EXPLORING THE INFLUENCE OF DEPARTMENTAL CULTURE ON PERCEPTIONS OF SCHOLARSHIP AND ROLE PRIORITIZATION OF BIOLOGY PROFESSORS

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I dedicate this manuscript to my husband, Jim Haswell, and our furry family who were patient and were my supporting force throughout this five-year academic journey.

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ABSTRACT

EXPLORING THE INFLUENCE OF DEPARTMENTAL CULTURE ON PERCEPTIONS OF SCHOLARSHIP AND ROLE PRIORITIZATION OF BIOLOGY PROFESSORS

by Melissa M. Haswell

The focus of this study was to identify how departmental culture influences scholarly identity and role prioritization of biology faculty members at a large, four-year university. A qualitative strategy of inquiry was chosen to examine the processes of socialization and acculturation of faculty members within a biology department. Pragmatic constructivism was the theoretical lens used to identify the common themes of the acculturation processes which shapes scholarly identity because it is an amalgam of constructivism and pragmatism. This inquiry enhances the current literature base because it identifies the socialization processes that specifically influence role prioritization and scholarship definition relative to the discipline of biology.

Shared leadership and cooperation are the identified cultural aspects that have greatest influences on the construction of the culture in a biology department. Further, this study identified service to undergraduate students in the form of faculty-student research projects as the ultimate goal of the department. This suggests that student-centered undergraduate education in the biological sciences can be used to establish a department that emphasizes both high quality teaching and high quality research. By reconfiguring faculty roles and redefining scholarship, biology departments can better meet the goal of providing state-of-the-art educational experiences for their students without sacrificing research productivity. Acknowledging service to students as a basis for tenure reward should be part of faculty role configurations, which is an important consideration as higher education rethinks traditional faculty roles and replaces them

with roles that suit contemporary life. Factors that require further exploration include how leadership and new faculty members create a culture of cooperation that leads to a transformational change within their academic department. In addition, future research should continue to explore the notion of service to students as a form of scholarship used in tenure and reward systems.

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INTRODUCTION

Introduction to the Study

In higher education there is often an imbalance in the configuration of academic roles of educators. This configuration often emphasizes research over teaching and relegates service work to a task completed only if time is available (Fairweather & Beach, 2002; Gappa, Austin, & Trice, 2007). In addition, recent studies suggest that students are studying less during their four years of college and many are not graduating with the skills required to compete in the new global economy (Babcock & Marks, 2010; Arum & Roksa, 2011). A lack of applicable skills and mastery of require competencies appears to be especially true in the STEM (Science, Technology, Engineering, and Mathematics) fields because of the frequent reliance on outdated teaching methods learned through the academic acculturation process and leave students lacking in a deeper understanding of scientific concepts and research skills (Handelsman, Miller, & Pfund, 2007; Association for the Advancement of Science, 2010). This study explores the acculturation process of a biology department and its effect on faculty role prioritization and definition of scholarship at Transformation University (a pseudonym for an actual Midwestern university in the United States). This chapter includes the background for this study, the statement of the problem, purpose and focus of the study, research questions, researcher perspective, definition of key terms/concepts, and theoretical orientation.

Statement of the Problem

Over the past decade, there has been a movement towards greater emphasis on student-centered teaching in higher education (Handelsman, Miller, & Pfund, 2007). However, the

reward and value placed on teaching undergraduate students at four-year universities often becomes less important than research and publication within a professor's academic discipline (Fairweather & Beach, 2002; Gappa, Austin, & Trice, 2007). Departmental emphasis on research relates to two underlying factors. First, research productivity has become a necessity for external money and prestige to the university (Prince, Felder, & Brent, 2007). Second, several recent studies suggest that tenure and rank promotion evaluations are primarily based on research productivity rather than excellence in teaching (Fairweather & Beach, 2002; Lee, 2004; White, 2010). Due to the extreme dedication that it takes to be a scholar of teaching as well as a scholar in one's discipline, few faculty members have the time or ability to achieve a high level of research productivity while simultaneously conducting high-level classroom teaching (Fairweather, 2002; White 2010). Most faculty are also educated only in their specific discipline via their graduate work and thus do not have a sufficient pedagogical background to determine whether they are choosing sound teaching methods to enhance student comprehension (Handelsman et al., 2007). Lack of pedagogical knowledge as well as a lack of time, often forces faculty members to fall back on a traditional lectured-based teaching format (Handelsman et al., 2007).

Traditionally, the teaching of biological science has focused on rote memorization of terminology and the minutiae of biological processes instead of focusing on learning core biological concepts and scientific skills (American Association for the Advancement of Science, 2010). These teaching methods are outdated and proven to be both ineffective for student comprehension and retention of basic biological concepts (Handelsman, et al., 2007; Wood, 2009). Further, science departments often do not emphasize teaching or recognize it as a legitimate form of scholarship, which may have played a role in the current shortage of

American students graduating with bachelor's degrees in the Science, Technology, Engineering, and Mathematics (STEM) fields (Wood, 2009). Students became discouraged and gave up on degrees in the sciences because many science faculty members are still entrenched in the traditional teaching paradigm, which treats each subject as a collection of facts with little integration between major biological themes (Handelsman et al., 2007; Wood, 2009). Therefore, the Committee on Undergraduate Biology Education to Prepare Research Scientists for the 21st Century, the American Association for the Advancement of Science, and the National Science Foundation initiated a call to reform undergraduate biology education (National Research Council, 2003; American Association for the Advancement of Science, 2010). These reform initiatives included the use of the scientific teaching method, as well as focusing on core concepts outlined by the America Association for the Advancement of Science and National Science Foundation in *Vision and Change in Undergraduate Biology Education* (2010). The practice of scientific teaching emerged through the collaboration of biology faculty members across the United States who promote the creation of science classrooms that not only enhance student learning but also follow the scientific method and "promote teaching as a scholarly endeavor" (Miller, Pfund, Pribbenow, & Handelsman, 2008, p. 1329). The method of scientific teaching is based on the "making teaching more scientific" by using the core essence behind science, discovery, which provides students with an authentic scientific experience and a deeper understanding of the interconnectedness of the various biological concepts (Handelsman et al., 2007, p. 1).

Although many biology departments are initiating a cultural change by adopting the method of scientific teaching, not all faculty members are keen on changing their core teaching practices (Handelsman et al., 2007). Departmental and disciplinary culture may play a role in the

promotion and adoption of scientific teaching (Sirum & Madigan, 2010; Austin, 2007). However, there is very little current research that examines the influence of disciplinary culture or the overarching culture of a higher education institution, on curricular and pedagogical changes leading to transformational changes within an academic department (Holyoke, Sturko, Wood, & Wu, 2012). Understanding the acculturation process of faculty members is especially important because there are layers of culture that influence how faculty members conceptualize and prioritize their roles of teaching, research, and service (Dow-Royer, 2010). Therefore, the faculty acculturation process should be examined in order to build a framework for the adoption of transformational change, such as a major curriculum overhaul (Sirum & Madigan, 2010; Holyoke, et al., 2012).

Purpose of the Study

The purpose of this study is to identify how departmental culture, such as the professional socialization process, influences how biology faculty members define scholarship and prioritize the academic roles of teaching, research, and scholarship at a large, four-year university with doctoral/research level ranking. A better understanding of the acculturation process of biology faculty members is necessary to initiate transformational changes in biological science education in order to improve student learning and retention, as well as to prepare students for their future careers (American Association for the Advancement of Science, 2010). Each biology faculty member has his or her own set of truths, facts, and causes that have arisen from the acculturation process experienced as a student and then as faculty member (Lee, 2004). Disciplinary-based acculturation begins as part of the graduate school socialization process during which faculty members establish a base scholarly identity that is renegotiated as faculty members begin

working at other institutions (Lee, 2004). The initial departmental socialization process experienced as a graduate student exposes aspiring faculty members to disciplinary-based culture, which shapes their perspectives on teaching (Lee, 2004).

Two dominant types of faculty members generally emerge from the socialization process: those who engage in teaching as their primary scholarly activity and those who engage in research as their primary scholarly activity (Lee, 2004). Science faculty who emphasize research as their main form of scholarship often teach the way they were taught and often choose not to put time into learning new teaching pedagogy (Handelsman, et al., 2007; AAAS, 2010). However, science faculty who engage primarily in teaching often take the initiative to learn educational pedagogy on their own via workshops and conferences, which expose them to new approaches to better prepare students for a career in a global economy (Handelsman, et al., 2007; AAAS, 2010). The basis of scientific teaching is the practice of science itself, which emphasizes discovery, critical thinking, and creativity with experimentation and active learning (Handelsman, et al., 2007). The scientific method of teaching is derived from compelling evidence from the neuroscience field on how people learn and the constructivist theory of learning first outlined by Dewey and Ausubel (Handelsman, et al., 2007). Further, scientific teaching is designed to develop both knowledge and skills by allowing students to construct their own knowledge base through the creation of a richer, more complex classroom environment that stimulates physical changes in the brain (Handelsman, et al., 2007). In contrast, traditional lecture-based classrooms are much less stimulating and thus may not create the complex network of changes to the brain required for learning (Handelsman, et al., 2007).

In addition to scientific teaching, the Association for the Advancement of Science (AAAS) proposes what they consider to be core concepts and competencies for biological literacy (AAAS, 2010). These core concepts and competencies are the culmination of conversations at national conferences, as well as biological concepts deemed crucial by the Association of American Medical Colleges, the National Research Council, the College Board Advanced Placement Study Programs, and National Science Education Standards (AAAS, 2010). The core biological concepts that all undergraduate life sciences majors should understand include:

- The diversity of life evolved over time by processing of mutation, selection, and genetic change.
- The basic units of structure that define the function of all living things.
- That growth and behavior of organisms are activated through the expression of genetic information in context that biological systems grow and change by processes based upon chemical transformation pathways and are governed by the laws of thermodynamics.
- That living systems are interconnected and interacting (AAAS, 2010).

The basis of the core competencies is the application and understanding of the core concepts, which are:

- The ability to apply the process of science via observation, experimentation, and hypothesis testing.
- The ability to use quantitative analysis and mathematical reasoning.
- The ability to use modeling and simulation as a way to study complex systems.
- The ability to understand that science is made of an interdisciplinary team.

- The ability to communicate and collaborate with other disciplines.
- The ability to understand that there is a relationship between science and its impact on society (AAAS, 2010).

The AAAS (2010) competencies and skills are becoming increasingly necessary for creating a dynamic 21st century global workforce. However, departmental culture may hinder transformational changes such as accepting contemporary teaching paradigms like scientific teaching or curricular changes like the addition of the core competencies and concepts (Allen & Tanner, 2009; Holyoke, et al., 2012).

Focus of the Study

The focus of this study is to explore the cultural factors that influence the development of scholarly identity and how a faculty member's scholarly identity subsequently impacts the teaching paradigms chosen by faculty members of a biology department.

Research Questions

1. What are the cultural influences that shape role conceptualization and prioritization of biology faculty members?
2. How do biology faculty members define scholarship?

Researcher Perspective

Pragmatic constructivism is the theoretical lens used to identify the common themes of the acculturation process of biology faculty members that shapes their scholarly identity because it is an amalgam of constructivism and pragmatism, which emphasizes the use of immersion and reflection as part of the knowledge-building process when conducting educational research that

focuses on changing the process of teaching and learning (Gordon, 2009). Therefore, direct immersion in fieldwork allowed me to gather data through a process of knowledge building as I examined the culture of the Transformation University biology department through faculty interviews, teaching observations, and site documents. Direct immersion is part of the constructivist approach to the data gathering process because it assists in understanding both the meaning-making process of faculty members, as well the interpretation and analysis of the cultural aspects used to construct the scholarly identity of a faculty member (Gordon, 2009; Patton, 2002).

Limitation of bias is imperative and is a methodological factor of which I am especially cognizant because I have had previous professional interactions with members of this department (Hill, 2007). I made a concerted effort to set aside my previous relationships with faculty members to ensure the approach used during interviews and classroom observations was that of a qualitative researcher. In addition, because biological research is generally quantitative in nature, I ensured that my interactions with participants reassured them of the value of a qualitative research project through professional behavior. This included maintaining communication with the participants, taking thorough notes, and recording the interviews. Copies of notes and transcripts of the interviews were shared with participants.

Further, my current professional experience as an administrator and biology instructor at another university, while helpful for giving insight into the reality of biology professors, could also cloud observational skills. My previous experience as a post-secondary biology instructor at various colleges and universities could also affect data gathering and interpretation. Throughout the course of the data gathering process, I worked to control subjectivity using reflective memos and member checks in order to remain in alignment with the purpose and focus of the study.

Definition of Key Terms/Concepts

For the purpose of this study, key term definitions include:

Biological faculty members are full-time faculty members of the biology department at the designated university.

"*Scholars of teaching* are [defined] as excellent teachers as well as expert teachers; but they differ from either one in that scholars of teaching share their knowledge and advance the knowledge of teaching and learning in the discipline in a way that can be peer-reviewed" such as publication, presentations, or mentoring of their colleagues (Kreber, 2002 p. 18).

Cultural influences include factors that affect the decision-making processing of a faculty member in a department.

Departmental culture is the "shared ideas and behaviors" that shape the beliefs, norms, values, ideologies, and assumptions of a department (Lee, 2004, p. 608). Departmental culture differs from institutional culture in that it is discipline-based and thus heavily influences academic/scholarly identity.

Academic/Scholarly Identity is the identification of a faculty member as a research or teacher as influenced by departmental culture (Boyer, 1990).

Pragmatic constructivism is a combination of social constructivism and pragmatism directed at the field of education research that examines the interaction between educational theory and practice (Gordon, 2009).

Social constructivism is a strand of constructivism that "focuses more on social process and interaction…" (Schwandt, 2007)

Pragmatism is defined as "integrating the process of thinking and doing" with critical reflection to purposefully change a situation or environment within a specific context (Gordon, 2009, p. 49; Creswell, 2007).

The *scholarship of teaching* is a dynamic faculty role that begins with a teacher who is "well-read and intellectually engaged in their field" (Boyer, 1990, p. 23).

Socialization/Acculturation/Enculturation to an organizational role that occurs with "an anticipatory learning period during which the prospective members begin to assume the values and attitudes of the group they wish to join" and involves "learning about the culture of the group, including its values, attitudes, and expectations." (Austin, 2002, p. 96).

Summary

The rationale for this study emphasizes the importance of understanding the cultural influences of biology faculty members that shape role prioritization and definition of scholarship in order to improve undergraduate biology education. The following sections provide the literature review required to understand the theoretical framework for the study; the history of the professoriate; the definition of scholarship; department culture and socialization; transformational change in academic departments; and student identity development.

CHAPTER II

LITERATURE REVIEW

Introduction

The following section provides a review of the relevant literature as outlined in Figure 1. The first section covers the theoretical framework, pragmatic constructivism, which is the foundation of the proposed research. The second section identifies the major influences that contribute to the creation of the scholarly identity of faculty members, and thus begins with an examination of the history of the academic profession because it was the initial basis for the creation of faculty identities. The third section discusses the changes that have occurred over time to shape the scholarly identity of 21st century faculty. The fourth section explains the redefinition of scholarship and learning that took place in the late 20th and early 21st centuries, which could play a role in changing how faculty members form their identities. The fifth section discusses the role departmental culture has on shaping faculty identity and its role in transformational change. Finally, this review of the literature identifies key concepts in student development theory, such as the redefinition of learning, that relate to scholarly identity development.

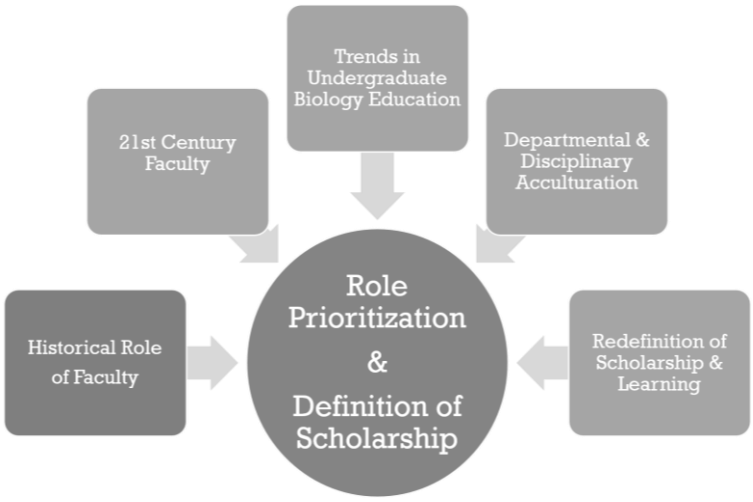

Figure 1. Concept Map Depicting Major Influence on Role Prioritization and Definition of Scholarship

Theoretical Orientation

Meaningful qualitative research in education requires a solid conceptual framework based on the adoption of one or more theoretical perspectives. This alignment becomes the foundational guide for the research process and provides clarity to the research focus. The chosen theoretical framework for this study is a combination of pragmatism and constructivism, known as pragmatic constructivism, with elements of grounded theory (Gordon, 2009). Therefore, a brief history of pragmatism and constructivism provides the underlying framework used to define pragmatic constructivism and a brief outline of grounded is presented, as well as a description of the application of theory to the research design and analytical processes for this study.

