Exploring the Teaching Beliefs of Excellent Undergraduate Professors

Aaron J. Giorgi[1] and T. Grady Roberts[2]
University of Florida
Gainesville, FL

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Abstract

The world is rapidly changing and the next generation of college graduates will need to be prepared to solve complex global problems. Effective teachers in colleges of agriculture are a key piece of the solution to this issue. The purpose of this study was to explore the teaching beliefs of excellent college professors so that novice teachers may learn from their accomplished peers. This study used faculty in the Academy of Teaching Excellence at University of Florida as a case study. Based on the Teacher Belief Scale, the majority of professors were classified as enablers, meaning that this group was high in Sensitivity and high in Inclusion. Examining the teaching philosophy statements of this group showed that the majority of professors expressed high Sensitivity and at least a neutral level of Inclusion. When comparing the two measures of beliefs, it was concluded that these excellent professors are consistently expressing beliefs of Sensitivity, but inconsistently representing beliefs of Inclusion. Based on this study, novice teacher should aspire develop high levels of sensitivity and at least moderate levels of inclusion.

Introduction

The world is rapidly changing and the next generation of college graduates will need to be prepared to solve complex global problems (National Research Council, 2009). Recognizing this need, the National Research Council (2009) issued a call for changes in the curricula and teaching in colleges of agricultural and related sciences. They specifically noted that many professors need to update their teaching methods and curricula. They did, however, acknowledge that there are numerous examples of professors who have already embraced new pedagogies and are preparing society-ready graduates. These instructors can serve as models to help others evolve.

The main goal for a teacher, in any capacity, is student learning. The formal teaching/learning process typically involves interactions between the teacher, learners, content, and the learning environment (Dunkin and Biddle, 1974). Students are more engaged in the learning process when they feel their faculty are involved in the collective process of education (Umbach and Wawrzynski, 2005). One component of this complex process that effects teacher involvement is the beliefs the teacher holds about the learning process. A successful teacher has a clearly defined teaching philosophy outlining their core values as an instructor. Understanding the teaching beliefs of excellent teachers can allow novice teachers to develop into excellent teachers by modeling the beliefs and behaviors exhibited by their accomplished peers. This could help increase student engagement within the learning process.

Review of Literature

The Theory of Planned Behavior (Ajzen, 1991) proposes that a person's beliefs influence their intentions, which in turn influence their behaviors. The classroom behavior of teachers ultimately affects students' achievement (Fang, 1996). Teaching involves two domains: (a) teachers' thought processes, and (b) teachers' actions and their observable effects. Understanding teacher's thoughts and actions will give us a better understanding of how these two components interact to increase or inhibit student performance (Clark and Peterson, 1986).

Ajzen's (1991) Theory of Planned Behavior serves as a theoretical frame for this study. For this study the major concepts of attitudes, subjective norms, and perceived control are operationalized as internalized beliefs, or teacher beliefs (Ajzen, 1991). Additionally, concept of motivation or intention is operationally measured from espoused philosophy.

According to Heimlich (1990), sensitivity and inclusion are the two key dimensions that describe the teacher's beliefs related to their thoughts and actions. Sensitivity relates to the understanding of the group (learners) needs, while inclusion refers to the amount of control the students have over their learning within the instructor's classroom. Combining the two dimensions categorizes teachers into four groups: (a) Experts have

low sensitivity and low inclusion; (b) Facilitators have low sensitivity and high inclusion; (c) Providers have high sensitivity and low inclusion; and (d) Enablers have high sensitivity and high inclusion.

Heimlich's (1990) assertion for these two key dimensions stems from the belief that a teacher's success relates to their ability to be sensitive to the cultural interactions within the learning environment; as well as, the teacher's ability to relinquish control. He also asserted that the measurement and subsequent intersection of these two dimensions will indicate a preferential teaching style (Heimlich, 1990). As described, Heimlich (1990) stated that the teacher outcomes or activities associated with each dimension change the focus from teacher to learner (inclusion), and from content to process (sensitivity) as you increase on either axis. These dimensional beliefs' are further validated as predictors by Clark and Peterson (1986) stating that teacher beliefs are a vector for perception, process, and action related to classroom activities.

