary teachers. Twenty-seven tenure-track professors participated
in one of four, two-hour focus group interviews. During the focus group interview, professors drew concept maps of their mental picture of teaching and learning and answered three questions.

Of these professors, 26 participated in one-hour individual focused interviews. Professors were asked to describe themselves as a teacher, what made them different from non-exemplary teaching professors, their greatest joys, the best thing about teaching, how they challenged students to think and learn the content, how their teaching enhanced student learning, how do they continue to remain exemplary, their goals for improvement, and the greatest challenges in their evolution as a college teachers.

The context of the study was located in a college of agriculture at a Midwestern land-grant university. This context was chosen because of the researchers’ interests in improving teaching in the college. The college also exemplifies the land-grant university philosophy with faculty actively engaged in teaching, research, and extension outreach/service. The college promotes teaching excellence through teacher workshops, recognition programs, and a peer evaluation system. Although the college places a high priority on quality teaching, the culture supports the attitude that research is of highest importance.

The twenty-seven exemplary teaching professors represented a range of academic disciplines in the college: 7 (26%) were in animal science; 6 (22%) were in agricultural and consumer economics; 4 (15%) were in natural resources and environmental sciences; 3 (11%) were in agricultural engineering; 3 (11%) were in human development, family studies, and agricultural education; 2 (7%) were in crop sciences; 2 (7%) were in food science and human nutrition. Four (15%) were untenured assistant professors, 10 (37%) were tenured associate professors, and thirteen (48%) were tenured professors. The professors taught an average of 17 years, ranging from 5 to 34 years.

Evidence from professors’ concept maps of teaching and learning, focus group interviews, and face-to-face interviews were analyzed. The researchers’ collected and interpreted the data using qualitative methods from an interpretivist stance (Lincoln & Denzin, 2000). Interviews were audiotaped and transcribed. Paper, pencils, and highlighter markers were used to help create organizers to code and summarize the qualitative data. Coding was used to analyze the qualitative data from the concept maps and open-ended questions. The researchers created a coding scheme of the major concepts, central ideas, or related responses (Glesne, 1999). Trustworthiness and believability was established through the use of data source, investigator, theory, and methodological triangulation (Denzin, 1984); peer debriefing, an audit trail, and a reflexive journals (Donmoyer, 2001; Lincoln & Guba, 1985).

Findings

The data from focus-group interviews, individual interviews, and concept maps of teaching were coded according to purpose of this study which was to understand how professors describe themselves as exemplary teachers based upon cognitive themes, affective-motivational themes, and teaching practices they employ to motivate students.
and make them think critically. In such, several sub-themes became apparent. The emerging themes regarding the cognitive facets of exemplary teaching professors were: context & relevance, applying knowledge, learning concepts, differentiated instruction, and reflective. Regarding the affective-motivational facets of exemplary teaching professors, the following themes emerged: disposition/affect, student affirmation/feedback, student success, positive regard for students, and professionalism. Regarding the teaching practices that exemplary professors employed to motivate students and make them think critically, the following themes emerged: planning skills, interpersonal skills, communication skills, and assessment skills.

The cognitive themes emerged from the evidence based on how teachers think about their disciplinary content and how they think their students should learn the material. Five themes regarding cognition are described and supported with selected, representative quotes.

Context & Relevance: Professors used real-life examples, examples that were meaningful to students, and stories or humor to create a context for meaningful learning and make the content relevant. One of the professors mentioned, “One of my basic philosophies is that if students can relate to something then they can remember it. I pick and choose, based on their backgrounds to fit in information that they will remember.” Another professor said, “I think that the examples you use to teach concepts have to be real—they have to be authentic. You have to connect them to what you already know.”

Applying Knowledge: Professors encouraged their students to analyze issues related to the discipline, make decisions, solve problems, and learn by doing. One professor explained how he integrated his research and Extension appointments into his teaching, “I have an Extension, research, and teaching, which are called appointments from hell. The beauty of it that I have research and real-world examples from producers that I can take back to the classroom. One day, I took a question that I had on the phone and wrote an exam question up and put it on the exam.” Another professor shared that he helped students learn “by doing. Hands-on and experiencing things.”

Learning Concepts: Professors noted teaching the major concepts of a subject, omitting minor details and discrete bits of information, the importance of showing students inter-relatedness of concepts, and helping students create mental pictures to learn concepts. An example of this was shared by a professor, “I’ve become less concerned with the body of knowledge and more concerned with the fact…that it is something that they will try to remember and use at some point in the future.”

Differentiated Instruction: Professors sought to understand where students were in knowledge of subject, recognize different learning styles or ways of learning the information, maintain flexibility in the learning environment, use a variety of modalities for instruction, and use multiple examples in instruction. This theme was illustrated by one professor, “Our students have changed in the last 20 years. I went through this huge transformation in the last 15 years with the kinds of students that I have had in class. Being able to adapt to the students that we have had is the key.” Another professor focused on students’ ways of learning, “I am also trying to tap into the model that is in
their head all the time. Being mindful. I use that term in a very purposeful way. I pay attention to not only the content but to my succession at any minute where I am with them. Trying to be in the moment with them the best I can.”