Theoretical Definitions

As individual theories, both pragmatism and constructivism have ambiguous definitions, which translate into numerous versions of each philosophy. Pragmatism can generally be defined as a worldview that focuses on the use of "knowledge as an instrument" to determine the

best solution to a particular problem (Schwandt, 2007, p. 240; Creswell, 2009). Therefore, the overarching theme of pragmatism is "integrating the process of thinking and doing" with critical reflection to purposefully change a situation or environment within a specific context (Gordon, 2009, p. 49; Creswell, 2007). Similarly, constructivism focuses on knowledge building based on the perceptions of participants within a specific cultural context (Schwandt, 2007; Patton, 2002). However, unlike pragmatism, value judgments also influence constructivism because constructivism emphasizes understanding of individual participant meanings instead of the social group as a whole (Gordon, 2009). However, Gordon suggests that pragmatism and constructivism be melded together to create a new paradigm to guide educational research because a combined philosophical approach is better suited to studying the process of teaching and learning than either philosophy alone. This section discusses the definition and merits of each philosophy individually and then use a critique of each philosophy to argue for the benefits of using both pragmatism and constructivism as a combined conceptual framework for educational research.

Historical Roots of Pragmatism

Pragmatism is a contemporary philosophical approach generally attributed to American philosophers; however, its foundation stems mainly from British and European philosophies that evolved during the Scientific Revolution and the Enlightenment (Ozmon, 2012). Early pragmatic underpinnings are evident in the works of Francis Bacon, Herbert Mead, John Locke, Jean-Jacques Rousseau, August Comte, and Charles Darwin (Ozmon, 2012). Bacon developed the use of inductive thinking as a means to advance the understanding of humans in the context of daily life because it emphasizes the use of careful observations about the natural world to

develop generalized explanations about a phenomenon, and became the foundation of the scientific method (Klein, 2012). Although the scientific method uses deductive reasoning to *test* hypotheses, inductive reasoning is necessary for the *creation* of hypotheses. The scientific method provides the framework for pragmatism because "orderly thinking" and the "experimental approach" that forms its basis extend from the physical and natural sciences to the social sciences for examination of the problems of life (Ozmon, 2012, p. 114). The application of the scientific method to examine and solve human social and psychological problems is evident in the work of George Herbert Mead, Auguste Comte, and Charles Darwin because they encouraged the examination of the dynamic interaction humans have with the natural world and with other humans (Ozmon, 2012). In contrast, Rousseau stressed the importance of environmental stimuli to create individual "hands-on" experiences that ultimately influence human behavior (Rousseau, 1762). In addition, Rousseau's emphasis on naturalism played a significant role in forcing educators to reexamine their views on childhood development, to which contemporary pragmatists such as John Dewey gave considerable attention when developing his educational philosophy (Rousseau, 1762; Dewey, 1938). In summary, the early work of these philosophers and scientists provids the basis for pragmatism, which ultimately involves the identification and understanding of the processes of the lived experience of humans in order to change and improve the quality of life (Ozmon, 2012).

Contemporary Pragmatism

Charles Sanders Peirce influenced the advancement of pragmatism towards the end of the 19th century through his influence on William James (James, 1916). Peirce promoted the use of ideas that "are as clear and concise as possible" as well as the importance of reflection with

regard to the consequences of applying the idea to create meaning (Ozmon, 2012, p. 120; Noddings, 2007). James took Peirce's notion of practical consequences and embedded it into his "theory of truth" regarding the human experience, but the name of the theory was changed to pragmatism (Ozmon, 2012, p. 120; Noddings, 2007, p. 25). Although James believed in the science of psychology and its benefit towards improving educational practice in the classroom, he was also aware that teaching was more of an art (James, 1916). James writes that in order for students to learn successfully, teachers must learn the art of observation using a "stereoscopic view" of the student to understand their intellectual needs (James, 1916, p. 11). James proposes the stream or field of consciousness as being an important aspect to the learning process (James, 1916). This theory acknowledges the connection between the physical sensations and emotional responses that one experiences while learning and how these feelings become embedded in the memories created (James, 1916). In addition, past memories become part of the learning process to create "successive mutations" in the field of consciousness (James, 1916, p. 19). Thus, for James, understanding the entire human experience was critical because it provided the best source for finding absolute truth about how the human mind works.

James was able to bring pragmatism into the mainstream of philosophical thought from a psychological viewpoint; however, John Dewey was able to enhance the depth of the pragmatic theoretical approach through actual application in the classroom through the progressive education movement that took place during the early 1900s (Ozmon, 2012). Dewey's emphasis was on the present moment with respect to understanding the lived experience of humans in their natural environment, which is why he often referred to his theories as naturalism instead of pragmatism (Dewey, 1938). In this respect, Dewey's philosophy aligns with Rousseau's emphasis of not forcing children to learn via methods or environments that are not conducive to

their developmental stage (Dewey, 1938; Rousseau, 1762). Learning itself is an experience, but its focus is not solely internal environment (Dewey, 1938). Educators must consider the "active side" of learning which is based upon learning that takes place in the external environment (Dewey, 1938, p. 39). Dewey felt the experiences that take place in the external environment shape the internal learning experiences that take place in the mind, which leads to growth. Thus, for Dewey, life itself is an educational process and the examination of the continuous myriad of sensations and experiences that occurs while living provides the best education (Noddings, 2007). However, Dewey stresses the importance of using a framework to create the external environment which involves using structured learning activities guided by a knowledgeable teacher to provide the best climate for effective learning (Dewey, 1938). In summary, the context of the learning experience as well as reflection were critical components of Dewey's philosophy, which began to move towards a social constructivist educational philosophy instead of a purely pragmatic approach.

The pragmatic worldview has been further elaborated by Ruwhiu and Cone (2010) to encompass indigenous pragmatism which proposes that the role of the social science researcher is to determine how members of a social organization, such as a tribe, use the context of their social experiences to create their meaning and understanding of their immediate environment. This "contextualized knowledge" is used to construct social identity through learned experience that arises from reflections on both successes and failures (Ruwhiu & Cone, 2010, p. 113). Indigenous pragmatism explores the effect of knowledge on application within a specific social context and then uses that knowledge to determine how to implement change (Ruwhiu & Cone, 2010). This adaptation is an extension of Dewey's work; however, instead of emphasizing structured learning experiences, its focus is social learning based on the cultural history and

context within a community (Ruwhiu & Cone, 2010). In addition, indigenous constructivism brings forth a cultural anthropology perspective that is often lacking in educational research. This perspective provides an excellent basis for understanding the process of education between and within cultures of different countries, as well as between institutional cultures, such as those that arise in between academic disciplines within a university.

Historical Roots of Constructivism

Just as pragmatism was one of the most influential educational theories during the early 1900s, constructivism became similarly popular at the beginning of the 2000s (Jones & Brader-Araje, 2002). The interest in and influence of constructivism as an educational theory began out of a dissatisfaction with the scientific approach to education that swept the United States during the 1960s and 1970s, and was led by Dewey as he moved from the pragmatic philosophical approach to a social constructivist approach as alluded to earlier (Jones & Brader-Araje, 2002). The disenchantment of educators towards behaviorism arose because in practice, it seemed to treat humans as though they were laboratory animals learning a task, and because it did not place any responsibility for learning on the learner (Jones & Brader-Araje, 2002). Once implemented in the classroom, behaviorism did not create the expected results (Jones & Brader-Araje, 2002). Students were learning via memorization through standardized testing and were not making meaningful connections with the material that led to lasting cognition (Jones & Brader-Araje, 2002). Thus, a move towards a philosophical approach, such as constructivism, that encompasses the full understanding of the interactions between the environment, as well as the interaction between the teacher and learner, became imperative. Initially, constructivism was a psychology theory; however, it now has various definitions based on context and is generally

thought of as a theory of knowledge and learning that builds upon the experience of the learner to develop a new, more complex knowledge base (Ozmon, 2012; Jones & Brader-Araje, 2002). In other words, transmission of meaning from one person to another is impossible. Instead, meaning is evoked by the teacher and then constructed by the learner because new knowledge is built upon previous knowledge and past experience" (von Glaserfeld, 1995). Therefore, a constructivist educational researcher must identify influences that affect the interpretation or construction of knowledge in a specific context, and then use these constructions of reality to elicit change (Schwandt, 2007). The basic tenet of constructivism is that active immersion of learners in their own meaning-making process is of highest importance because learning occurs through assimilation and adaptation to the environment (Jones & Brader-Araje, 2002; Riegler, 2003)

There are several categories of constructivism, including: cybernetic, psychological / cognitive/personal, biological/neurobiological, physical, psychiatrist/therapeutic, literature/media, sciences, computational, social, system theoretical, pedagogical, radical, and many others related to specific academic and technical disciplines (Riegler, 2003). However, this study focuses on those with the greatest impact on educational research and include the following: psychological/cognitive/personal, social, and radical (Riegler, 2003). The underpinnings for constructivist thought originally stemmed from the work of Jean Piaget and Lev Vygotsky. Piaget studied both the psychology of thought and the psychological experience in order to understand the "dual nature of intelligence as something both biological and logical" (Piaget, 1950, p. 3). Much like Dewey, Piaget's work emphasized the construction of individual knowledge based on experience. However, Piaget's focus was the individual development of children, especially with regard to the sensory and language aspects of learning (Piaget, 1950;

Jones & Brader-Araje, 2002). Piaget believed that except for the sensory motor sensations of hunger or basic affection, the social environment had little effect on learning in children until they were able to speak (Piaget, 1950). He felt that even at the beginning of the use of rudimentary language by children, the capacity for intuitive thought, as well the ability to assimilate and reflect upon new information, is accelerated (Piaget, 1950).

Like Piaget, Vygotsky also studied the developmental aspects of childhood and the influence of both spontaneous interactions and formal structured learning experiences, as well as the enhanced capability to learn as language skills increased (Ozmon, 2012). However, the theories developed by Piaget and Vygotsky were contradictory in that Piaget thought cognitive development preceded learning and Vygotsky thought just the opposite was true (Piaget, 1950; Vygotsky, 1930). This disconnect between their theories explains why Piaget's version of constructivism is often called personal constructivism (Piaget, 1950). Vygotsky aligns with social constructivism due to his careful attention to social interactions and their effect on development (Vygotsky, 1930). Vygotsky (1930) believed that learning itself was not developmental because individuals have their own developmental achievement process that is set in motion through both organized (classroom) and unorganized (environment) learning within the context of the social interaction of the culture (Vygotsky, 1930). Vygotsky coined the phrase *zone of proximal development*, which he felt described the crucial developmental period when children began to master language, which further stimulates cognitive development via the internalization of external knowledge and helps to define the child's intellectual potential. The symbols of language allow for the assignment of meaning to objects based on previous experience and for construction of individual meaning related to those contextual experiences (Vygotsky, 1930). In addition, Vygotsky (1930) believed skill mastery occurs by learning the

entire process via immersion, such as an apprenticeship, and guidance from a knowledgeable person instead of learning isolated modules that do not make sense individually. Thus, he viewed social interaction as the driving force behind cognitive development (Vygotsky, 1930).

Ernst von Glaserfeld (1996) define his well-known version of constructivism as radical constructivism because it focuses on high-level thinking and a reconstruction of how one views the world. Von Glaserfeld (1996) believed, like other constructivists, that cognitive skills were adaptive, and he did not view knowledge as a commodity obtained at the end of the education process as dictated in Western philosophy. Instead, knowledge comes from actively building the mind to create the learner's "organization of the experiential world, not the discovery of an objective ontological reality" (von Glasersfeld, 1996, p. 2). Consequently, as one learns, he or she creates a reconceptualization of the world (von Glasersfeld, 1996). This goes against the goal of most other educational philosophies that purport the ultimate aim of education as finding a universal truth (von Glasersfeld, 1996). Therefore, von Glaserfeld (1996) created a model that is drastically different because it emphasizes identifying the relationship between what the learner experiences as real, such as cultural language and thought patterns, the cognitive structure created from these experiences, and the questions as to what is real about the world in order to examine existence "beyond our perceptual interface" (p. 4).

In summary, radical and psychological constructivism both focus on the individual's internal cognitive processes in relation to knowledge construction; whereas, social constructivism emphasizes social processes and interactions as the main sources of knowledge building (Gordon, 2009; Schwandt, 2007). Consequently, *knowing* replaces knowledge as the product of education.

Pragmatic Constructivism in Education

A disconnect exists between theory and practice in educational research, which in the past has mainly emphasized the insights of students instead of the insight of the teacher (Gordon, 2009). Faculty members have specific insights that arise from their own acculturation process both as students and as academic professionals, which contribute to the development of their scholarly identity (Gordon, 2009). Thus, educators are constructing knowledge as they reflect on their own educational and professional experiences, or their lived experience. The construction of this knowledge is not merely an individual process, nor is it solely a social process (Gordon, 2009). Instead, construction of knowledge through both individual and social processes requires active involvement as well as reflexivity on the process (Gordon, 2009). Therefore, combining pragmatism and constructivism into one working theory called pragmatic constructivism provides a unique interpretation and understanding of the processes of education and its influence on faculty members and students in developing their scholarly identities.

The foundation of pragmatic constructivism is solidly comprised of Dewey's pragmatism combined with the basic tenets of personal, social, and radical constructivism (Gordon, 2009). Dewey's pragmatic approach emphasized that derivation of "genuine knowledge" takes place through the integration of "thinking and doing" (Gordon, 2009, p. 49). This integration requires that participants be actively involved in the process being studied and engage in reflective action about that process (Gordon, 2009). Dewey (1897) viewed education as continuous reconstruction of experiences and advocated that personal reflection about the shared learning

experiences take place on a cultural or community level elicit societal change. Further, James (1916) presents his theory of "*stream of consciousness"* as complementary to constructivism because it recognizes the importance of previous experiences and emotional responses have on memory development and meaning making.

The constructivist influence on pragmatic constructivism includes examining the social context in knowledge development, as well as the development of critical thinking skills throughout the learning process (Gordon, 2009). Constructivism provides an excellent underpinning for the examination of the interaction between educational theory and practice because it accounts for both the individual processes (radical constructivism) and social processes (social constructivism) that influence both knowledge building and meaning making (Gordon, 2009). Gordon suggested that because the original intention for constructivism was for the psychological and biological examination of behavior education, it does not provide an adequate guide for the examination of educational practice as a lived experience when used as the lone conceptual framework for educational research. Both theories view the experience of actively living as a life-long stimulation for cognitive development based on interaction with the environment, which includes both cultural and environmental aspects. Thus, the theoretical combination of pragmatism and constructivism is necessary to provide an adequate theoretical underpinning for educational research in order to provide a holistic understanding about the processes of cognitive development and meaning making that occur for both teacher and student.

Grounded Theory

Grounded theory emphasizes both inductive and deductive processes used to generate theory throughout the course of data analysis instead of using data to prove a theory (Gibson & Brown, 2009). The grounded theory approach generates concepts and hypotheses during data analysis through the process of data "coding, memo writing, theoretical sampling, triangulation, and the constant comparative method" which continues until data saturation is achieved (Gibson & Brown, 2009). The generation of hypotheses is both inductive and deductive because the process of interpreting the data is based on instinct and familiarity with the field studied, which leads to the creation and then formalization of relationships between the identified concepts (Gibson & Brown, 2009). Therefore, grounded theory provides the foundation for data gathering and analysis for studies based on qualitative methodology to ensure credibility of both the data and the researcher (Gibson & Brown, 2009).

Definition of Scholarship and Role Prioritization

Section 2 provides an overview of the historical and conventional definitions of scholarship, as well as the influences and history of role prioritization. The first section outlines the history of academic profession and its influence on both role prioritization and scholarship. The second section describes the role of institutional and departmental culture on the definition of scholarship and role prioritization.

A Brief History of Faculty Roles and Scholarship

The development of the academic profession in the United States began during the Colonial Era (1636-1789) (Cohen & Kisker, 2010). Originally, college teaching positions consisted of a temporary, part-time assignment for male students who had recently graduated

from a baccalaureate programs and were looking for permanent employment in the ministry or law (Schuster & Finkelstein, 2006). During this period, college teachers were tutors who fulfilled multiple roles during their tenure, including teacher, custodian, and mentor to a group of assigned pupils (Schuster & Finkelstein, 2006). Tutors became both intellectual and spiritual role models for students (Schuster & Finkelstein, 2006). The use of tutors as the backbone of higher education professionals is a derivation of the British higher education system, which emphasizes character building, as well as civic and religious leadership (Boyer, 1990). During the second half of the 18th century, the Emergent Nation Era (1790-1869), the number of colleges increased, which led to the emergence of the permanent professor (Cohen & Kisker, 2010; Schuster & Finkelstein, 2006). This new trend led to the professionalization of faculty towards the end of the 19th century, which led to a core of permanent faculty members with academic specialties, or disciplines (Cohen & Kisker, 2010; Schuster & Finkelstein, 2006). The professoriate consisted of older, more experienced academics who focused on research and teaching in academic discipline instead of tending to the development of a cohort of students (Cohen & Kisker, 2010; Schuster & Finkelstein, 2006). Thus, the permanent professorship was now a valid career choice instead of a source of temporary employment.