Utilizing this convention, Heimlich (1990) found 95% of adult educators in Ohio are highly sensitive and 95% are highly inclusive. When applied to preservice teachers in agricultural education Cano, Garton, and Raven (1992) found that 56% of preservice teachers were both highly sensitive and highly inclusive, 20% were only highly sensitive and 20% were only highly inclusive. Whittington and Raven (1995) conducted similar research assessing teaching beliefs of student teachers and found 87% of student teachers were both highly sensitive and highly inclusive.

"Personal Documents are a reliable source of data concerning a person's attitudes, beliefs, and view of the world" (Merriam, 1998, p. 116). Educators who write a teaching philosophy want to document those beliefs, values, and approaches (Goodyear and Allchin, 1998). To combat the void of scholarly works related to statements of teaching philosophy, their role, how to compose them, or how to evaluate them as personal statements, Goodyear and Allchin (1998) compiled and synthesized literature to develop a standing source on teaching philosophies.

From their work, we know that "articulating an individual teaching philosophy provides the foundation by which to clarify goals, to guide behavior, to seed scholarly dialogue on teaching, and to organize evaluation" (Goodyear and Allchin, 1998, Introduction, para. 2). When a professor enters a teaching setting, he or she has a predetermined philosophical framework (or teaching philosophy) that guides his or her practice (Coppola, 2002).

Developing a teaching philosophy has explicit benefits for professors, including that the teaching philosophy can be used to stimulate reflection on teaching (Chism, 1998), it can be used as a point for examining teaching practices (Coppola, 2002), and the statement sets principles which guide behaviors (Goodyear and Allchin, 1998). It is widely acknowledged that most educators struggle with developing a written teaching philosophy. "This is likely due to the fact that their [professors] ideas about this are intuitive and based on experiential learning, rather than on a consciously articulated theory" (Chism, 1998). Additionally, Goodyear and Allchin (1998) noted:

In preparing a statement of teaching philosophy, professors assess and examine themselves to articulate the goals they wish to achieve in teaching. The process helps the teacher clarify the "why" of teaching as a foundation for the "what" and "how" of teaching, by answering the question: "Why are you teaching?" (Roles of Statements for Professors, para. 1)

Components of a quality philosophy statement include conceptualization of teaching and learning, goals for students, implementation and design, growth plan, and evaluations (Chism, 1998; Coppola, 2002).

A potential means for improving the learning environment and facilitation of learning for the benefit of the learners, is for educators to understand their predilections toward a teaching style (Heimlich, 1990). By delineating the beliefs, a model can be established. According to the components of the social learning theory presented by Bandura (1977) most behaviors are learned through modeling. The effectiveness of the model is directly correlated to the functional value of the behaviors and the status of those modeling within the social group. Models are more likely to be adopted when the outcome, student achievement in this case, has value within the system. It is also stipulated that the level of association within a social setting delimit the modeling opportunities (Bandura, 1977).

Methods

The purpose of this study was to explore the teaching beliefs of excellent college professors to determine if a relationship exists between teacher beliefs and philosophy statements. The objectives of the study were as follows:

1. Describe the teaching beliefs of excellent college professors.

2. Describe the expression of inclusion and sensitivity within teaching philosophy statements of excellent college professors.

3. Compare teacher beliefs and teaching philosophy statements of excellent college professors.

Exploring the Teaching

This study used a three-phase case study of faculty in the Academy of Teaching Excellence in the College of Agricultural and Life Sciences, at the University of Florida. This group includes professors elected to membership based on receiving awards and recognition for teaching. The target population was all members of the Academy currently employed at University of Florida, totaling thirty-three professors since 2008 (N = 33).