Reflective: Professors sought new ways to teach students, were life-long learners about the teaching process, monitored learning and made instructional decisions accordingly, and sought to continuously improve the practice of teaching. Three quotes exemplify this theme. One professor said, “It’s fun to talk to colleagues and see what they are doing and get ideas. I never go talk to somebody and not get an idea.” She added, “…I didn’t really know why things work, why things didn’t work. That’s a big evolution; learning more about the theory behind the practice, so…what I do is a lot more thoughtful.” Another professor added that he studies his teaching practice as a scholar, “I learn from seeing mistakes that didn’t work, but I learn mostly by getting in there and doing things…. I look at teaching as from a research viewpoint.”

In regard to the affective-motivational themes of teaching, concern for others, instructor values, and the factors that motivate the instructor to teach served as a model of interpretation. Five themes regarding affect-motivation are described and supported with selected, representative quotes.

Disposition & Affect: Exemplary professors described themselves as being personable, caring, and empathetic. One professor mentioned, “I think you have to let the student know that you enjoy what you are doing and that you enjoy them.” Several professors mentioned that they cared such as, “To know that I truly care about them.” Professors also described that they had a passion for teaching their subject and students, “I have a lot of energy and enthusiasm for the subject and the teaching and the ideas.”

Student Affirmation & Feedback: Professors were motivated by student praise and student learning. Nearly every professor mentioned that the best thing about teaching was seeing students learn new concepts or when their students tell them that they appreciated their efforts as represented in the next two quotes, “The best thing about teaching is the reward of the student’s satisfaction in learning the material. That is the greatest reward. Having them tell you and seeing the light bulb go on.” “When a student comes back and says…that was the best course I had…when you get a little acknowledgment that says, ‘You have made a difference.’”

Student Success: Professors valued student growth and development as professionals and people and impacting student success. A professor described valuing students in the following way, “The number one focus is the student….and have an interest not only in this class but how they do in the long-run in agriculture.” A number of professors mentioned that they thrived off of student success, such as “…when they excel, I just love to see that expression of excitement on their face.” Some professors shared that they saw student success outside of the classroom in real-life situations, “We have had some students that have had to tackle some real tough life problems and have asked me for advice…is rewarding for me. The fact that they would still trust me and seek me out for my advice.”
Positive Regard for Students: Exemplary professors valued students as bright and motivated, as individuals who could uniquely contribute to the learning environment, and they valued relationships and interactions with students in a co-learning environment. “Exemplary teachers...have to be sincerely interested in the student’s learning.” Professors also expressed appreciation for their students, “I enjoy the students...they are in a really great time of life. The world is so new and fun for them to be here in college and see the things they have never experienced before.”

Professionalism: Teaching professors communicated a desire to excel as educators, remain current with disciplinary knowledge, educate future professionals in the discipline, instill an appreciation of the discipline, and a passion for the subject itself. Professors shared that teaching should have similar status to research, “I think it is important for administrators to realize that just as research programs evolve, teaching programs should evolve.” Many professors expressed that they had high expectations of their teaching, “I was unhappy with anything less than doing than what I knew was my best.” Several professors expressed a desire to help their students see the value of their disciplines, “Giving them [students] some information and appreciation for my area.” A senior professor mentioned his desire to educate future professionals in his field, “I would like to find the answer to how we can attract more students in [discipline] before I retire.”

The tasks that teachers do to prepare a teaching plan, actions taken to create a positive learning environment, engage learners to think critically, and assess learning outcomes served as a model of interpretation for the teaching practices of exemplars in this study. Four themes regarding teaching practices are described and supported with selected, representative quotes.

Planning Skills: Professors described that they knew the objectives and/or outcomes, had a plan for what and how to teach, and prepared resources in advance. Nearly every professor described the time commitment that it took prepare for teaching and being available for students, “The common threads that you would see would be organization, enthusiasm, and interaction. Try to get there early and stay there late.” The professors tended to focus on how to teach rather than the delivery of content as highlighted by one professor, “Planning is how you can help students remember [content], and how you connect to what they already know. That’s what planning is. Planning is not sitting down and developing a PowerPoint presentation. That’s mechanics.”

Interpersonal Skills: Professors learned students’ names, backgrounds, and experiences, used humor and stories from personal experience, were accessible or had an open-door policy, and listened to students’ needs. A common practice among the professors is that they wanted to get to know their students. One mentioned, “I do everything I can to learn their names, right away, quick. Even playing games so I can learn their names. I can usually get 50 names in one night if I play a little game with them for about 10 to 15 minutes.” Some professors wanted to authenticate that they were human to cultivate an openness between the students and themselves. “I am willing to put myself on the line and do something that is a little socially risky. It makes me vulnerable and makes me human. Sometimes I do great and sometimes I make a mistake.
There is an opportunity there to make connection over that. In that process there is a little self-deprecating humor and so that starts that moment of connection and bonding.”