As the 19th century saw this shift to professionalization of higher education faculty, discipline specialization intensified and now required graduate level training, which generally took place at German research universities (Schuster & Finkelstein, 2006). The German higher education system heavily influenced the American basis of professorships and the promotion of faculty as experts in their discipline (Schuster & Finkelstein, 2006; Gappa, Austin, & Trice, 2007). Initially, the emphasis of the professorship in order of importance was teaching and then service to the church and community (Schuster & Finkelstein, 2006). However, by the middle of

the 19th century, the scientific method had displaced religion, which led to a paradigm shift in America that emphasized industrialization and materialism during what is known as the University Transformation Era (1870-1944) (Cohen & Kisker, 2010; Schuster & Finkelstein, 2006). This shift gave rise to the American research university, which focused less on religious teachings and began to place greater value on driving the economic development of the nation through scientific discovery and innovation (Cohen & Kisker, 2010; Schuster & Finkelstein, 2006; Gappa, Austin, & Trice, 2007). Land grants from the government assisted in the era of nation building through investment in new research universities that emphasized research and development of key factors such as military advancements, improvements in agriculture, and engineering (Cohen & Kisker, 2010; Boyer, 1990). An allegiance to government played an important role in restructuring academic priorities, and eventually a reprioritization of faculty roles (Gappa, et al., 2007). Research replaced teaching as the center of the academic role, which spurred the creation of discipline-based departments requiring doctoral level training and led to beginning of the "publish or perish" mentality in academe (Gappa, et al., 2007, p. 51). This era also ushered in a new form of community service through the acknowledgement of service to the community as scholarly work in the form of applied research (Boyer, 1990). Previously, community service work consisted of religious activities or participation in historical or literary societies (Cohen, & Kisker, 2010). Finally, in the early 20th century, the devastating effects of the Great Depression led to a new vision for the nation that would use advancement of knowledge through university research as the key to prosperity and national security (Boyer, 1990). The intensification of academic research during the 1940s led to an increase of scholarly publications, discipline specialization, and the professional societies that dominate academia

today (Schuster & Finkelstein, 2006). The three-part role of the professional academic, research, teaching, and scholarly service, in combination with the development of the tenure system that makes up the basis of the contemporary higher education system were now in place (Gappa, Austin, & Trice, 2007; Boyer, 1990).

Critics of current higher education faculty claim that due to the mantra "publish or perish," teaching duties have been neglected for the past 100 years (Honan & Teferra, 2001). Boyer (1990) suggested that the cultural change of the professoriate became restrictive and that over the past several decades the emphasis on research has overshadowed the true definition of academic scholarship. He describes the professoriate as "…academics who conduct research, publish, and then perhaps convey their knowledge to students or apply what they have learned" (Boyer, 1990, p. 15). Departmental culture promotes an atmosphere of pressure to publish and promotion of research as the main form of scholarship, with little consideration of the value of scholarship in teaching (Serow, Van Dyk, McComb, & Harrold, 2002). This type of atmosphere often results in the accusation that professors at research universities neglect their teaching and service responsibilities in order to devote their time to research (Serow, et al., 2002). Further, there is an assumption that a professor who is actively conducting research and has a doctorate degree must have the skills necessary to teach and therefore does not need to be concerned with understanding the pedagogy behind effective teaching (Boyer, 1990). Many faculty describe being assigned classes to teach, but believe the real expectation by their department is to conduct

research and to find research funding that will bring money to the university (Boyer, 1990). Teaching becomes less important as a measurement of scholarly activity when seeking tenure in large part because teaching skills are subjective and indicators of research productivity via publication and presentations are objective, and thus quantifiable (Boyer, 1990; Fairweather & Beach, 2002).

Further erosion of the value of undergraduate instruction occurred during the 1980s when the majority of colleges aligned with the free market model of higher education (Brint, 2009). The free market model emphasizes the role of students as consumers and education as a product that provides the credentials necessary to obtain employment (Brint, 2009). Colleges and universities opted to become nimble in their development of new programs to address the demand of the marketplace for career-specific training (Brint, 2009). Brint opined that the immediate demand for new programs may have led to a lowering of academic standards in order to meet the needs of students who were paying customers who view education as a guarantee to employment. When combined with an emphasis on faculty research instead of quality teaching, the lack of academic rigor led to a further decline in educational quality (Brint, 2009). In today's society, with its shift away from industrialization toward an emphasis on global competition, students are required to have a sound background in their discipline (Scott, Lisagor, & Marachi, 2009). A global society requires teaching pedagogy that moves beyond a teacher-centered knowledge transmission model to a model that emphasizes student learning via application of knowledge in the classroom (Scott et al., 2009). Therefore, to meet the needs of 21st century students competing in a global scale for employment, today's academic professionals must not only be experts in their discipline, but also experts at *teaching* that discipline.

A Redefinition of Scholarship

Redefining scholarship to include teaching as a highly rewarded form of scholarship that is included in tenure reward system, was a paradigm shift initiated by Boyer (1990). Boyer defined the scholarship of teaching as a dynamic faculty role in which a teacher is "well-read and intellectually engaged in their field" (p. 23). However, this definition is often misconstrued, particularly true at research-intensive universities, where the interpretation of the scholarship of teaching is a combination of excellence in teaching and being an expert in your field, which is not the same as using teaching as a form of scholarship (Kreber, 2002; Wood, 2009). Excellence in teaching requires a dedication to one's own discipline, as well as a concerted effort to use this knowledge to motivate and educate students in order to ensure they have actually learned the material (Kreber, 2002). Excellent teachers generally use self-reflection and a learner-oriented teaching style to enhance classroom performance; however, they might rarely consult current literature for the most appropriate teaching pedagogies (Kreber, 2002). Further, some professors strive to become expert teachers who successfully combine their disciplinary knowledge expertise with teaching knowledge expertise, to create pedagogical skill with content knowledge in the classroom (Kreber, 2002). However, to become a true scholar of teaching, one must be both an excellent or expert teacher in their discipline who shares "their knowledge and advances the knowledge of teaching and learning in the discipline in a way that can be peer-reviewed" such as publication, presentations, or mentoring of their colleagues (Kreber, 2002 p. 18).

In his seminal work, *Scholarship Reconsidered*, Boyer (1990) suggested that not all faculty members define academic roles the same way due to personal preference and ability. He outlined four types of scholarship: the scholarship of discovery, the scholarship of application, the scholarship of integration, and the scholarship of teaching. While this research emphasizes

the importance of the scholarship of teaching, it is necessary to briefly characterize and define Boyer's forms of scholarship to enhance the understanding of the importance for allowing flexibility in role definitions and thus one's scholarly identity. The scholarship of discovery focuses on a "commitment to knowledge for its own sake, to freedom of inquiry and to following, in a disciplined fashion, an investigation wherever it may lead," which is another way to describe research in one's discipline (Boyer, 1990, p. 17). Boyer stressed the importance of academic research, because of its contribution to disciplinary knowledge, as well as the excitement generated by new discoveries that permeate and electrify the college campus. The scholarship of discovery aligns with the scholarship of integration, because discovery involves examining newly discovered or old information with a new lens to provide an updated and more holistic picture of the phenomenon being studied (Boyer, 1990). Boyer (1990) also emphasized the need to integrate knowledge between disciplines, which requires restructuring traditional disciplinary boundaries by encouraging interdisciplinary collaboration to reconfigure the map of knowledge. Collaboration allows for interdisciplinary communication, which is important because each discipline has its own culture and language, which if not understood to some extent by other departments causes "mutual incomprehension" (Woods, 2007, p. 854). Students and faculty with competence in interdisciplinary communication are more likely to collaborate on research projects that not only enhance knowledge, but conceptual and critical thinking skills as well (Woods, 2007). The ability to collaborate between and within disciplines is becoming a new requirement for 21st century students to succeed in a multi-professional and multi-cultural global workforce who may be involved in solving complex world issues that require a more holistic academic approach (Woods, 2007). Finally, service, which is defined as providing civic or social services to the community or university, is generally described as "not doing

scholarship but doing good" (Boyer, 1990, p. 22). However, Boyer insists that since service work is essentially the application and integration of discovered knowledge from one's disciplinary research that is therefore an important form of scholarship.

The Influence of Scholarship Definition on Role Prioritization

Debates surrounding the definition of scholarship have thus ensued since Boyer's (1990) initial report. Marsh and Hattie (2002) suggest that department culture, in combination with the values and characteristics of individual faculty members, is the major influencing factor in how an academic department defines scholarship. Academic departments struggle with the research-teaching nexus, which has become one of the main arguments surrounding the nature of the relationship between teaching, research, and student learning (Prince, Felder, & Brent, 2007). Therefore, the research-teaching nexus becomes the ultimate determinant of faculty role prioritization, as well as whether teaching, research, or a combination of both become the basis for the definition of scholarship. Research is usually the winner of the research-teaching nexus because faculty know the basis of the faculty reward system is research productivity; however, there is also a push from administration to be active, outstanding teachers and researchers (Felder, 1994; Prince, et al., 2007). There is a belief in higher education that faculty research enhances the practice of teaching, and "much of the rationale for the existence of research universities is that these two activities are so mutually reinforcing that they must coexist in the same institutions" (Marsh & Hattie, 2002, p. 603). However, there is ample disagreement in the literature describing the relationship between teaching and research as being antagonistic instead of complementary (Marsh & Hattie, 2002). Several studies indicate that the benefit of faculty research on teaching effectiveness is small, and this has proven to be especially true for the

scientific disciplines (Felder, 1994; Marsh & Hattie, 2002; Jenkins, 2004; Prince, et al., 2007). However, Marsh and Hattie (2002) proposed several other confounding variables that may affect how faculty members integrate teaching and research. Faculty members who believe they are highly skilled teachers invest more time in teaching than research, while faculty who believe they are more highly skilled at research, will invest their time there (Marsh & Hattie, 2002). In addition, the degree of satisfaction a faculty member receives from either teaching or research determines the level of effort put forth towards each role, thus leading to the favored role receiving more effort (Marsh & Hattie, 2002). Personal goals and extrinsic rewards, such as teaching awards, may also affect role prioritization (Marsh & Hattie, 2002). Finally, beliefs held about the relationship between teaching and research greatly affect role prioritization (Marsh & Hattie, 2002).

Many faculty members believe there is a symbiotic relationship between the two role components. Conversely, many give priority to one role over the other (Marsh & Hattie, 2002). Prince, Felder, and Brent (2007) suggest a new paradigm, which integrates Boyer's (1990) four types of scholarship into one teaching paradigm to strengthen the research-teaching nexus based on the need of the department and the students. The new paradigm provides a more holistic experience for both faculty and students, because the academic experience emphasizes involvement of students in faculty research, as well as an emphasis on inductive teaching methods such as course projects and problem solving (Marsh & Hattie, 2002). A more holistic teaching paradigm provides students with authentic learning experiences that not only contribute to their academic and professional preparation, but also to the scholarship of the department as a whole (Marsh & Hattie, 2002). In addition, this new paradigm emphasizes providing professional development opportunities for faculty members that focus on both teaching and

research, as well as rewarding faculty members for successful integration of all four types of scholarship outlined by Boyer (1990) (Marsh & Hattie, 2002). In summary, a more integrative approach to faculty evaluation that encompasses all facets of the faculty role, as well as taking into consideration the scholarly identity of the faculty, such as which roles they prefer to emphasize based on their talents, would provide a more rewarding experience for both students and faculty members (Colbeck, 2002; Marsh & Hattie, 2002).

Influence of Organizational Culture on Scholarly Identity

Each educational institution has a shared "sense of purpose and continuity" which is better defined as its overarching organizational culture (Bergquist & Pawlak, 2008, p. 10). An understanding and assessment of the culture of a school and its individual departments is essential for meeting the needs of 21st century students facing the ever-growing, dynamic global economy (Bustamante, 2008; Walvoord, et. al., 2000). Six different types of interrelated cultures act as the main drivers of the dynamic North American culture of higher education institutions, including that of campus leaders and faculty members (Bergquist & Pawlak, 2008). The collegial, managerial, and developmental cultures are the three types of culture recognized as being especially influential on faculty scholarship and identity (Bergquist & Pawlak, 2008).

The collegial culture stems from the colonial and German roots of North American higher education, which emphasizes the autonomous "generation, interpretation, and dissemination of knowledge," as well as the prestige bestowed on faculty for their academic research (Bergquist & Pawlak, 2008, p. 15). Thus, research is the component of faculty work weighed most heavily in the determination of scholarship because it provides quantifiable proof of work in the form of publications and presentations (Bergquist & Pawlak, 2008). Whereas the

qualitative nature required to judge quality of teaching, has led to the creation of the managerial culture (Bergquist & Pawlak, 2008). The managerial culture goes hand-in-hand with the collegial culture because a portion of its meaning making comes from evaluation of the productivity and work of faculty members (Bergquist & Pawlak, 2008). In contrast, Bergquist and Pawlak (2008) explained that the developmental culture finds meaning in both personal and professional growth of the entire academic community and has a special emphasis on faculty development, especially teaching. Therefore, a philosophical gap exists between faculty members who identify with the collegial/managerial cultures versus the faculty members that identify with the developmental culture.

The following sections outline the influences of both institutional and departmental culture on role prioritization on definition of scholarship.

Institutional Culture

The perception of culture is often that of a static or unchanging entity; however, the culture of institution is dynamic and evolves through interactions with others, as well as individual behavior (Schein, 2010). Further, a description of leadership skills could include the exertion of behavior that is influential or used as a model for determining the behavior of others, which is essentially the creation of culture (Schein, 2010). At institutions of higher education, the overarching culture springs from a combination of the current university president as well as history of the organization (Tierney, 1988; Schein, 2010). Leadership establishes the foundational "social order," which uses language and symbols to represent the values and subsequently the culture an administration desires for the institution (Tierney, 1988; Schein, 2010, p. 3). The formal vision and mission statements articulated by a university perpetuates the

espoused culture and becomes especially compelling in the meaning-making process when used in conjunction with the speeches, publications, and actions of the president (Tierney, 1988; Schein, 2010). The rhetoric espoused by a university president provides the backbone for the mission of each college and department within the institution and sets the stage for program and curriculum development due to its pervasive and permeating nature in organizational operation (Tierney, 1988; Schein, 2010). However, Tierney (1997) pointed out that institutional culture is malleable and does not require discovery and conformity in order for a person to feel part of the organization. Instead, the interpretation of culture is a culmination of the "partial and mutually dependent knowledge of each person caught in the process and develops out of the work they do together" (Tierney, 1997, p. 4). In addition, Tierney (1997) described adaptation to a new culture as an "interpretive process involved in the creation" (p. 6) of meaning rather than something transmitted from institution to individual.

Departmental Culture

Although the underlying operations of an organization are leadership driven, there are also subcultures, such as academic departments, that may also hold their own sub-set of assumptions reflected in task prioritization based on their unique experience and educational background. (Schein, 2010). As students become immersed in departmental culture as both an undergraduate and graduate student, a foundation is created that becomes the basis for how aspiring faculty view life as a professional academic (Lee, 2004). During this critical period, aspiring faculty grapple with multiple roles which include: 1) being graduate students, 2) becoming experts in their field of study, 3) becoming familiar with the academic profession as a teacher and researcher, and 4) becoming a member of their department (Austin, 2002; Lee,

2004). In addition, doctoral study is a fundamental process through which aspiring faculty members learn the professional norms related to teaching and research (Braxton, Lambert, & Clark, 1995). Weidman and Stein (2003) describe the importance of both informal and formal aspects of departmental climate as being one of the key drivers in graduate student socialization. Informal aspects of department culture includes collegiality between faculty members and inclusion of students in faculty research (Weidman & Stein, 2003). The provision of an encouraging and collegial faculty environment, as well as participation in scholarly activities with faculty members, were significantly associated with transmission of disciplinary norms to potential faculty members (Weidman & Stein, 2003). Therefore, a departmental culture that provides direct access to faculty who are actively engaged in disciplinary scholarship and collegiality between faculty members made the most significant impression on graduate students as to how they conceptualized faculty roles (Weidman & Stein, 2003). Further, formal socialization aspects, such as departmental goals and values, as well as other written policy statements reinforce informal cultural aspects that assist students in constructing their initial conceptualization and prioritization of their academic roles (Weidman & Stein, 2003). Together, the processes experienced by aspiring faulty members are labeled anticipatory socialization as they learn how to become members of the academic profession through observation during their doctoral education (Braxton, Lambert, & Clark, 1995).

Disciplinary culture has a strong influence on scholarly identity because faculty members mentor students, and students, in turn, begin to model those held in high esteem (Austin, 2002). Relationships with faculty members, as well as their peers, present "patterns of professional interactions" that can affect the value that a prospective faculty member places on research and teaching (Deem & Lucas, 2007; Lee, 2004). Graduate students learn to emulate the behaviors of

the faculty members with whom they work, especially with regard to how they prioritize their time and their interactions with students (Austin, 2002). However, graduate faculty mentors often do not serve as role models for teaching practices (Austin, 2002). Interviews conducted with doctoral students demonstrated that some graduate faculty mentors offered to discuss teaching practices with them; however, most doctoral students relied upon their undergraduate experience as a basis for their choice of teaching paradigms (Austin, 2002). Austin (2002) reports that the majority of students in the study indicated that they were not offered formal instruction on best teaching practices and the professional development opportunities that were offered for teaching practice were not "organized systematically to ensure growth or appropriate preparation" (p. 105). Therefore, foundational preparation for aspiring faculty members during graduate school consists mainly of research experience with a faculty member, with little value or formal training with regard to the role of teaching. Further, Braxton, Lambert, and Clark (1995) reports that graduate students who worked as teaching assistants were able to identify the four teaching norms used to describe inappropriate interpretation of undergraduate education, which include: interpersonal disregard for students and other colleagues; particularistic grading (awarding grades subjectively versus objectively); moral turpitude; and inadequate planning and organization of the courses they teach. Therefore, students who have initial training related to teaching might be better prepared to teach once they become a faculty member (Austin, 2002).