In Phase I, twenty-two members of the academy (n = 22) elected to participate and thus constituted the case. In this phase each professor completed a researcher modified Van Tilburg/Heimlich Teacher Belief Scale (Heimlich, 1990) administered through an online questionnaire. Data were collected using the Tailored Design Method (Dillman, 2000).

The Van Tilburg/ Heimlich instrument is a 22-item questionnaire. Items relate to the two dimensions: sensitivity and inclusion (Heimlich, 1990). Items agreed to are scored based on a predetermined value for each item and total items answered. This discerns a score for both dimensions. Heimlich (1990) defines three levels to each score: low (0 - 6.0), neutral (6.0 – 8.0), and high (8.0 – 11). Numeric scores are plotted on a grid with defined quadrants to label the respondents Teacher Belief Scale type. For the delineation of quadrants, Heimlich (1990) uses a breakdown of 0-6 as low, and 6-11 as high for each dimension; no neutral is used.

The Van Tilburg/Heimlich instrument was validated by interviewing researcher-identified adult educators, analysis for statements qualitatively, correlating statements to concepts, and then having an expert panel evaluate the statements for clarity and application (Heimlich, 1990). A second validation was made where a population ranked the items based on a Likert type scale relating each statement to either side of the domains Sensitivity, or Inclusion (Heimlich, 1990). The response frequency was measured, and using a binomial test (α =.05 a priori) the statements were categorized or eliminated (Heimlich, 1990). The reliability of these items was determined by a principle component factor analysis using orthogonal varimax rotation (Heimlich, 1990).

In Phase II, respondents were asked to provide their teaching philosophy statements. Of the sample population, eleven members (n = 11) elected to continue their participation in the study and provided the statements. The qualitative content analysis was assessed according to the characteristics Holsti (1969) asserted for modern content analysis. The characteristics of procedural, rule-based, and systematic process are descriptive of this study (Holsti, 1969). As the analysis

was conducted, rules for assessment were developed under ex post facto conditions in concordance with the naturalistic paradigm as defined by Lincoln and Guba (1985). The Goetz-LeCompte (1981) continuum was a theoretical frame for this study's typological analysis. Typologies are devised on some external basis (an a priori theory) and are then applied to new sets of data (Goetz and LeCompte, 1981). Analysis involves the aggregation of qualitative information within the given categories (Lincoln and Guba, 1985). The aggregation of the items in the philosophy statements were analyzed for items based on the predetermined dimensions of Inclusion and Sensitivity as operationally defined by Heimlich (1990).

"Since the investigator is the primary instrument for gathering data, he or she relies on skills and intuition to find and interpret data from documents," (Merriam, 1998, p.120). In concordance with Merriam's statement, three criteria were developed to assess a score for the content analysis for each dimension. Each dimension was evaluated for (a) quantity of items stated, (b) strength of items in relation to the dimension, and (c) explicit nature of the items stated based on definition of each dimension. Criteria two was the limiting factor of the evaluation because of the inherent biases of the researcher. The scores were low, neutral and high, mirroring the score breakdown established by Heimlich (1990) for the instrument.

A criticism of qualitative research techniques relates to the "highly subjective and therefore unreliable nature of human perception" (Merriam, 1998, p. 95). Merriam (1998) also defined one major researcher concern as "measuring the frequency and the variety of messages" (p. 123) due to subjectivity. Assumptions and interpretations of the qualitative content analysis are limited by the researcher's views and biases. The researcher for this study was scored as an Enabler on the instrument; scoring a 9 for Sensitivity, and a 7.9 for Inclusion. Subjectivity within data analysis derived from the experiences of the researcher being trained as an Agricultural Educator and having taught secondary Agriscience education. Several beliefs of the researcher as an educator must be noted as well: (a) the primary stakeholders of education are the students; (b) education should be objective based related to student outcomes; and (c) education is a paradox of fluid activity that can be planned but is rarely executed as planned.