**Communication Skills:** Professors delivered content in an organized and logical fashion, with real examples, in multiple ways, repeatedly, communicated expectations clearly, and gave clear explanations. Because of the years of teaching experiences, the professors shared stories that would help communicate the concepts they wanted the students to know and apply. “I use lots of stories in class. I spend the first couple weeks in every course trying to establish communication channels....” Some professors conceptualized learning experiences from the students’ points of view, “I am trying to be very aware of the fact that I am dealing with novices and they can’t swallow it at the rate that I am capable at the rate that I can deliver it.” Another professor described his delivery of content as engaging. He focused on delivering the content through interactive dialogue, “My lecture style is to engage them. They come in with the idea that I am going to make them think...they ask questions and sometimes we get off on tangents...I find little pockets during these discussions to stick info in because the discussion is going so well and I don’t want to stop it yet I want to get some material in the class.” Many professors mentioned that they used different modes of delivery to present information so that students had several opportunities to grasp the content. In particular, one professor described his approach as, “I show slides for lectures. I go through this process of...give them a verbal definition. Then I will show them a diagram of the idea. I will put the diagram up and ask how is that verbal definition expressed in this diagram? I’ll ask someone to tell me what they see. Then I might show them a plan of a real [example]. Then they are starting to gain some skill at seeing it and finding it. Then I will show them multiple examples of real [examples]. I have my laser pointer and as I walk around I give the laser pointer to someone. They can then point it [concept] out. There is this constant back and forth between them and myself.”

**Assessment Skills:** Professors monitored for student understanding both formally and informally, gave feedback, and conducted formative and summative self-assessments of teaching. Professors describe their assessment practices as, “…see what they did in their classroom and question whether or not that was effective. If it wasn’t, find out ways to make it more effective. Every class should grow on the previous class,” and “I think you have to constantly be evaluating in the classroom.” Another professor described assessment through the use of questioning and observations. “So I work at being patient and going slow, staying in touch with them and connecting with them and using my observational skills to tell me where I am at and often asking them lots of questions.”

**Conclusions, Implications, & Recommendations**

Three conclusions emerged from the findings through a process of praxis and synthesis. First, exemplary teaching professors internalized content into a set of concepts that they could clearly communicate to students and help them assimilate into their cognitive structures. The exemplars’ mental images of teaching were shaped by their professional discipline and they integrated their research and/or Extension appointments to complement their teaching. This conclusion appeared aligned with Kreber’s (2002) definition that exemplary teachers continuously search for new possibilities in
understanding their problems of practice through professional development opportunities and integration of their research and/or Extension appointments with their teaching responsibilities. Exemplary teachers in this study conceptualized disciplinary content based on their experiences. Therefore, college teachers should conceptualize content in ways that reduce the amount of content covered and make content more meaningful for students. Further, college teachers should engage in professional development opportunities that facilitate the discussions about the concepts of their disciplines and staying current with future career needs of their students. Studies should be conducted to determine domain-specific concepts across the agricultural disciplines as well as teaching strategies that would effectively convey pedagogical content. College teachers should also be studied to gain a greater understanding of the developmental processes in which they conceptualize and internalize concepts in various agricultural disciplines.

Exemplary teaching professors cared about students and their teaching responsibilities. They were intrinsically motivated, felt they sacrificed research time for teaching, and reflected about their teaching in a way as scholars of teaching and learning. The passion exemplars had in regard to teaching supported that their expertise was developed from reflection and self-regulation (Kreber, 2002). College professors should strive to teach through the minds and experiences of their students. This notion of “meta-teaching,” is thinking about teaching through the minds of the learners. Further, some exemplars felt that they were making sacrifices of their research programs due to the fact that they invested more time in planning their lessons and exams and being more accessible to their students. They also felt that they would not be rewarded for teaching successes, especially compared to the rewards given to successful researchers. Because exemplars were intrinsically motivated to teach, future studies should investigate if professors become exemplary based on their motivation or other factors such as cognitive ability, technical reflection, teaching artistry, or personality.

Teaching practices were aligned with previous studies of effective teaching in higher education (Lancelot, 1929; Lowman, 1995; Menges, 2001; Sherman, 1987; Spafford, 1998), and were manifestations of how exemplary teaching professors think and feel about teaching (Murray, 1997). Cognition, motivation, and practice appeared to be interdependent, which supported Solomon and colleagues’ model (2001) of moral human behavior. College teachers should reflectively think about their practice as well as their students through cognitive and affect lenses. Faculty developers should help develop college teachers by engaging them to think about how their mental schemas, problem-solving strategies, affect, and motivation influence learners in the context of teaching. Researchers should try to understand the interdependent nature of the cognition-motivation-practices model. Future studies should observe and videotape exemplary teachers in practice and conduct stimulated recall interviews with teachers and their students to determine the connections between the cognition, motives, intentions, and perceptions of the teacher and their students.

This study contributed to the knowledge base on the practice of exemplary teaching professors by exploring the thinking, motivation, and practices of exemplars. The findings from this study could inform universities and colleges to facilitate professional development, reflection, and discussions about disciplinary knowledge and
pedagogy for new professors. New professors should focus on teaching concepts, interact with students, and implement a variety of teaching methods that engage students to think and apply the content. Understanding the problem-solving strategies of exemplars would help provide models of effective teaching for new faculty and professors interested in improving their teaching.

References