Student Development Theory and Role Prioritization

The process of self-authorship is a process of identity negotiations that occurs throughout a lifetime and is the basis for development of a student's core self (Baxter Magolda, 2004). However, most academic disciplines ignore identity development because academic learning and

student development have evolved as separate entities in higher education (Keeling, 2004). Similar to *Scholarship Reconsidered* by Boyer (1990), Keeling (2004) suggests the notion of *Learning Reconsidered*, which emphasizes a shift from the old paradigm of knowledge transmission to an emphasis on transformation via identity development for the students of today. Keeling (2004) recommends that students be educated in a more holistic fashion during which transformative learning experiences help them examine and reframe both personal and professional values that can be applied to a career in their academic discipline. Transformative learning experiences involve new teaching paradigms that allow student to develop cognitively using reflective judgment, such as service learning, community service, research projects with faculty members, and study abroad experiences (Keeling, 2004). Such experiences provide the basis for students to learn content and become competent in their field, which is imperative in the discipline of biological sciences (Keeling, 2004; Sirum & Madigan, 2010; Holyoke, et al., 2012). Finally, student development theory provides a new lens for the examination of how foundational experiences aspiring faculty members have during their own academic career influences initial role conceptualization as a new faculty member.

Summary & Implications for Research

It is apparent from reviewing the literature that higher education, especially the professoriate, is constantly changing based on societal needs. In fact, improvement of undergraduate education is one of the top five demands identified in the literature as promoting transformational change in an academic department (Walvoord, et al., 2000). A redefinition of scholarship and learning has created a paradigm shift in academic departments towards being student-centered, instead of faculty centered (Scott, et al., 2009, p. 14). The promotion of an

undergraduate biology curriculum as outlined by the AAAS (2010) core competencies, values collaboration, diversity, and critical thinking skills, which students can apply to future careers is becoming the norm (Scott et al., 2009, p. 14). As new teaching paradigms to improve undergraduate education continue to emerge, and the use of student development theory encroaches into academic departments, the department will need to adapt to accommodate these changes, or risk the fate of decreasing enrollment in their programs.

Understanding the culture of a department allows university and departmental leadership to enhance their understanding of faculty and disciplinary culture, which greatly assists in the ability to achieve the buy-in necessary for change implementation (Walvoord, et. al, 2000). Walvoord, et al. (2000) identifies several cultural categories found in academic departments that require consideration for initiating transformational change, which include academic environment, type of people in the department, departmental values, leadership changes, and the level of departmental engagement in decision-making. Thus, culture is not a top-down process passed from leadership to faculty members (Tierney, 1997). Instead, culture is a give-and-take process that requires cooperation and a shared set of values between leadership and faculty members within a department, and is considered to be emergent due to its adaptive nature (Tierney, 1997; Walvoord, et. al, 2000). Therefore, examination of the faculty acculturation process enables cultural and contextual elements of departmental culture used to define scholarship and prioritize the academic role, which allows for a deeper understanding of how transformational change are negotiated within a department. Further, identification of these cultural elements brings to light the important role of the academic socialization process in acculturating students.

CHAPTER III

RESEARCH DESIGN

Introduction

Chapter III outlines the research design, a description of the study population, and the sample population who participated in this study. Explanation of the data gathering methods, the triangulation methods, and the analytical methods are included in this chapter.

The qualitative strategy of inquiry chosen is a case study approach because it is an empirical inquiry used for in-depth examination of a contemporary phenomenon (Yin, 2014). The examination of contemporary phenomenon within a specific context enhances the understanding of the "contextual conditions pertinent to the case" (Yin, 2014, p. 16). The contemporary phenomenon investigated in this study involves the socialization and acculturation of faculty members within the context of a biology department. In addition, a case study approach allows for the use of different epistemological orientations for the inquiry, such as the pragmatic constructivism and grounded theory framework used for this study (Yin, 2014). A sound theoretical framework considers ethical issues and begins with set guidelines for specific data gathering methods to ensure the researcher trustworthiness, credibility, and competence (Patton, 2002; Anfara, et al., 2002). Therefore, using pragmatic constructivism with a grounded theory foundation provides the conceptual framework that guides the data gathering and analyses processes to build a "coherent interpretation" of the data (constructivism) (Marshall & Rossman,

2010, p. 208). Finally, a qualitative design strategy must be emergent and flexible to create a more holistic picture of the reality being studied and allows for critical assessment and modification of the data gathering process from beginning to end (Anfara, et al., 2002; Magolda & Weems, 2002; Marshall & Rossman, 2010).

A qualitative conceptual framework must also address both quality and rigor, which requires accounting for validity, both internal and external, reliability, and objectivity (Anfara, et al., 2002). Therefore, in order to ensure internal validity, reliability, and objectivity, a three-pronged approach to data gathering known as data triangulation was used because this process involves collecting three main forms of qualitative data: interviews, observations, and site documents (Anfara, et al., 2002; Patton, 2002). Validity is especially important to the qualitative researcher, because unlike a quantitative researcher, who depends on a carefully constructed and validated instrument, the researcher is the data collection instrument (Patton, 2002). To meet internal validity requirements, I engaged in high quality, prolonged fieldwork that included in-depth, open-ended interviews, detailed observations, and analysis of documents collected from the fieldwork site (Anfara, et al., 2002; Patton, 2002). The use of a purposive sample and thick, rich descriptions ensured external validity in order to draw conclusions that could apply to a larger population (Anfara, et al., 2002; Patton, 2002). Triangulation also ensures reliability and objectivity, which is necessary for maintaining dependability and confirmability of a qualitative study (Anfara, et al., 2002, 2002). The use of several types of data gathering methods not only strengthens the internal validity by demonstrating that the verification methods used to draw conclusions from the data indeed match those found in reality, but the instrument (the researcher) is also more reliable when making those conclusions (Anfara, et al., 2002). To ensure instrument (researcher) reliability, it is important to maintain excellent records while doing fieldwork

because it creates an audit trail that others can follow to verify that the researcher actually completed the data gathering process in question. In addition, the researcher uses peer examination of the data and analysis, as well as a code-recode strategy to ensure that the correct conclusions are made during the data analysis process (Anfara, et al., 2002). Thus, constant comparative analysis, an aspect of grounded theory, allows the researcher to determine if the desired themes are emerging or if a new theme is emerging, as the data was gathered, and is also helpful for categorization and pattern identification (Anfara, et al., 2002). Constant comparative analysis is therefore both inductive and deductive in nature, which allows for the generation of theory throughout the course of the data analysis process (Gibson & Brown, 2009).

Purpose of the Study

The purpose of this study is to identify how departmental culture influences scholarly identity, and conceptualization and prioritization of teaching, research, and service roles of biology faculty members at a large, four-year university with doctoral/research level ranking. A better understanding of the acculturation process of biology faculty members is necessary to initiate changes in biological science education in order to improve student learning and retention (American Association for the Advancement of Science, 2010). Each biology faculty member derives multiple meanings from the acculturation process they experienced as a student and currently experience as a faculty member related to biology department culture (disciplinary-based), as well as the overarching culture of the university (Lee, 2004). Disciplinary-based acculturation begins as part of the graduate school socialization process, which is honed through

experience at the faculty member's hiring institution and its departmental culture (Lee, 2004). This combination of discipline-based cultural influences is the primary driver for a faculty member's professional and personal identity, which then influences how they prioritize their academic roles, and thus how they define scholarship (Lee, 2004).

Focus of the Study

The focus of this study is to explore the cultural factors that influence the development of scholarly identity and how a faculty member's scholarly identity subsequently impacts the teaching paradigms chosen by faculty members of a biology department.

Research Questions

1. What are the cultural influences that shape role conceptualization and prioritization of biology faculty members?
2. How do biology faculty members define scholarship?

Researcher as Methodologist

Pragmatic constructivism is a newly synthesized conceptual framework that was chosen for this study because there is a disconnect between theory and practice in educational research, which in the past emphasized the insights of students instead of the insights of the teacher (Gordon, 2009). Each biology faculty member has specific insights that arise from their own acculturation process both as students and as academic professionals in a higher education setting, which shapes their scholarly identity, and thus their teaching practice (Gordon, 2009). In essence, biology professors are constructing knowledge as to what they feel are effective teaching methods while they reflect on their own educational and professional experiences. The construction of this knowledge is not merely an individual process, nor is it solely a social

process (Gordon, 2009). Instead, knowledge construction occurs through both individual and social processes, which requires active involvement as well as reflexivity on the process (Gordon, 2009). Therefore, with pragmatic constructivism as the underpinning theoretical perspective and elements of grounded theory used as the underlying analytical theory, this study is able to examine or analyze the underlying culture that influences scholarly identity and teaching practices within the biology department by identifying common themes between faculty members.

Site Description

Transformation University is a public doctoral/research university founded in the late 1800s (Carnegie Foundation, 2014). The university is located in a small Midwestern city with a total student body of approximately 27,000 students. The classification of doctoral/research universities is under both high level and very high level research universities and above all other categories of universities and four-year colleges (Carnegie Foundation, 2014). Transformation University offers over 200 undergraduate degrees, as well as over 70 graduate programs at the master's, specialist, and doctoral level, as well as a college of medicine. Transformation University purports that it is a student-centered university with an emphasis on teaching and direct interaction with faculty members in order to provide students with an education that provides them with the necessary skills for success in their respective field. Transformation University strives for national recognition, and due to its ranking as one of the "Top 100" large public universities in the nation in 2014 by U.S. News and World Report, it has achieved that goal because of its innovative programs and research facilities, which other universities within its home state do not provide.

The biology department at Transformation University offers both undergraduate and master level degrees in several biological specialties and partners with several other departments for two interdisciplinary doctoral degrees. The biology department is a leader in natural resources-related research within its state and offers other degree specialties not offered by other universities. Thirty full-time tenure-track faculty members and seven fixed-term faculty serve over 1000 undergraduate students and 70 graduate students. Faculty members at Transformation University are also unionized. Undergraduate student enrollment numbers reflect a doubling in biology majors over the past decade, and tenure-track faculty numbers have increased by 71%. In addition, the biology department has recently experienced a 10-fold increase in the number of external grants obtained for research and is in the process of building a $95 million science building, which will house state-of-the-art laboratories, and learning spaces for outdoor experiential learning, hands-on laboratory studies, and active-learning classrooms. Finally, the biology department at Transformation University is in the process of curriculum development for alignment with the core competencies outlined in the AAAS Vision and Change (2010) recommendations.

Ethical Considerations

First, the researcher completed a course in the use of human subjects in educational research administered by the Collaborative Institutional Training Initiative (CITI) (Appendix A). Second, the Institutional Review Board (I.R.B.) at Transformation University approved this research study, as did the biology department chair. In addition, the dean of the college who oversees the department as well as the faculty association received the same e-mail letter. In order to gain access, all identified gatekeepers received a research proposal that included all

potential risks and benefits, a description of participant selection, the consent forms, and methods for protecting participant confidentiality (Magolda & Weems, 2002).

Informed consent forms (Appendix B) assured participants of anonymity and disclosed the purpose, procedures, risks, possible benefits, and a withdrawal statement, permission to create an audio recording of the interview, compensation details, and the opportunity to ask questions (United States, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978). To prevent harm to both the university and the participating faculty members, each participant was assigned a pseudonym (Professor A, Professor B, etc.) to ensure that neither the department, nor the faculty members are singled out for their comments or opinions of the socialization and acculturation process at their respective universities (Patton, 2002; Dow-Boyer, 2010). In addition, digitized transcripts and audio recordings of interviews, observations, and any other identifiable documents, were stored in a protected computer or locked filing cabinet inside a locked office away from the research site. Finally, in preparation for data gathering and analysis, qualitative researcher certification was completed through the Collaborative Institutional Training Initiative (CITI) (Appendix A), which provides ethical training in Human Subjects Research.

Participant Recruitment and Selection

A purposeful sampling method of the biology department at Transformation University provided access to the specific type of faculty member required for the study. A purposeful selection of study participants provided assistance in clarifying and understanding the research problem and questions (Creswell, 2009). Therefore, the professors at Transformation University chosen to participate met the following criteria:

1) The university has a biology department that offers at least a master's level program to ensure that faculty members interacts with both undergraduate and graduate students.
2) The biology department has tenured and tenure-track faculty who hold Ph.D. or other equivalent doctoral degrees to assist with understanding the socialization and acculturation process that takes place through doctoral training.
3) The biology department is in the process of a transformational change relating to the improvement of undergraduate biology education.

Recruitment began during August of 2013, and, by the end of February 2014, there were only four participants. A second invitation to all remaining potential participants sent out March 1, 2014, did not elicit any responses; therefore, I developed a strategic recruitment plan based on the demographic data of those who participated. Based on the data collected in my demographic survey (Appendix D), all of the professors who participated are in the same basic age range of 45-55. It appeared from reviewing the faculty list on the department website that most of the faculty members had similar levels of work experience based on their dates of degree completion and work experience listed. I decided to target new recruits based on their reported date of degree earned as listed on the departmental website. A third round of recruitment letters was sent on March 18; however, this new strategy did not elicit any additional participants.

Data Sources

The participant sample is hard to estimate when using emergent design because there are multiple paths of inquiry that provide data sources (Patton, 2007; Gibson & Brown, 2009). A thorough qualitative study requires acknowledgment of data saturation (Gibson & Brown, 2009).

Data and theory saturation are aspects of grounded theory routinely used to determine that the appropriate amount of data gathering and analysis has taken place in order to ensure adequate emergence of themes for theory development (Gibson & Brown, 2009). For this study, I conducted eight interviews, and four classroom observations/site visits; I reviewed 180 documents, and I wrote over 75 memos. Memos consisted of three forms including those relating to research methods, analytical processes, and researcher reflections. Reflective memos were also used to record informal conversations with biology faculty members that occurred through informal means, such as meeting them in the hallway or at a professional conference. When all data sources were combined, data saturation was reached, which essentially became the point at which reviewing additional data became exhaustive and provided no additional insights to the emerging themes.

Interview & Observation Protocols

The interview process began during September 2013 with four members of the Transformation University biology department participating. Initial interviews took place from September 2013 until February 2014. Based on the completion of an initial comparative analysis, I determined that a second interview would further elucidate some of the emerging themes. All four participants agreed to a second interview, which took place between May 2014 and September 2014. I upheld consistency between interviews by using an interview question guide to ensure that all participants were asked the same questions, but, at the same time, the formality of the interview did not interfere with maintaining a conversational dialogue which provides alternate areas of discovery (Appendix D). Both interviews consisted of semi-structured questions and probes in order to record how biology faculty members perceive and

prioritize their roles and how they define scholarship. A handheld digital audio recording device was essential for recording participant interviews. The recordings were stored in the digital field log and then transcribed by myself into text format.

After each initial interview took place, all participant agreed to classroom observations. The time and date of the observation was coordinated with the participant to ensure a successful teaching observation, such as making sure that it was not a day when students were taking an exam or that the participant would be away at a conference during the selected lecture time. During the observations, it was imperative to record specific activities related to direct student-faculty interaction, student-student interaction, teaching pedagogy implemented, and the overall atmosphere/culture of the classroom. Examples of data recorded included how faculty address students, how they handled student questions, student interactions during group work, and if students were engaged in class activities.

Observations

During and after both interviews and observations, I wrote reflective memos detailing my thoughts and reactions to the data gathered during these sessions. The creation of reflective memos was imperative to the data gathering process because the researcher is the instrument and careful attention to influencing factors is essential for maintaining data integrity (Patton, 2007). Thick, rich descriptions and reflective memos also prevent biases that could have implications on data interpretation and analysis (Anfara, et. al., 2002; Patton, 2002). By constantly comparing the questions with answers for both the individual interviews and departmental focus group, a list of additional exploratory questions resulted as new themes emerge (Anfara, et. al., 2002). It was also helpful in categorization and pattern identification to identify themes throughout the data

gathering process (Anfara, et. al., 2002). Subsequent importation of the data into the qualitative analysis software NVivo® organized the data for analysis. In addition, any hand-drawn sketches and conceptual maps that were scanned into a digital format and stored in the field log as an analytical memo.

Constant comparative analysis of the interview transcripts allowed for proper identification of patterns, categorization and data coding. Individual transciption and analysis for all observations, interviews, and researcher memos allowed for determination of emergent themes throughout the data gathering process (Creswell, 2009; Anfara, et. al., 2002). As themes emerged, coding schemes were developed to manage the data, which allowed for content analysis and identification of primary patterns (Patton, 2002).