In Phase III, a comparison between the Teacher Belief Scale scores and results from the content analysis was conducted to discern if scores exhibited based on the instrument match the personally-reported views of the respondents via their philosophy statements. As

stated by Lincoln and Guba (1985) deductive analysis begins with reference to a body of empirical data. Both scores established the empirical data required to compare scored and stated views of each dimension.

Results and Discussion

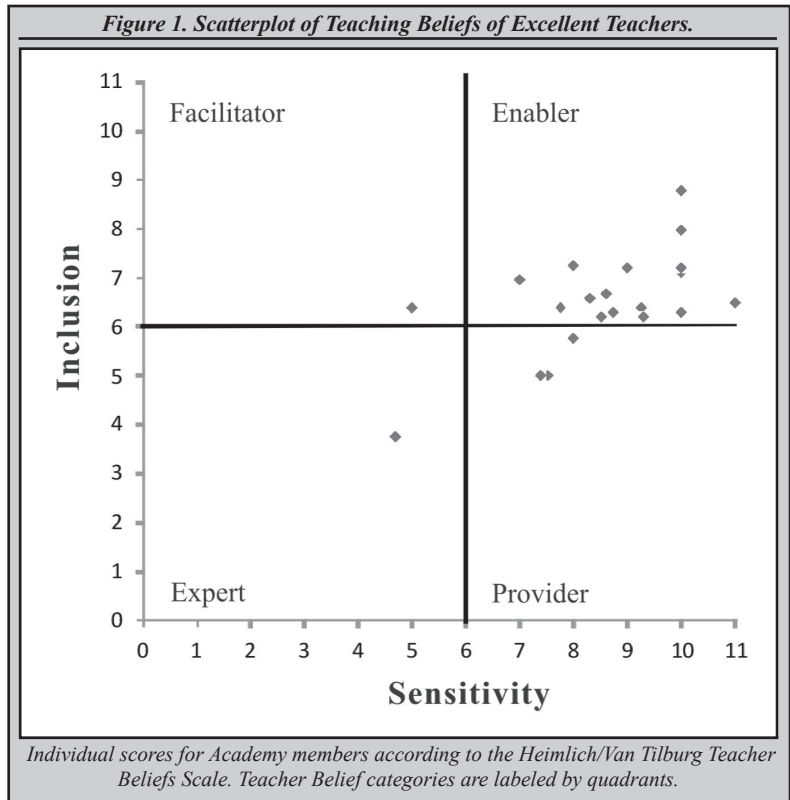**Objective 1 – Describe the teaching beliefs of excellent college professors.**

Respondents were scored on two axes, sensitivity and inclusion. Based on the plotted scores (see Figure 1), respondents fell into one of four categories: expert, facilitator, enabler, and provider. It was found that of the sample 77% (n = 17) were scored as "enabler," 14% (n = 3) were scored as "provider," 4% (n = 1) were scored as "facilitator," and 4% (n = 1) scored as an "expert." The mean calculated score for Sensitivity was 8.5, and for Inclusion the score was 6.5. Both scores are calculated on a range from 0 to 11.

The majority of faculty in the Academy of Teaching Excellence in the College of Agricultural and Life Sciences at University of Florida are classified as enablers (Heimlich, 1990). This means that this group is high in Sensitivity and high in Inclusion. These findings mirror the data collected by Heimlich; he found that 69% of his respondents also scored within the enabler category.

Objective 2 – Describe the expression of inclusion and sensitivity within teaching philosophy statements of excellent college professors.

Respondents' teaching philosophy statements were qualitatively analyzed for themes of the dimensions Sensitivity and Inclusion. Each respondent was scored based on three criteria: quantity of items, strength of items, and explicit nature of items within their statements. The findings for each respondent are reported individually. Key examples are highlighted for both Sensitivity and Inclusion in Tables 1.