Field notes are an important source of data in a qualitative study because they are essentially a form of analysis that takes place in the moment of data gathering (Gibson & Brown, 2009). Therefore, field notes were recorded for each interview and observation and a brief demographic survey was administered to each faculty member (Appendix D). Field notes and memos from formal interviews were recorded manually into a field notebook during the initial event and were then transcribed into a digital format. In addition, informal conversations occurred with several faculty members in the hallway of the department, as well as at a conference attended by many of the faculty members. These conversations were recorded manually into a field notebook and then transcribed into a digital copy in the form of a reflective memos for data anlaysis. No audio recordings were obtained for the informal conversations.

Site Artifacts and Documents

Artifacts included digitized public web pages (university, department, and faculty as posted on the public departmental website); public photographs posted on the department website; college newsletters; newspaper articles; and public postings to departmental social media outlets. Cultural artifacts are an important piece of the triangulation process because they include all of the publicly display elements of the culture such as building architecture; published missions and values; observed rituals; products of faculty or student research such as posters;

All site documents and artifacts were gathered and reviewed according to approved university IRB standards. A cursory review of the department website occurred in order to determine the number of faculty in the department because this information was required on IRB documentation; however, no documents were reviewed before IRB approval was granted in order to maintain the integrity of the study. Items were organized for coding in both a digital field log and in NVivo.

Data Interpretation

Finally, data interpretation constructed the reality perceived by the biology professors throughout their socialization and acculturation process in order to understand how this process affects their role conceptualization and prioritization, as well as their definition of scholarship (Patton, 2002; Hill, 2007). Further, because the judgment of analysis and interpretation processes has substantive significance, the extent to which the research findings enhance the understanding of this process, its consistence with similar studies, and usefulness requires

acknowledgement (Patton, 2002). Data triangulation and the ability of the researcher to hone skills, such as subject knowledge and sound judgment based on experience, allows for careful identification of significant patterns (Patton, 2002).

Summary

The body of literature surrounding the socialization and acculturation processes of biology faculty and its application to transformational change is limited to a few dated reports and studies that do not apply directly to the field of biology (Corcoran & Clark, 1984; Tierney, 1988; Braxton, Lambert, & Clark, 1995; Rosch & Reich, 1996; Tierney, 1997; Walvoord, et. al. 2000; Lee, 2004). This research provides a more recent articulation that specifically identifies the socialization process and its effect on role prioritization and scholarship definition in the discipline of biology. Finally, this study enhances the body of knowledge regarding how these cultural influences could lead to transformational changes in undergraduate biology education.

CHAPTER IV

PRESENTATION OF FINDINGS

Introduction

This chapter presents the findings of data gathered over a twelve-month period. Analysis included studying the data gathered from interviews, classroom observations, and documents related to the Transformational University and the department under study based as they related to the focus of this study. The chapter begins with a review of the conceptual framework and the research questions that provided the basis for this dissertation study. A brief description of the study site provides a contextual framework for case study in section two, and the third section provides a brief demographic profile of the study participants, as well as a profile of the department as a whole. In addition, the third section outlines the narratives and site documents used to construct the emergent thematic descriptions of the cultural influences that affect role conceptualization and prioritization of biology professors, as well as the definition of scholarship constructed by the participants. The final section of the chapter provides an interpretive framework for how the identified cultural influences shape the role conceptualization and prioritization, as well as how these influences shape faculty members define scholarship.

Conceptual Framework

The conceptual framework that guides this research, as discussed in Chapters I and II, suggests that academic socialization during a faculty member's undergraduate and graduate education may provide the initial basis for forming scholarly identity, which includes role prioritization, role conceptualization, and definition of scholarship (Lee, 2004). However, the unique set of cultural influences at their current institution of employment may play a greater

role in creating saliency for how faculty members remodel their scholarly identity and redefine scholarship (Lee, 2004). The research question design is based on eliciting answers that help to describe how biology professors conceptualize what it means to be a part of the academic profession, how they prioritize their role as a faculty member, and how they define scholarship (Boyer, 1990; Dow-Royer, 2010; Bolton, & Boyer, 1973; Holyoke, et al., 2012; Rosch, & Reich, 1996; Tierney, 1988).

The study design aims to identify and describe the influence of institutional, departmental, and disciplinary culture on the scholarly identity development of biology professors as they progress through the academic profession. A better understanding of the acculturation process of biology faculty members would assist in the inititation of changes in biological science education aimed to improve student learning and retention (AAAS, 2010). The meaning assigned to the personal experiences of each faculty member occurs within a specific framework, the biology department culture (disciplinary-based), as well as the overarching culture of the institution (Lee, 2004; Patton, 2002). Disciplinary-based acculturation begins as part of the graduate school socialization process and becomes an iterative process as each faculty member encounters varying institutional and departmental cultures at their hiring institution (Lee, 2004). This combination of discipline-based cultural influences is the primary driver for a faculty member's professional and personal identity and may be associated with flexibility in their academic role (Lee, 2004). Departmental socialization and disciplinary-based culture are the most influential with regard to conceptualization and prioritization of faculty academic roles (Lee, 2004).

In addition, this study also examines how biology professors define scholarship. Boyer (1990) defines the scholarship of teaching as a dynamic faculty role in which a teacher is "well-

read and intellectually engaged in their field" (p. 23). Academic scholarship is often defined as the triad of research, teaching, and service; however, a heavy emphasis on research as the most important form of scholarship has dominated academia since the paradigm shift towards research institutions in higher education began in the 1940s (Boyer, 1990; Schuster & Finkelstein, 2006; Kreber, 2002; Wood, 2009). This is particularly true at research-intensive universities, where the interpretation of scholarship often means that the professor is a researcher who is forced to teach (Kreber, 2002; Wood, 2009). Inherent to the faculty acculturation is identifying how faculty members personally define scholarship because construction of scholarly identity shapes this definition. Thus, this researcher asked faculty members for their personal definition of scholarship, which is separate from the definition that emerges from constraints placed on them from institutional, departmental, and disciplinary culture (Lee, 2004). The unit of analysis for this research is the biology department with the nested subunits being full-time, tenured biology faculty members (Dow-Royer, 2010).

Review of Data Gathered

Depth and credibility were part of the data gathering process via data triangulation, which included the use of individual, semi-structured interviews that lasted approximately one hour and site observations that lasted approximately one hour. Initial data gathering took place from September 2013 to February 2014. A second set of individual semi-structured interviews that lasted approximately one hour each were conducted from May 2014 until September 2014. Document analysis included departmental by-laws, university website, departmental website, public social media postings, publicly posted photographs, college newsletters, university strategic action plan, newspaper articles, and the provost's academic prioritization report.

Member checks consisted of informal meetings with several of the participants, as well as with other faculty members via informal conversations in the hallway of the department or at professional conferences. This provided confirmation of the interpretation of the data and were recorded as reflective memos.

Table 1. Data Types, Sources, and Quantity

Types	Quantity
Faculty Interviews	PA (2), PB (2), PC (2), PD (2)
Classroom Observations	4
Documents and Photographs	180
Method	23
Analytical	22
Memos	
Reflective	16

P = professor

Review of Data Analysis Process

Qualitative data analysis is an inductive process that requires the categorization and identification of themes that emerge through the data gathering process (Anfara, Brown, & Mangione, 2002). Constant comparative analysis during and after the data gathering process allows for the derivation of meaning from the data through categorization and pattern identification (Anfara, Brown, & Mangione, 2002). The research questions provided a guide for the analytical process as the collection of cultural perceptions for each faculty member provided an individual voice through interviews and observations before categorization, consolidation, and interpretations of the data were used to provide a picture of the department as a whole.

During the initial phase of the data analysis, I reviewed interview transcriptions from eight separate interviews, as well as field note impressions from interviews and teaching observations as shown in Table 2. Importation of the text of the transcribed interviews, field

notes, and artifacts into NVivo 10® was essential for organizing the data for analysis. The preliminary strategy for analysis was open coding of transcripts and field notes using NVivo 10® qualitative data analysis software. Open coding involved identifying words or phrases from each faculty participant or from field notes, and then coding these words or phrases for initial impressions relating to definition of scholarship, department culture, role conceptualization, role prioritization, and characteristics of the teaching profession. The initial process of coding was primarily analytical and assisted in comprehending the narratives provided by each participant. Words and phrases from each participant that related to teaching paradigms used; role prioritization and conceptualization; definition of scholarship; or aspects of department culture were extracted from the text and organized into descriptive nodes. For example, in response to interview questions related to role prioritization, node descriptors included professional development, teaching methods, student-faculty relationship, role prioritization, faculty acculturation, definition of scholarship, department values, and characteristics of faculty.

During the second phase of data coding, I conducted both word search queries and created conceptual maps based on the data coding nodes created during phase one. In addition, I reviewed over 100 departmental and university artifacts and documents, which included website photographs and text, public social media postings, building photographs, and the departmental by-laws as listed in Table 2. Kaczynski, Salmona, and Smith (2013) outlined qualitative analysis methods that formed the basis of Table 2. I would also like to acknowledge that during the transition to the second phase of analysis there was a struggle with narrowing the coding structure into manageable themes. I realized that the initial definition of teaching paradigms used as the basis of the research focus was limited to the narrow scope of classroom teaching and was based on a preliminary literature review as well as my seven-year experience as a non-

research faculty at a teaching focused university. After revisiting the purpose and focus of the study and reviewing qualitative analysis literature, which argues that reliance on literature in the initial analysis phase is not recommended and should be reserved for final analysis, a second coding of the literature was conducted with a broadened view of teaching and academic scholarship in mind (Gibson & Brown, 2009). Several reflective memos describe the recognition of this shift in thinking throughout the data analysis process. Therefore, phase one analysis began using a more deductive approach, which I realized and acknowledged during phase two of analysis. This realization and acknowledgment is indicative of becoming increasingly better at honoring the practices of qualitative inquiry and thus open to different understandings of the data, which redirected the researcher to the overarching purpose and focus of the study. This experience makes the interpretation of the departmental culture influences on faculty role conceptualization and definition of scholarship richer and deeper than during the initial analysis strategy.

Qualitative data analysis is an iterative process; therefore, the coding structure was continuously refined as the coding process continued while reviewing participant interviews, observations, and field notes, as well as analyzing cultural artifacts and documents (Patton, 2002). Identified relationships between nodes created from initial impressions allowed for the synthesis and refinement of the code mapping structure into three parent nodes foundations, departmental culture, and definition of scholarship. These three parent nodes provide broad conceptual labels that are relevant to the research questions. Creation of a refined coding structure allowed for in-depth analysis using queries and conceptual maps in NVivo 10, which was helpful for thematic development. Therefore, the coding structure included 40 initial codes and distilled down to approximately 18 codes through the axial coding process.

Data Analysis

Key underlying patterns and thematic meanings relating to the influence of culture on role prioritization and definition of scholarship of biology professors was the result of the data analysis process. The themes that emerged indicate that how biology professors prioritize their roles and define scholarship is an iterative process that evolves from multiple strata of cultural influence. This process began through foundational experiences during their undergraduate and graduate training and shaped further through the departmental adaptation process that ensues once they become full-time time, tenured faculty members. The themes included foundational experiences, cooperation between colleagues, and identification of values. The organization of the following sections relate to each research question.

Table 2. Connecting the Data and the Research Questions – Linking Data Sources to Findings

Data Types	Data	What are You Trying to Find Out?
Interviews	PA, PB, PC, PD	Demonstrate Alignment of Interview Questions to the Research Questions
Observations	Classroom	Relate to Research Question 2
Documents	Department By-laws	Relates to Question 1 and 2
	University Website	Relates to Question 1 and 2
	Public Social Media	Relates to Question 1 and 2
	University Strategic Plan	Relates to Question 1 and 2
	Provost Academic	
	Prioritization Report	Relates to Question 1 and 2
	College Newsletter	Relates to Research Question 1 and 2
	Newspaper Articles	Relate to Research Question 1
	M1-M23	Audit trail of Emergent Design
Memos	A1-A22	Findings and Interpretations of Multiple Meanings
	R1-R16	Researcher as an Instrument

P = professor; M = methods; A = analytic; R= reflection

Research Question 1: Cultural Influences on Role Conceptualization

Research Question One: What are the cultural influences that shape role conceptualization and prioritization of biology faculty members?

The Role of Academic Training and Department Culture on Role Conceptualization

Interview questions (Appendix C) promoting a conversation with faculty members allowed for the genesis of key terms or phrases that related to role prioritization. Categories that emerged after open coding and axial coding reduction included *department culture* and *foundations*. Both departmental culture and foundational experiences influence role prioritization and conceptualization as depicted in Figure 2. The furthest circle represents foundational experiences because it takes place during the pre-faculty socialization period during undergraduate and graduate training. While this foundational period sets the early basis for socialization and role prioritization in academic life, it is early in a faculty member's career and plays less of a role in their current conceptualization than the culture of the department where they currently work. Thus, department culture has a greater influence on role prioritization. A more in-depth description and analysis of the influence of both themes on role prioritization follows in the next section.

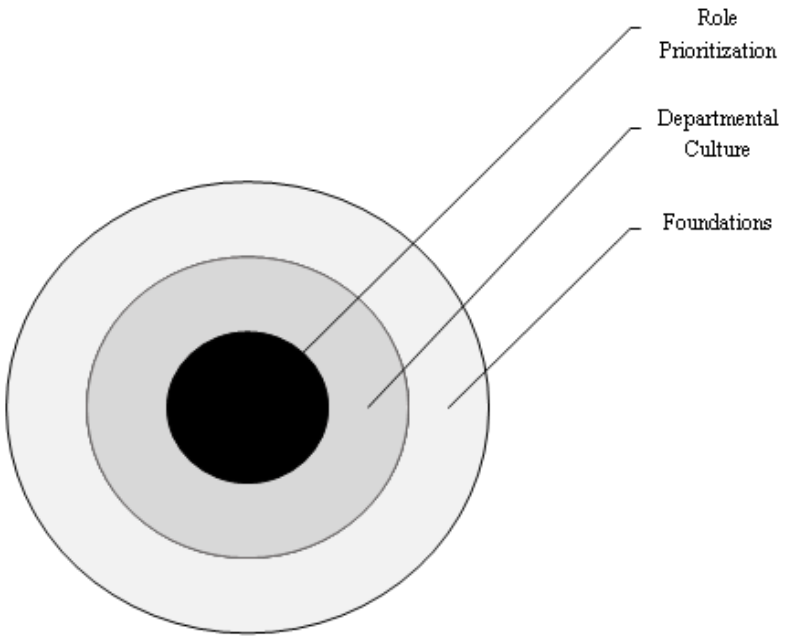

Figure 2. Relationship of Foundations and Departmental Culture to Role Prioritization

Foundations: How Academic Training Influences Role Prioritization

Foundational experiences identified in this study include both undergraduate and graduate experiences of each faculty member participant, as well as previous departmental experiences such as a postdoctoral research position or a previously held faculty position at another university. As discussed in Chapter II, the initial exposure to departmental culture as a graduate student is a critical period, which becomes part of a transformational process as the graduate student progresses through a doctoral program towards becoming a prospective faculty member (Lee, 2004; Austin, 2002). During this iterative process, graduate students juggle dual roles as both a student and emerging expert in their discipline (Austin, 2002). In addition, students experience the life of a potential academic through work as a teaching or research

assistant (Austin, 2002). In their roles as teaching or research assistants, students develop relationships with faculty members, which influence the value they may place on prioritization of their future academic role (Deem & Lucas, 2007; Lee, 2004).

The development of values that are part of self-authorship requires cognitive maturity and relates to the ability to construct knowledge through problem solving and reflective judgment in a specific context (Baxter Magolda, 2004). Working with both faculty and peers in an academic setting, therefore, helps shape the values an aspiring faculty member uses to prioritize their academic role (Austin, 2002). Austin (2002) indicated, "Most students make sense of the academy and its values" (p. 103) through their interactions with faculty members, which then provide the basis for how future faculty members view their own students. Thus, a direct link exists between the development of values and the culture of the department(s) in which they studied. This becomes an influential experience that shapes initial role prioritization. For instance, if an aspiring faculty member studies with a professor who places a greater emphasis on teaching, it may play a role in their teaching practice and the value they place on student learning. However, if the early experience of an aspiring faculty member involves a high level of research with little interaction with senior faculty and there is little emphasis on teaching, then the researcher role would become a greater priority in their initial conceptualization (Austin, 2002). All participants in this study were able to describe defining moments from either their experience as a student, or from their early career that provided the foundation for the initial construction and prioritization of their academic role. For example, Professor A at Transformational University explained that out of the three faculty roles teaching, research, and service, the role he enjoys most has evolved over the years. He provided an interesting take on role prioritization, and described his current evolution and favorite part of his role as:

> …mentoring students. So that's a combination of teaching and research….my teaching has changed over the years, and it's just become more, for lack of a better word, friendly towards the students. I think when I first started out I thought I had to be objective and somewhat removed.

In fact, all four study participants indicated that early experiences as an undergraduate student, graduate student in postdoctoral training, or positions held early in their careers provided the basis for their values and the ways they prioritize their early role as a faculty member. Important socialization experiences consisted of interactions with faculty as well as with other students, which aligns with research presented by Austin (2002). For example, Professor C described the following experience as a doctoral student:

> I wound up doing research that I didn't really enjoy, and I decided that I didn't want to continue doing research and that kind of turned my focus even more to teaching… I knew from the first time that I taught a lab that teaching was going to be part of what I wanted to do, but up until my PhD work I thought that I wanted more of a balance in research.

Professor D echoed similar experiences that took place during her doctoral program:

> I think for both my master's and my PhD work, there was a lot of support for professional development and being a teaching assistant. I would say much more than we have here, and not coming from the department, just coming from the university as whole. There was a lot of support…there were workshops that were available and there was a lot of training in the department for the particular classes that you did…another grad student and I were just given a class, given a lab, that we developed all the labs and the instructor was very hands-off, and so that was really great training about when you are teaching a

field course, you know, what data are you going to collect, how are you going to relate this to the students, and get experience too.

Further, Professor D expressed that she gives almost equal prioritization to teaching and research. According to my field notes, Professor D was emphatic that teaching takes place both inside and outside of the classroom. As an active researcher who supervises several graduate students, she described the individual mentorship provided through graduate research projects as teaching that is equally important to classroom teaching. Professor D demonstrated that classroom teaching was also a high priority based on her interactions with her students when I observed her classroom. The class observed was a large lecture course with approximately 100 undergraduate students, yet she made genuine attempts to connect with students on a personal level through levity and the passion she displayed for her discipline.

As described in Chapter II, working directly with a faculty member on research, as well as the overall atmosphere that graduate student experiences, plays a significant role in initial role prioritization (Weidman & Stein, 2003). Professor A shared that he completed several research projects as an undergraduate and that this initial experience motivated him to continue studying biology. In addition, he stated that he also worked closely with a mentor while doing his master's work, which provided a "family-oriented" experience in which he developed close bonds with his committee members. In addition, Professor B described to me a discussion he had with his advisor during his master's work regarding teaching experience. Professor B asked his advisor if he had received training as to how to teach, and he quoted his advisor as saying, "I wish I would have," and "You kind of learn, but you know you mostly do whatever you had and

you kind of emulate the ones that as a student you enjoyed…." Professor B then shared with me how his advisor encouraged him to complete at least one year as a teaching assistant in order to provide him with some level of teaching experience because "as a professor you were going to have to teach."

Influence of a Departmental Culture of Cooperation on Role Prioritization

As described in Chapter II, faculty rationale for their current role prioritization stems from the goals and values of the department where they presently work, as well as the overarching mission and values of the university (Austin, 2002; Lee, 2004). Social interactions and espoused values are part of organizational culture, which leads to a set of "norms and practices" that are enacted by the organization are derived from the vision of leadership (Schein, 2010, p. 13). The beginning of changes in role prioritization stems from the leadership of the president (IP) whose tenure ran from 2000-2009. According to university literature, during the presidency of IP, the Carnegie Foundation ranking of Transformation University advanced to doctoral/research-intensive and IP was integral in the addition of a medical school to the university. Thus, the hallmark of the tenure of IP was to improve the research quality and ranking of the university. In addition, Professor B shared that the dean of the college who oversees the biology department provides the general direction or sets goals for the department, but that department has autonomy to accomplish the goals as they see fit. According to both Professor B and C, the dean's initial goal was to increase the amount and level of research conducted in the department when he began his tenure in 2008. All participants shared that, over the course of the last eight to ten years, faculty embraced this charge and built a strong research base, which led the dean to turn his focus to teaching over the last couple of years. According to

Professor D, the overall departmental vision changed from a teaching focused department to a research focused department in 2008. Further, in the last couple of years the current emphasis changed to incorporate both high quality teaching and high quality research. Professor D also shared that a new chair took over the department in 2009 who had a heavy research background, unlike the previous chair whose disciplinary specialty was biology education. Her perception of the new chair was positive and she described how hiring leadership from outside the department (chair) or university (dean) provided a fresh perspective and removed the historical contexts that seemed to be influencing decision-making processes in the past.

An effective leader must possess a core set of personal and ethical values that provides a lens for decision-making processes (Northouse, 2009). A new college dean and department chair began their tenure at Transformation University in 2008 and 2009 respectively, which led to the initiation of a transformational process within the department and eventually to changes in faculty role prioritization due to a slow change in departmental values. According to university records, with new leadership, the department has grown exponentially over the past ten years to include a 210% increase in undergraduate biology majors and a 71% increase in tenure-track faculty. In fact, the new department chair assisted in obtaining $30 million in state grants for a new science building (Stolz, 2014). Further, one of the participants mentioned how the dean is very involved in the hiring process, and described how the dean carefully reviews the applicants recommended by the department, as well as the entire pool of applicants. In addition, new hiring practices over the past eight years included bringing in faculty cohorts. Professor D shared that this is a young department, with respect to duration of employment of faculty in the department due to the hiring of new faculty over the past 12-15 years in addition to the retirement of several long-term faculty members. She also indicated that the majority of new faculty members entered

the department as part of a hiring cohort who were able to support each other with regard to "learning the ropes" of the department. Professor D voiced that she felt this allowed them to feel more comfortable and may have helped both support and fuel the changes occurring in the department. Professor D shared that the newer faculty were more accepting of change, were more flexible and were willing to try new things, which provided a new perspective to the department with regard to change. Professor D described the current culture of the department to be a shared leadership with less emphasis on rank, which Professors B and C also mentioned. Therefore, instead of competition within the department between old and new faculty, Professor D expressed that the new perspective of the department is targeted at retaining faculty because "they want them to stay," and we will "help them to be successful" instead of creating a competitive, hierarchical, and unwelcoming environment. Professor D stated, "The goal with regard to faculty retention is to be supportive, establish a commitment to the new faculty member, and create a department that they want to be a part of." Professor A shared also his thoughts on the importance of collegiality between faculty and leadership:

> So, the reason that the relationship and the faculty and faculty chair is so important is because it sets a tone in part for how the faculty will relate to one another…if they view the chair as an authority figure, there's more likely to be competition between the faculty and less cooperation. If it's viewed as a more horizontal interaction then we are all involved in the governance of our body, our um, our group, and this of course, all this, encompasses what the students come into.

However, my field note impressions of the description of collegiality from Professor A was that this department valued collegiality and for the most part worked well together; however, on occasion an allegiance to union policy would get in the way of the decision-making process. He shared that he felt the department should stand up for itself and not worry about the reaction from union leadership regarding their decisions.

Finally, Schein (2010) described how leadership must coordinate a long-term survival plan that acknowledges and satisfies all of its constituencies because the "mission ultimately derives from a balancing of the needs of different stakeholders is the same" (p. 75). Therefore, leadership must satisfy the needs of all stakeholders in the department such as successful program completion and career obtainment by students; the needs of the faculty to do research and further knowledge; the needs of the local and state community; and the need of the university with regard to reputation and fiscal soundness (Schein, 2010). Departmental leadership accomplished these tasks in several ways. First, new hiring practices, as previously described, have influenced role prioritization because faculty hiring became strategic in that new faculty are hired to create diversity in the department with regard to biological specialties as noted by Professor D. The department has also created different tracks for faculty, which include research track and research/teaching track, as well as one faculty member who is dedicated to science education. Currently, out of the 30 faculty on a tenure track, eight of them are research track, which requires them to teach only one class per semester because their main role is to obtain grants and conduct research. The creation of several tracks allows some faculty to focus more on research, while others are able to focus more on teaching and research, as well as student mentoring. However, the effort to create different academic tracks within the department subsequently ended due to an initiative by the faculty union at Transformation

University. Second, this department was very adept at creating symbols that unite students, faculty, and the community by creating several research institutions, biological stations, and other off-site research centers that benefit all stakeholders. Departmental literature describes a genetics laboratory; two research centers for protecting natural resources; a biological station; an herbarium; a museum of cultural and natural history; and a marine research vessel. The investment in the faculty and infrastructure to maintain the labs and research resources is a symbolic gesture that shows the value the college and department places on research, teaching, and serving the community. All of the participants mentioned at least one of these entities as being very important to the department during their interviews. Through the voices of each participant, it seemed that these physical entities provided recognition and value for their work and that most faculty members felt integrated into the shared mission of the department (Schein, 2010).

Results of a New Leadership Perspective

As discussed in Chapter II, the foundation for role prioritization typically begins in graduate school and undergoes a transformation as new faculty members interact with their department of employment (Austin, 2002; Lee, 2004). Therefore, role prioritization is malleable and constantly reconfigured based on the current desires of the faculty member; the previous academic experiences of the faculty member; and the two-way exchange of cultural norms and practices that takes place between the faculty member and the hiring department (Tierney, 1988; Austin, 2002; Lee, 2004). In my field notes, I recorded that Professor D exudes enthusiasm, excitement, and energy with regard to the transformational changes occurring in the department related to leadership changes and the impact of the new faculty cohorts. She expressed

excitement over the new science building, especially with regard to the active learning classrooms, the new curriculum, and new monetary investments of the department. Several times, she used the phrase, "this is really exciting."

Professor D described the new building and new faculty members as investments by college and departmental leadership that apply to both arms of the faculty role prioritization in the biology department – teaching and research. This investment is in alignment with the description of the new building on the university website:

> The building's multi-purpose auditorium, active learning Classroom, informal meeting spaces, and open floor plan allow for adaptability, shared resources, and a level of collaborative research and learning beyond what currently exists…The building will provide classrooms and state-of-the-art laboratories for approximately 40 research-active faculty, their students and support staff.

Faculty Perspective Influences Departmental Culture

Culture can create a "basic sense of identity and defines the values that provide self-esteem" and can "tell members who they are, how to behave toward each other, and how to feel good about themselves" (Schein, 2010, p. 29). The biology department at Transformation University, as described by participants in this study, as well as the values espoused by departmental by-laws, encourages an atmosphere that values the scholarship of both faculty and students. Below is a departmental mission as posted on the Transformation University website:

> The mission of Transformation University's Department of Biology is to educate effectively, conduct sound scientific research, and provide service to our community and the greater region. We strive to provide a stimulating environment for learning through

> high-quality classroom instruction and faculty-mentored research experiences for undergraduate and graduate students. We seek to impart to all students and the community an understanding of the process of science and the ability to apply biological knowledge throughout their life experiences.

This statement from Professor C describes her understanding of the core values and role priorities of the department:

> I really think the core values of our department have a nice balance between teaching, there's a very strong commitment to teaching, but at least as strong of a commitment to research. And everyone recognizes that service is important and we do what we need to do to ensure that all the service stuff is done, but our real focus is teaching and research.

To corroborate the voice of Professor C, departmental by-laws provide written documentation of the role prioritization of the department as a whole, and echoes the description. The departmental by-laws explicitly state:

> As candidates move through the ranks, they should demonstrate a sustained commitment to teaching, scholarship, and breadth and leadership in service. Candidates should provide evidence that indicates that he/she has performed at a level commensurate with earning promotion to a higher rank.

In addition, when asked to describe the basic culture of the department, Professor D stated the following:

> First, the success of the students, and involvement and engagement of the students in success in the classroom, but also success once they leave here.

Therefore, based on my triangulated data sources, which include faculty interviews, observations, field notes, and department documents, it becomes clear that department culture leads to an emphasis on prioritizing the roles of teaching and research.

Summary of Findings for Research Question 1

The core values of the department stem directly from the history and overarching culture of Transformation University. In addition, the dean of the college who oversees the biology department has embraced these values and has initiated their enactment in the departments that he oversees. Both Professors B and C noted that the current dean advocates for improving one of the three roles on a rotational basis but that the implementation of how the goal is accomplished is up to the department. Further, the historical description of Transformation University as described by university literature includes phrases such as "student-centered education," while the priorities and initiatives of the university and departmental website includes similar wording. Therefore, the combination of the voices of the participating faculty members, the historical context of the university, and the dean's initiative, assisted in creating and perpetuating a departmental culture that ultimately makes service to students its core departmental value.

Research Question 2: Definition of Scholarship

Research Question 2: How do biology faculty members define scholarship?

Data analysis revealed the following themes for research question two: teaching, research, and service to students. The definition of scholarship is closely related to the previously described cultural influences on role prioritization described for research question one. The prioritization of teaching and research by the biology department at Transformation

University originates from three key values that emerged during this cultural analysis. The identified values are:

1) To serve students by providing an excellent education and career preparation.

2) To become a resource for stewardship of the state's local resources.

3) To bring prestige and recognition to the university through high-level scholarship conducted by both students and faculty, as well as adoption of new teaching methods.

The identified values of the department in combination with the foundational experiences of faculty members provide the basis for understanding how biology faculty members in this department define scholarship. A description of each of the identified role priorities, teaching, research, and service to students, follows in order to provide clarification for each individual valued role based on the voices of participants and departmental artifacts. All faculty members in the biology department at Transformation University define scholarship using a configuration of all three roles based on their track, research or combined teaching/research track.

Departmental Value of Teaching

Teaching is a high role priority of the biology department at Transformation University. The departmental website uses the following description of their faculty members to entice students to become biology majors:

> Our highest priority is to maintain an academic environment that supports student achievement and involvement. From coursework to field work, you'll work closely with biology faculty and staff and take their inspiration from the classroom to the lab. Connect with your professors and experience even more when working together or under

> their guidance on special projects. Our commitment is to provide you with a stimulating education that prepares you for a fulfilling career and enhances your ability to adapt quickly in a rapidly changing world.

Thus, this department defines high quality teaching as emphasizing both high-level classroom teaching, evaluated mainly through end-of-semester student opinion surveys, as well as supervision of research with students. All four participants corroborated the importance of end-of-semester student opinion surveys and mentioned the importance placed on conducting research with students, especially undergraduates, as a form of teaching.

Participants in this study emphasized that with the exception of the research-focused faculty, the majority of the remaining tenure-track faculty members in the department embrace teaching as 50 to 60% of their role, which aligns with the faculty job description in the department by-laws. During the teaching observation for each of the study participants, I recorded in my field notes how each faculty member expressed genuine concern for students. For instance, each of the professors used some type of formative classroom assessment, such as clicker activities, to determine how well students were learning material covered that day. Clicker activities are a type of formative assessment in which the instructor presents a question to the class and students respond using a hand-held electronic clicker or a clicker application on an electronic device, that captures initial student understanding of the concept and projects it on the screen for the entire class to observe. In addition, university records indicated that within the last six years, six biology faculty members received teaching excellence awards from the university, which indicates a commitment to quality teaching practices. Thus high quality teaching is an essential component of scholarship definition for faculty members of the biology department at Transformation University.

Departmental Value of Research

Previous research indicates that departmental policy dictates the value of research capital over teaching, and that the value of research capital over teaching was especially prevalent in science departments (Deem & Lucas, 2007). Participant voices in combination with site documents such as the departmental by-laws and departmental promotional materials identified research as an important departmental value. Department by-laws describe research as a "scholarly and creative activity," required for success on a tenure-track appointment. The types of documents, which the department allows as evidence to prove scholarly work could include the following:

- Evidence of three peer-reviewed publications.
- Being awarded a research grant, outstanding research award, or excellence in teaching award.
- Presenting posters or papers at extramural professional meetings.
- Authoring a non-peer-reviewed book or book chapter.
- Serving on a board or review panel related to the candidate's discipline.
- Consulting activity (review of a grant proposal, contract, manuscript, or book).

Several studies presented in the literature review indicated that time spent on research often interferes with the ability to teach well (Fairweather & Beach, 2002; Gappa, Austin, & Trice, 2007). However, professor A was emphatic about dispelling this notion, and stated:

> I think there's a notion that research interferes with teaching and I, I (sic) really don't agree because anything, any activity could interfere with another activity if one makes sacrifices along those lines or isn't interested. I consider myself a very active researcher and I will put my teaching up against anybody in this university or this department and

> it's not because I'm some great teacher, it's because I care and I like it. But on top of that, my research helps my teaching and vice versa.

Departmental policy and mission statements combined with the voices of the faculty members elucidate that research is a highly valued form of departmental scholarship. Further, based on the synthesis of all data sources, research with undergraduate students has become synonymous with teaching by faculty members in this department.

Departmental Value of Service to Students

Academic service work generally entails service to the university, service to the community, or both, yet all of the faculty members used the phrase "service to students." Professor A described role prioritization in the department as relating to a change in culture and values towards service to students:

> The core values are changing…and I'd say at the top of the list is still, um (sic), service to students. And that can take on anything from teaching to mentoring, you know whether it be graduates or undergraduates.

Professor A created a new form of academic service – service to students. This new definition creates a more encompassing view of service because it includes both teaching and research in the realm of service work for faculty members. The other three participants echoed similar sentiments in which they all defined service as relating to some aspect of student development or education. These descriptions of service included such phrases as advising undergraduates, involving undergraduates in research, assisting students in obtaining special classroom

accommodations, supervising graduate students, and participating in curriculum committees. Therefore, by giving equal prioritization to teaching and research, the department effectively encompasses service by emphasizing service of students.

Professor A described the basic principles outlined in Chapter II regarding the influence of the cultural environment on student role prioritization when he described how teaching is a priority because it extends beyond the classroom:

> We teach, our behavior, how we treat our colleagues, how we interact with each other, teaches students. In our, in the atmosphere that we create as a department, you know, how we stop and talk to each other in the hall, because you know we are socializing them. They're young people that are just learning how to be in the world. So I would say, that lecture is an important part, but it's only a part of how we deal with students, how we deal with adversity, how we run a discussion, or organize our lab, and so on and so forth. How we talk to our graduate students in front of our undergraduate students. It's so multidimensional that that's only one part of teaching.