Respondent 1. Statements show a neutral level of Sensitivity and a high level of Inclusion. Examples demonstrating Sensitivity from respondent 1's philosophy statement include "There are, however, multiple student needs…," and, "…my teaching methods must be flexible, adaptable, and dynamic within any given setting…" The following statements demonstrate

Figure 1. Scatterplot of Teaching Beliefs of Excellent Teachers.

Individual scores for Academy members according to the Heimlich/Van Tilburg Teacher Beliefs Scale. Teacher Belief categories are labeled by quadrants.

student Inclusion: "…the focus of the classroom is on students challenging themselves to answer…" and, "Specific classroom activities include… a Socratic approach to teaching in which I lead open, in-class discussions…"

Respondent 2. Statements showed a high level of both Sensitivity and Inclusion. The following statements demonstrate the dimensions: "…focused on the concepts of accessibility, and relevance and involvement." and, "…sensitivity to the student's family, employment and other obligations."

Respondent 3. Respondent 3 demonstrated high levels of Sensitivity and Inclusion with many statements made regarding both factors. Sensitivity was demonstrated with phrases such as, "class personality," "personal rapport," and, "empathy. Statements made include "My goal is to have a classroom in which students feel comfortable, accepted, and challenged." and, "I try to incorporate strategies that appeal to a variety of learning styles. Evidence for Inclusion was

Respondent	Statement
Sensitivity	
1	"There are, however, multiple student needs, learning styles and learning objectives that are more effectively met with other approaches."
4	"…to better understand their [students'] needs, career objectives, and develop a relationship of mutual respect."
5	"I enter each situation with a desire to understand others first…"
Inclusion	
3	"…students learn best when they have a personal stake in the course content."
7	"I require my students to conceive their own research questions and study designs, with faculty guidance…"
9	"…focuses on involving students as much as possible in the learning process."

Table 1. Key Statements of Teaching Belief Dimensions

found in statements, "…students learn best when they have a personal stake in the course content." and, "…student evaluations have helped me to define some of my personal strengths."

Respondent 4. Statements showed a high level of Sensitivity and a low level of Inclusion. Sensitivity was demonstrated with the following statements: "First, I care for my students…," "…students in my classes represent a mosaic of different learning styles." and, "…better understand their personal needs…" Inclusion was demonstrated with the following statement: "…students choose and complete self-directed projects…"

Respondent 5. Respondent 5 demonstrated a high level of Sensitivity and a neutral level of Inclusion. Evidence used to support Sensitivity was found in the following statements: "I enter each situation with a desire to understand others first…," and, "I update material to complement the needs of our students…" Inclusion was demonstrated with the statements: "…activities which supplement the lecture content, including opportunities for peer review and team work." and, "My assignments provide students the option of … making development decisions about their assignments."

Respondents 6. Respondent 6 demonstrated a high level of Sensitivity and a low level of Inclusion. No statements were made related to the dimension of Inclusion within the philosophy statement. The following statements were made related to Sensitivity: "To account for different learning styles,…," "To me, caring for the student means that I know everyone by name…," and, "…I ask them [students] about their broken leg, or sick grandmother, or genetics course."

Respondent 7. Statements showed a high level of Sensitivity and a high level of Inclusion. Statements made demonstrating Sensitivity include the following: "Every person in intellectually and emotionally unique,…," "…aptitudes, personality types, learning styles and levels of emotional maturity all vary among students…," and, "…intended to bring to bear the diversity of expertise, skills and styles pertinent to the research questions being asked." Statements made demonstrating Inclusion include the following: "…more personalized and unconstrained by classroom context." "…tailoring educational experiences…"and, "I require my students to conceive their own research questions and study designs…"