Curriculum committees are a normal option for faculty service work; however, this department takes it further as described by Professor B:

> We are redesigning of intro curriculum to really suit our [meaning students'] needs, and this is based on doing exit surveys and assessments of students. What their strengths and weaknesses are.

The curriculum change, which is currently underway in the biology department at Transformation University, involves the adoption of the AAAS core competencies curriculum. This is a fundamental undertaking for the department because it requires development of a five-course sequence of introductory courses and voices from the department shared that while most

new faculty are involved with and excited about the new curriculum, there was some initial resistance and frustration. Professor C described being part of the committee overseeing the curricular changes, which developed a proposed new foundational sequence and presented it to the department. She described how this initial proposal met with strong resistance from a significant portion of the faculty. Here Professor C describes what occurred at the end of the first year on the curriculum development committee:

> So this was at the end of that first year, and so we decided not to give up. So the second year we came back and started the semester, before we started teaching we had a retreat…, so we spent the whole day brainstorming and trying to reach a consensus that we wanted the result of this to be. We spent the whole year with the whole department meeting weekly to come up with this list of objectives and how this could be divided into a course sequence. It is a frustration to me, but I will tell you that what we came up with the second year was almost exactly the same as what we came up with at the end of first year. It's just that we had to involve everybody in the discussion. You have to get buy in. You know if we knew more about how to change things, we would have known that from the beginning.

This response by the faculty aligns with the need for faculty to make decisions in a positive and collegial atmosphere where they maintain autonomy over their own decisions (Walvoord, et. al., 2000). Finally, most of the 50/50 faculty members in the department advise undergraduate students, as well as teach several undergraduate courses. Professor B is concerned when students do not come to talk to him when they have problems understanding the course material and he encourages them to visit him during office hours (corroborated during teaching observation). Professor B is also concerned about writing meaningful letters of reference for students to help

them find employment or get into graduate or professional school. Professor B seemed to take pride in advising undergraduate students, largely because advisement involves getting to know students better and providing them with guidance for their career. Finally, Professor B shared that the best way to get to develop genuine relationships with students occurs through undergraduate research projects or in teaching small, hands-on classes that require working directly with students, (no lab assistants or teaching assistants are used for the specialty 300-400 level courses taught by this professor). The combination of teaching and research with undergraduates thus becomes service to students.

Professor A has extensive research experience at several high-level research institutions and is a research-based faculty member in this department, which means that he has a reduced teaching load. Yet, he identifies working directly with students as the role he most enjoys. He also indicated that, through his own experiences at various institutions his view towards students has evolved over the years, which is part of the ongoing process that is part of faculty acculturation (Austin, 2002). The experiences of Professor A show an evolution in role prioritization, as well as his unique interpretation of faculty roles. It is evident that students are his main priority and that direct interaction with students both in the classroom and as research assistants provides a basis for him to act as a mentor, which allows him to give equal prioritization to both teaching and research. Professor A described student mentoring as one of the most important aspects of faculty work that should not only include classroom interactions and involving students in research experiences, but also modelling professional behavior when interacting with department colleagues and other students. Therefore, the value faculty members

place on student interaction directly plays a role in their current interactions with students. I captured Professor A's ability to interact with students in my field notes as an observer in one of his classes:

> He is dressed casually, jeans and a plaid shirt over a t-shirt. He drinks coffee while talking and moving around the room. He has a calming, relaxed lecture style. It's as if he is just having a discussion with students about a topic…In addition to data, he always uses references for the data and acknowledges certain/specific researchers. He lists references on the slides and mentions that the publications are in top journals such as *Science*. Again, it seems as if he is modeling to the graduate students how to create a professional research presentation…Seems very comfortable, welcoming in classroom. Very relaxed, open atmosphere. I notice students in this class are more attentive than in the other observations, which mainly consisted of undergraduate students. Instructor provides a very "professional" presentation and it is as if he is talking to colleagues and not just teaching or transmitting knowledge.

Professor A uses words and actions that indicate his personal values lean towards student development. Personal values influence the type and quality of the interaction a faculty member has with students whether it takes place in a classroom setting or in an experiential learning environment such as working with a student on a research project. Therefore, early experiences in a disciplinary culture influence value development, which in turn shapes the definition of scholarship (Austin, 2002; Lee, 2004).

Summary of Findings for Research Question II

Disciplinary research and high quality teaching are highly valued in the biology department at Transformation University, and thus become an important cultural influence on faculty definition of scholarship. However, faculty definition of scholarship as presented by the faculty members in this department presents itself as a complex and dynamic educational process in which service to students is the major underlying theme and the ultimate form of identified scholarship. Service to students as a form of scholarship encompasses the following:

- Classroom teaching.
- Working with students as a research mentor or academic advisor.
- Curriculum development to suit the needs of the students.
- Acting as a professional role model by displaying collegiality towards other faculty members and students in the department.

Summary of Findings

The findings reported in this chapter resulted from the analysis and synthesis of various data sources to answer each research question. Data analysis of interviews, observations, and departmental documents identified the key cultural influences of institutional and disciplinary culture that create departmental policies for faculty role prioritization, which affect how faculty members define scholarship. Evidence indicated the basis of role prioritization relates to the high value placed on both research and teaching in this departmental which is ultimately leads to faculty definition of scholarship as service to students. Findings discussed in this chapter were themes that emerged from the data analysis process, which include the axial codes *Foundations,*

Department Culture, and *Definition of Scholarship*. The findings established in this chapter provide the basis for the recommendations discussed in Chapter V.

CHAPTER V

SUMMARY AND DISCUSSION

Interpretations and Recommendations

As presented earlier, examination of the faculty acculturation process is necessary to identify the cultural elements of university and departmental culture that establish an environment in which transformational change may take place. Biological science education at many universities still emphasizes outdated teaching methods that are ineffective for student comprehension and retention of basic biological concepts, as well as lacking in applicable skills students need to build careers (Handelsman, Miller, & Pfund, 2007; Wood, 2009). The literature indicates that students give up on degrees in the sciences because outdated teaching paradigms are not student-centered. This study identified key cultural aspects that are necessary for initiating transformational changes in the teaching paradigms used in biology department, which include foundational experiences of a faculty member's academic preparation, departmental cooperation, and student-centered values. Therefore, an influential relationship exists between role prioritization and faculty definition of scholarship.

Interpretation of Findings for Research Question 1

Research Question One: What are the cultural influences that shape role conceptualization and prioritization of biology faculty members?

Theme 1: Foundational Experiences

Initial role prioritization begins with doctoral training and again when aspiring academics become tenure-track faculty members because they renegotiate their role prioritization based on the academic rewards created by the cultural system of the department (Tierney, 1997). Further

exploration using a conceptual model created in NVivo 10 (Figure 3) depicts how early influential interactions such as working as a teaching assistant or conducting research with a faculty member may influence how faculty members initially construct their academic identity, which relates to both Research Questions One and Two. Both departmental culture and foundational experience influence role prioritization; however, foundational experiences set the stage from which future iterations of faculty identity evolve. Once faculty members configure the priority of their academic roles, they create a new definition of scholarship as it applies to the department where they currently work. When viewing this model through a constructivist lens, faculty members initially configure their academic roles based on the quality and types of experiences they have during their graduate work. This configuration is in alignment with the work of Braxton, Lambert, and Clark (1995), who reported that experience as a teaching assistant during doctoral training influences the teaching practices of aspiring faculty members, while those who experienced a more research-oriented doctoral experience were more likely to identify less with teaching. All participants in this study reported rewarding research experiences during their doctoral training, and three of the four participants in this study reported they had doctoral and in one case, postdoctoral training, in teaching, which included a teaching assistantship or workshops for teaching training during their doctoral coursework. The remaining participant valued teaching on a more individual basis and voiced the importance of teaching outside the classroom such as conducting fieldwork with students or acting as a role model for students via professional and collegial interactions with colleagues.

Therefore, all participants in this study shared an appreciation for both teaching and research initiated by their foundational experiences, which the departmental policy and literature of the biology department at Transformation University further elucidate.

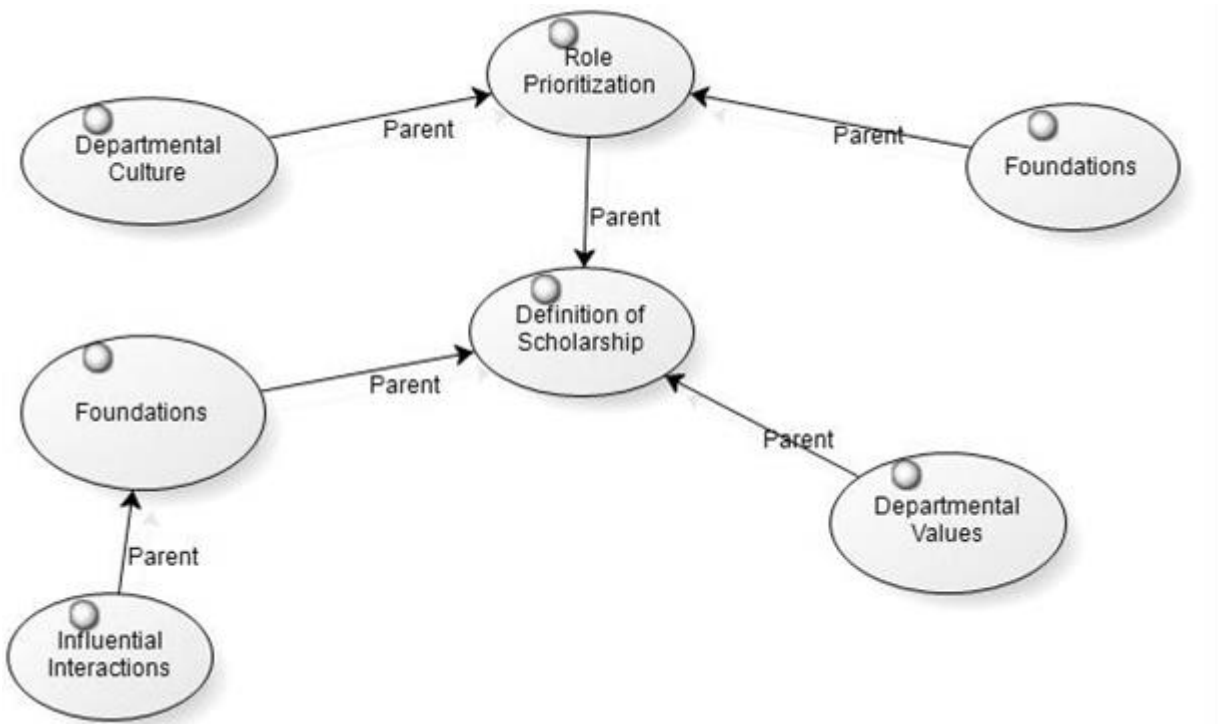

Figure 3. Influence of Foundations on Role Prioritization and Definition of Scholarship

In addition to professional training for teaching and research, important foundational experiences also included an influential person such as a graduate teaching assistant or professor who instilled a passion for the academic profession by encouraging them to participate in research or teaching experiences during their graduate coursework. All faculty participants in this study reported an influential person or mentor as being an important part of their decision to pursue an academic career.

Theme 2: Departmental Cooperation and Role Prioritization

Departmental policy plays a key role in defining the values, priorities, and thus culture of an academic department (Deem & Lucas, 2007). In some cases, academic department culture evolves into a caste or hierarchal system in which senior professors dominate the policy making process, setting the tone for the entire department (Walvoord et al., 2000). A hierarchal system

is vertical in nature and creates a competitive culture, where faculty compete for resources and power for themselves; whereas, shared leadership models are horizontal, allowing for cooperation and respect between faculty members, often leading to greater emphasis on student success (Walvoord et al., 2000). In fact, academic departments that clearly defined policies, provided an explicit outline of performance expectations, and had a high morale, created a more positive experience for new faculty members entering the department (Rosch & Reich, 1996). Further, an emphasis on faculty success and cooperation within a department generally led to greater student success because faculty members are able to establish a niche within the department, while also building community within the department (Walvoord et al., 2000).

The culture of the biology department at Transformation University presents itself as one of collegiality and genuine concern for colleague and student success. In other words, the department exhibits an overall cooperative tone with a non-hierarchal, shared leadership system. Faculty members shared that disagreements occurred within the department and that some faculty did not participate as fully in departmental activities as others; however, disagreements did not prevent the department from focusing on improving the quality of undergraduate education through several important department initiatives. Departmental initiatives for improving undergraduate education include:

- Aligning the curriculum with AAAS Vision and Change (2010) core competencies
- Development of an interdisciplinary Ph.D. program.
- Promotion of undergraduate research and community service with faculty.
- Creation of different faculty tracks for role flexibility and faculty satisfaction.

- Increase in diversity of faculty by disciplinary specialties to enhance both teaching and research dynamics.
- Hiring faculty in cohorts to provide camaraderie and support through the new faculty transition period.
- Construction of a state-of-the-art science building that emphasizes both teaching and research.
- Promotion by college and departmental leadership of a shared vision for improving undergraduate education that gives the department autonomy in the decision-making process.

Therefore, a cooperative departmental atmosphere defined by clear policies and values provide the basis for leading a department through transformational change.

Recommendations for Research Question 1

As a result of this study, I suggest the following recommendations:

1. The biology department at Transformation University should consider providing faculty members and graduate students with a workshop that centers on the importance of the foundational experiences for student socialization to professional and academic careers. The stories shared by faculty members in this department indicate the importance and influence of these foundational experiences in the way faculty members prioritized their academic roles and how they interacted with colleagues. It is important for both faculty and graduate students to recognize the importance of these early experiences because of the

influence their actions have on students and colleagues. Faculty members act as advisors, mentors, and role models for undergraduate students, which could greatly influence the future academic and professional decisions of students.

2. The biology department at Transformation University should consider providing training in student development theory for all faculty members, but especially those in key leadership roles. The actions of this department, such as the curriculum change towards core competencies and the hands-on experience of undergraduate research, are in alignment with student development initiatives suggested by Keeling (2004). Keeling (2004) proposed that undergraduate education should lead to self-authorship, or identity development, through the integration of academic learning, as well as the larger context of overall development of the student as a person. Student affairs professionals of the Educational Leadership Department at Transformation University would be excellent resources for this endeavor, in conjunction with the faculty development center. Student affairs professionals provide a different perspective on student growth and development as a whole person. This development involves guiding students through the evolution of a combination of psychosocial and cognitive growth, as well as the reinforcement or evolution of social identities (Evans, Forney, Guido, Patton, & Renn, 2010). Understanding student growth in these areas can be used to enhance program planning and development of departmental policy.

Interpretation of Findings for Research Question 2

Research Question 2: How do biology faculty members define scholarship?

Theme 3: Student-Centered Values

Based upon the data analysis for this study, my interpretation of how faculty members in the biology department at Transformation University define scholarship is more encompassing than what they credit themselves. As described in Chapter II, the traditional definition of service in faculty roles includes service to the university through university and departmental committees, which is how Professor C described the department's definition of service. However, all of the faculty members described both teaching and research as service to students. The structure of the policy and values of the department towards high quality teaching and research, with emphasis on student-centered, undergraduate education, essentially creates a new definition of departmental scholarship, which is service to students. Figure 4 depicts my interpretation of how faculty members in the biology department define scholarship, which shows the integration of teaching and research to create service to students as a new form of scholarship.

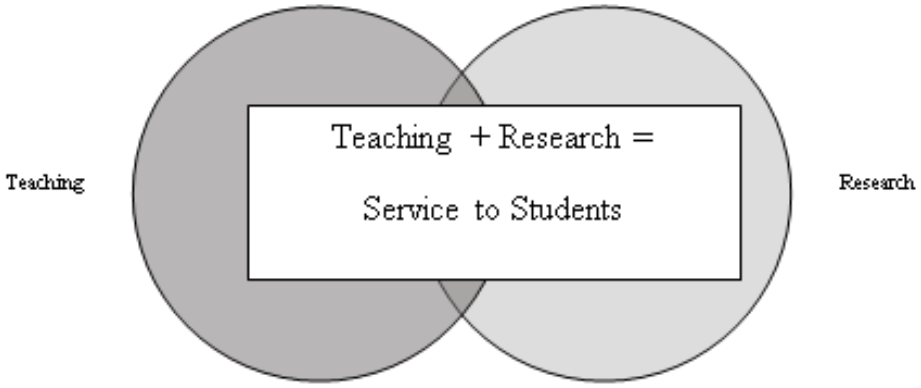

Figure 4. The Primary Roles of Teaching and Research Combined to Provide a New Definition of Scholarship: Service to Students

Therefore, faculty members in the biology department at Transformation University have defined scholarship by integrating their teaching and research roles to meet the needs of undergraduate biology students. This definition creates a shift in teaching paradigms toward student-centered education that emphasizes student learning, and creates a nexus where teaching and research converge to form a more encompassing definition of scholarship: service to students. As described in Chapter II, the teaching and research nexus as examined by Hattie and Marsh (2002) concludes that research productivity is not complementary to teaching effectiveness, which did not differ between academic departments. Further, even though there was no positive statistical relationship between teaching and research shown, most faculty members believed that research positively influenced their teaching ability (Hattie & Marsh, 2002). However, recent research indicates that it may be the teaching methods used by faculty members that lead to the negative association described by Hattie & Marsh (2002) (Willcoxson, et al., 2011). Problem-based learning, which allows involves developing a closer relationship with the student, is positively associated with a faculty member's research productivity (Willcoxson, et al., 2011). This scenario more closely aligns with the student-oriented teaching methods currently implemented in the biology department at Transformation University.