Respondent 8. Respondent 8 demonstrated a high level of Sensitivity and a low level of Inclusion. Statements made showing evidence of Sensitivity include: "I care about students as individuals…," "Learning names personalizes…" and, "…a clear

message to the students that you care about them." Only one item was made related to Inclusion: "I am committed to…interactive lectures…"

Respondent 9. Statements showed a low level of Sensitivity and a high level of Inclusion. No statements were found related to Sensitivity. Inclusion was demonstrated by statements such as the following: "…on involving the students as much as possible in the learning process." and, "Students will have the opportunity to explore topics on their own…"

Respondent 10. Respondent 10 demonstrated a neutral level of Sensitivity and a low level of Inclusion. The statements made by the respondent was contextualized with the phrase "I" do this or that 42 times. The severity of "I" statements demonstrates a focus on the respondent, not on the students. Evidence for Sensitivity is represented by the following statements: "I spend time learning who my students are, not only their names, but their interests, hopes, and concerns." "…make every effort to be available for my students outside the classroom."

Respondent 11. Statements showed a high level of Sensitivity and a neutral level of Inclusion. Statements made to support Sensitivity include "The first is to understand the needs of students…" "…responds to the student's learning style…" and, "My goal is to incorporate a variety of modalities…" Inclusion is supported with the following statements as evidence: "…to tailor learning opportunities to those…" "…creating a learning environment and individual learning opportunities…"

Overall Category. Based on the researcher-developed qualitative analysis scoring, the respondents exhibited the following results for the two dimensions: 73% (n = 8) scored high Sensitivity, 46% (n = 5) scored high for Inclusion, 18% (n = 2) scored neutral in both dimensions, while 9% (n = 1) and 36% (n = 4) scored low for Sensitivity and Inclusion respectively.

The sample population exhibited the following categorical breakdown based on the qualitative scores: 27% (n = 3) was categorized as an Enabler, 9% (n = 1) was categorized as a borderline Enabler/ Provider, 27% (n = 3)was categorized as a Provider, 9% (n = 1) was categorized as a Facilitator, 9% (n = 1) was categorized as a borderline Facilitator/Expert, and 18% (n = 2) was categorized as a borderline Expert/ Provider.

The majority of faculty in Academy of Teaching Excellence in the College of Agricultural and Life Sciences at University of Florida demonstrated high Sensitivity within their philosophy statements. Additionally, the majority of faculty demonstrated at least a neutral level of Inclusion within their philosophy

statements. These scores mean this group espoused a high level of receptivity and understanding of students' needs in the classroom, while also giving at least some control to the students over their education within the instructor's classroom as defined by Heimlich (1990). According to Ajzen (1991) these faculty, based on these espoused intentions, have a strong predictor to understand student needs and provide their students with some level control over their learning process as defined by Heimlich (1990).

Objective 3 – Compare teacher beliefs and teaching philosophy statements of excellent college professors.

Utilizing the a priori categorization of scores from the Van Tilburg/Heimlich Instrument scores and the developed content analysis assessment comparisons can be drawn. In the dimension of Sensitivity 73% (n = 8) respondents scored the same on both components. Thus, three of the respondents, 27%, demonstrated a lower level of sensitivity to student needs in the content analysis as opposed to the Teacher Belief Scale score. For the dimension of Inclusion it was found that 27% (n = 3) respondents scored the same on both components, 36.5% (n = 4) scored lower on content analysis compared to the Teacher Belief Scale score, and 36.5% (n = 4) scored higher on the content analysis as opposed to the Teacher Belief Scale score for the level of inclusion of student in the learning process. A direct comparison for each respondent can be found in Table 2.

Upon a side by side comparison of Teacher Belief Scale scores and content analysis for faculty in the Academy of Teaching Excellence in the College of Agricultural and Life Sciences at University of Florida, it was found that the strength of scores for Sensitivity were mirrored on the Teacher Belief Scale and content analysis. Greater variability was shown for Inclusion scores for the faculty. As shown, the majority scored different on the Teacher Belief Scale than the content analysis. It is concluded that faculty are adequately expressing and representing beliefs of

Sensitivity within philosophy statements. It is also concluded that faculty are not accurately representing beliefs of Inclusion.

Summary

An understanding of intentions, as proposed by Ajzen (1991), is central to understanding motivations and predicting behavioral outcomes or achievements. Based on the content analysis we can infer that faculty in the Academy of Teaching Excellence in the College of Agricultural and Life Sciences at University of Florida will demonstrate behaviors at a high level related to understanding and addressing the needs of their students. This inference is further validated due the similarity in both Teacher Belief Scale and content analysis scores. Continuing this conjecture, faculty will exhibit moderate behaviors related to affording students control over their learning process. This is based on the variability of scores for the Inclusion dimension within the content analysis.

This population of faculty, as well as the outcome of the behaviors, satisfies components of Bandura's (1977) social learning theory. Fulfilling these components will enhance the functional value of the modeled behaviors related to the dimension of Inclusion and Sensitivity. It is also implied that students and faculty in the College of Agricultural and Life Sciences at University of Florida value teachers that are sensitive to student needs and inclusive of all students since members of the academy were selected through a student nomination and peer evaluation process, which further validates this population based on Bandura's 1977 descriptions. Based on the findings, it is recommended that new instructors should strive to model these behaviors in practice. Additionally, it is recommended that faculty focus on understanding the two dimensions as defined by Heimlich (1990). This understanding should focus on metacognitive assessment of personal attitudes and norms related to the dimensions. This would further enhance the final behavioral outcomes based on the internal understanding of the theory of planned behavior (Ajzen, 1991).

The results of this study only apply to the small group of faculty examined in the case. Teaching beliefs of faculty not in the academy should be examined to see if similarities exist. Additionally, this study should be replicated at other universities and in other disciplines to see if similar results

Table 2. Comparison of Instrument and Content Analysis Scores					
	Van Tilburg/Heimlich Teacher Belief Scale			Philosophy Statements	
Respondent	Sensitivity	Inclusion	Category	Sensitivity	Inclusion	Category
1	High	High	Enabler	Neutral	High	Fac/Exp
2	High	Neutral	Enabler	High	High	Enabler
3	High	Neutral	Enabler	High	High	Enabler
4	High	Neutral	Enabler	High	Low	Provider
5	High	Neutral	Enabler	High	Neutral	Ena/Pro
6	High	Neutral	Enabler	High	Low	Provider
7	High	Neutral	Enabler	High	High	Enabler
8	High	Neutral	Enabler	High	Low	Provider
9	Neutral	Low	Provider	Low	High	Facilitator
10	High	Neutral	Enabler	Neutral	Low	Exp/Pro
11	High	Neutral	Enabler	High	Neutral	Ena/Pro

are found. Finally, teacher beliefs and behaviors are inputs in the learning process. Teaching beliefs should be compared with student performance (learning) to determine if relationships exist.

To allow for a more specific assessment of undergraduate college professors the Teacher Belief Scale should be evaluated and potentially redefined according to the original dimensions. Heimlich (1990) applied the Teacher Belief Scale to adult educators in Extension Education. The items should be evaluated and potentially exchanged for more pertinent or valid items for the population, and the setting. Additionally, new items should be added to address contemporary trends in the educational system. If addressed, this could account for variances between Teacher Belief Scale and content analysis scores for the Inclusion dimension.

To further the description of behaviors of the faculty, the researcher should conduct in-class observation of the professors. This would finalize the case study, as well as describe the final component of the theory of planned behavior (Ajzen, 1991). With a final behavioral analysis, a true model can be made for the behaviors of excellent professors. Research should assess faculty behaviors on several factors: self-reported and student assessments, as well as an outcomes or student achievement component. Reiterating the initial conjecture, the main goal for a teacher, in any capacity, is student learning.

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