In addition to creating a research-teaching nexus, the biology department at Transformation University has constructed a definition of scholarship that aligns with Boyer's (1990) redefinition of scholarship. Excellence in teaching requires a dedication to one's own discipline, as well as a concerted effort to use this knowledge to motivate and educate students to ensure they have actually learned the material (Kreber, 2002). Further, using service to students as a definition of scholarship incorporates all four of Boyer's domains of scholarship: the scholarship of discovery, the scholarship of application, the scholarship of integration, and the

scholarship of teaching. Departmental research is essentially the scholarship of discovery, which Boyer stressed as important not only because it contributes to the body of knowledge, but also because it creates excitement within the department and the entire college campus. For example, the biology department at Transformation University uses university newsletters, a department Facebook® page, and the university website to celebrate and promote the research conducted by faculty and students in the department. The inclusion of students in faculty research, as well as encouraging students to conduct their own research projects, provides the basis for the definition of the scholarship of teaching outlined by Boyer (1990), which describes the scholarship of teaching as a form of scholarship that "both educates and entices future scholars" (p. 23). In addition, faculty members then align the scholarship of teaching with the scholarship of discovery by using their new knowledge to teach students either in the classroom or by involving them in the actual research project, which is also a form of collaboration. In combining the scholarship of teaching with the scholarship of discovery, the biology faculty members have evolved their work to align with the scholarship of integration. Collaboration allows for interdisciplinary communication, which is important because each discipline has its own culture and language, which if not understood to some extent by other departments causes "mutual incomprehension" (Woods, 2007, p. 854). The ability to collaborate between and within disciplines is important for 21st century students to succeed (Woods, 2007). The biology department at Transformation University encourages students to conduct research with faculty members that is on the borderline of convergence between disciplines, as well as between faculty members within the department who study different aspects of biology (Boyer, 1990). Finally, service to students is encompassed in the scholarship of service, which Boyer (1990) defines as "not doing scholarship but doing good," as well as it being an integration and then application of

discovered knowledge (p. 22). Faculty members accomplish the role of service in different ways such as participating on the curriculum committee, conducting research with students, and advising students. However, the most important interpretation of the scholarship of service as defined by the biology department at Transformation University, creates student-faculty research relationships, which provides a more inclusive definition of scholarship because it defines teaching as more than a mere transmission of knowledge from teacher to student (Boyer, 1990). Therefore, faculty members in the biology department at Transformation University are defining scholarship through an integration of the four domains of scholarship outlined by Boyer.

Recommendations for Research Question 2

As a result of this study, the following recommendation is suggested:

The biology department at Transformation University should redefine the role of service in their departmental policy and by-laws with regard to tenure requirements. The current statement reads:

> In order for the candidate to meet the department standard in Service, the quality of her/his overall Service portfolio should show evidence of effective, high-quality service, including active participation on at least two Department committees and a College or University committee. Participation in more general department activities (e.g., faculty meetings and seminars) is required.

This requirement indicates a lack of acknowledgement of the scholarship of service defined by the service a biology department provides to students through a hands-on, experiential education, which is the basis of the values of the biology department. Yet faculty members are not including this in their reward structure and application for tenure. A broader definition is

required that encompasses all forms of service valued by the department, including service to students and service to the state and local communities with regard to the research this department conducts on natural resource preservation. Prince, Felder, and Brent (2007) outlined several suggestions for the restructuring of faculty rewards that aligns with definition of scholarship defined by the biology department at Transformation University, which includes teaching as scholarly work. Formal recognition should include successful integration of teaching and research; the inclusion of undergraduates in meaningful research; and participation in faculty development programs for inductive teaching methods with subsequent proof of successful implementation (Prince, Felder, and Brent, 2007, pp. 290-291).

Future Research Opportunities

Because the data from this research resulted from a case study and the fact the departmental culture varies between institutions, its applicability to other biology departments may be limited. Further, for unknown reasons there was a low participation rate for this study. However, several key cultural factors that were salient for propagation of a transformational change within this department are now apparent. Figure 5 outlines a summary diagram denoting the cultural influences on role prioritization and the other factors related to role prioritization. Role prioritization is in the center with foundations and departmental culture as key influential factors in role factors for role prioritization. Foundations is in a downward facing triangle because it has less influence on current role prioritization than departmental culture, which is in an upward facing triangle. Factors that require further exploration include how leadership and new faculty members created a culture of cooperation that led to a transformational change, as well as the influence of young faculty on change. Several times during data gathering,

participants mentioned the new guard and old guard. It may be beneficial to explore faculty values, prioritization, and definition of scholarship based on age, gender, and experience in the discipline. Finally, with regard to foundational experiences, it might prove beneficial to explore why faculty members choose to work at an institution that values both teaching and research when all of the faculty members in this department acquired their doctoral training from high-level or very-high level research institutions.

In addition, future research should continue to explore the notion of service to students as a form of scholarship used in tenure and reward systems at university biology departments that possess similar values with regard to teaching and research. Service to students was a common phrase used by all participants in this study and seems to provide a definition of scholarship that captures what biology faculty members at a research/doctoral level institution strive for and should be a consideration as part of departmental policy.

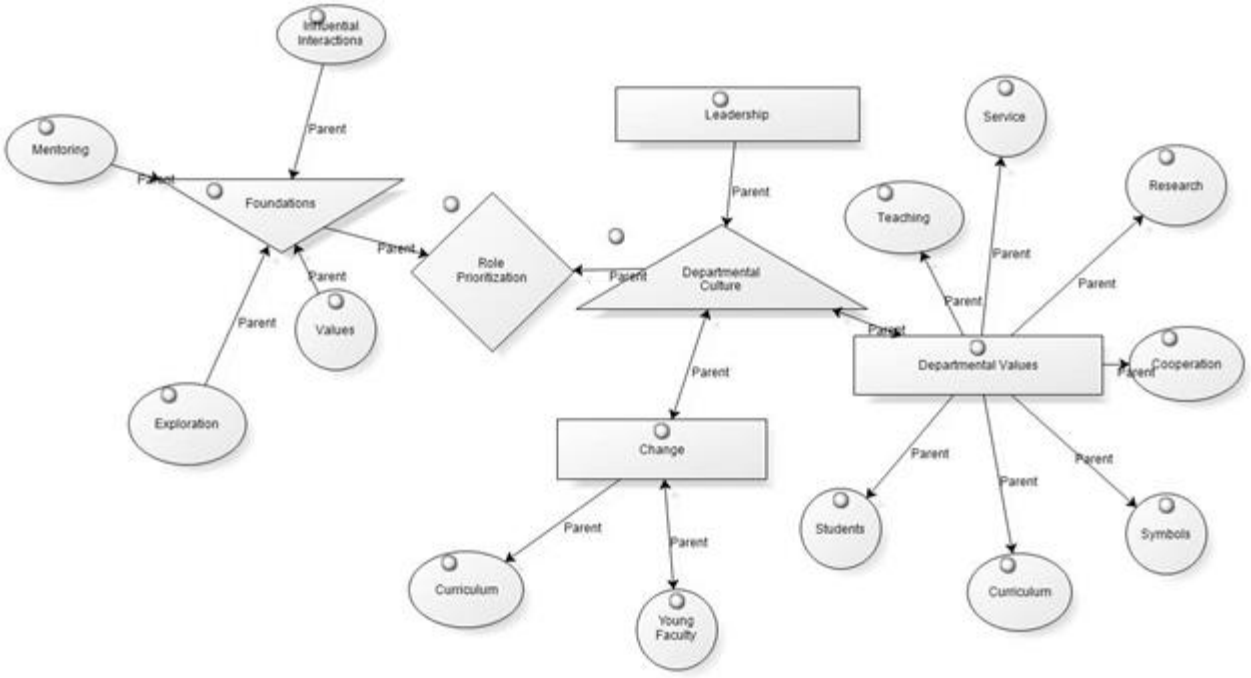

Figure 5. Cultural Influences on Role Prioritization and the Other Factors Related to Role Prioritization

Implications for Theory & Practice

The elucidation of the cultural influences on faculty role prioritization and definition of scholarship in the biology department at Transformation University provide two important additions to the body of knowledge and practice surrounding the effects of culture on academic departments. First, the identified cultural influences implies that student-centered undergraduate education in the biological sciences does not create a department that emphasizes high quality teaching over high quality research. By reconfiguring faculty roles and redefining scholarship, biology departments can better meet the goal of providing state-of-the-art educational experiences for their students without sacrificing research productivity. Acknowledging service to students as a basis for tenure reward should be part of faculty role configurations, which is an important consideration as higher education rethinks traditional faculty roles and replaces them with roles that suit contemporary culture. Using service to students as the underlying basis for scholarship aligns with the needs of both faculty and students by restructuring the faculty rewards system to view teaching as a form of service that is measured by the completion of scholarly endeavors by students (Hutchings, Huber, & Ciccone, 2011). Further, service to students provides more than just the passive transmission of knowledge from teacher to student; it engages students through an interactive application of knowledge that allows for mastery of knowledge as well as creating the "disciplinary habits of mind" students need to prepare for successful careers (Hutchings, Huber, & Ciccone, 2011, p. 6). Finally, service to students allows both faculty and students to flourish because it provides a better way to gauge teaching effectiveness. As discussed in Chapter II, the faculty reward system emphasizes research as a greater form of scholarship because teaching skills are subjective and indicators of research productivity via publication and presentations are objective, and thus quantifiable (Boyer, 1990;

Fairweather & Beach, 2002). However, incorporation of service to students as part of the reward system would provide a better gauge of teaching and mentoring effectiveness because it provides direct proof of student ability to apply classroom knowledge in a research setting, through a professional presentation or via a successful internship experience.

Second, the voices of the faculty members in this study emphasize the importance of cooperation within a department and its influence on department culture. Cooperation in the biology department at Transformation University began with shared leadership, starting with high-level administration down to faculty, which created a sense of camaraderie and value within the department. Further, hiring faculty in cohorts provided an additional feeling of camaraderie between the faculty members hired together. Camaraderie and value are cultural influences in this department that opened the door to solving problems creatively by allowing faculty members to define the roles within the department, as well as to create meaningful educational experiences for students based on their disciplinary expertise. A sense of camaraderie and shared values becomes necessary for successful transformational changes, such as the curriculum changes occurring within the biology department at Transformation University, and is the hallmark of a learning organization (Holyoke, et al., 2012). Strategic leadership, such as that exhibited by the president and dean at Transformational University, combined with a departmental culture that values both individual learning of faculty and collaborative learning of the department as a whole and permits organizational learning occurs more successfully (Holyoke, et al., 2012). Learning organizations foster departmental climates that provide the decision-making opportunities for faculty members with regard to departmental processes and curriculum, as well as individual creative endeavors such as research, which creates a collegial atmosphere valued by faculty members (Holyoke, et al., 2012). Maintenance of the department as a learning organization

requires constant attention and work, especially as new faculty members enter the department. It is thus an important aspect of the department culture that I recommend to receive consistent monitoring and adaptation for the biology department at Transformation University.

Summary

The cultural influences of shared leadership and cooperation provide the greatest influences on the construction of the culture in the biology department at Transformation University. The biology department identifies service to undergraduate students as its ultimate goal, which they meet by providing undergraduate students with state-of-the art teaching facilities that allow them to conduct research with faculty members. Therefore, faculty research becomes part of the teaching role and not a separate, antagonistic role that diminishes the act of teaching. In summary, this research study provides a basis for understanding how reconfiguration of faculty roles in biology departments to emphasize student-oriented research allows for both high quality teaching and high quality research. However, further research exploring both the influence of department culture on policy formation, curricular development, and the concept of service to students is recommended for the biology department at Transformation University, as well as other higher education institutions to determine if there are other important cultural influences that should be considered.

APPENDICES

APPENDIX A

CITI CERTIFICATION

CITI Collaborative Institutional Training Initiative

Social & Behavioral Research - Basic/Refresher Curriculum Completion Report
Printed on 4/17/2013

Learner: Melissa Haswell (username: mhaswell)
Institution: Central Michigan University
Contact Information Phone: 989-794-1939
Email: palme2mm@cmich.edu
Social & Behavioral Research - Basic/Refresher:

Stage 2. Refresher Course Passed on 03/24/13 (Ref # 9171081)

Required Modules	Date Completed	Score
SBE Refresher 1 – History and Ethical Principles	03/23/13	5/5 (100%)
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects	03/23/13	4/5 (80%)
SBE Refresher 1 – Informed Consent	03/24/13	5/5 (100%)
SBE Refresher 1 – Research with Prisoners	03/24/13	4/4 (100%)
SBE Refresher 1 – Research in Educational Settings	03/24/13	4/5 (80%)
SBE Refresher 1 – Instructions	03/24/13	no quiz
Central Michigan University	03/24/13	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Return

APPENDIX B

ADULT CONSENT FORM

Study Title: Exploring the Influence of Departmental Acculturation on Teaching Philosophy and Practice of Biology Professors

Research Investigators' Names and Departments:

Melissa M. Haswell (doctoral student in the Educational Leadership Department and principal investigator)

Dr. Daniel Kaczynski (dissertation committee chair); Educational Leadership Department

Contact information for:

Student:	Advisor:
Melissa Haswell	Dr. Daniel Kaczynski
944 Outback Ridge	Campus Address: EHS 338
Midland, MI 48640	Phone: (989) 774-7365
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Phone: 989-859-5761	

Introductory Statement

You are cordially invited to participate in a doctoral research project that is scheduled to be conducted at your university during the spring semester 2013 and fall semester of 2013. The purpose of this study is to identify how various aspects of departmental culture influence how biology faculty at four-year research universities conceptualize and prioritize teaching, research, and service roles, which is the basis of their scholarly identity and ultimately influences their choice of teaching practices. This research will be used to fulfill the dissertation requirement for the attainment of a doctoral degree in educational leadership. You are being asked to participate

because you are either a tenured or tenure-track faculty member in the biology department at Transformation University. The principal investigator, Melissa Haswell, is also available to answer any questions that you may have regarding the project.

What is the purpose of this study? The purpose of this study is to identify how various aspects of departmental culture influence how biology faculty at four-year research universities conceptualize and prioritize teaching, research, and service roles, as well as how they develop this identity throughout their academic career. A better understanding of the acculturation process of biology faculty members is important for biological science education in order to improve student learning and retention. Disciplinary-based acculturation begins as part of the graduate school socialization process and is further shaped by the faculty member's hiring institution and its departmental culture. This combination of discipline-based cultural influences is thought to be the primary driver for a faculty member's professional and personal identity, which then influences their choice of teaching methods.

What will I do in this study? Each participant will be asked to agree to and participate in 1) a personal, face-to-face interview 2) complete a brief demographic survey, 3) a classroom observation, and an optional 4) participation in a follow-up faculty focus group (a separate consent form will be provided if you choose to participate in the focus group session).

Please initial here if you agree to be recorded during your face-to-face interview:

Initials:_____

How long will it take me to do this? 1) The interview portion of the study will take approximately one half to one hour of the participant's time. 2) The demographic survey will take approximately 10 minutes to complete. 3) The classroom observation will not involve any direct participation as the researcher will be observing a classroom teaching session. 4) Follow-up focus group participation will take approximately one hour of additional face-to-face time.

Are there any risks of participating in the study? Participation risk is minimal and the magnitude of harm or discomfort anticipated would be no more than those encountered in daily life or during a routine day at work.

What are the benefits of participating in the study? While there is no immediate, direct benefit to you as a participant, the results may contribute to a better understanding of the acculturation process of biology faculty members. This information may be helpful in improving biological science education at this institituion, as well as others to improve student learning and retention.

Will anyone know what I do or say in this study (Confidentiality)? The information that you provide for this research will be treated confidentially, and all raw data, which will include audio recordings of the interviews, will be kept in a secured digital file by the principal investigator. The only persons that will have access to the raw data will be the principal researcher and her dissertation committee chairperson. Further, to ensure confidentiality, your name will not be used to identify the questionnaire and interview data collected from you. Instead, you will be assigned a number at the beginning of the project and the data collected from you in written and audio format will be recorded under the assigned number. If a participant withdraws from the

study, the audio recording will be destroyed. Results of the research will be reported as aggregate summary data, and no individually identifiable information will be presented. Each participant will also have the right to review the results of the research if they wish to do so. A copy of the results may be obtained by contacting the principal investigator at the indicated address listed below. In addition, your participation in this research project will be kept confidential and will not be reported to other faculty members in your department, the department chair, or your respective dean.

You should be aware that the results of the study will be shared with your dean and department chair upon their request. However, all identifiers will be removed so that participant responses are presented anonymously.

Will I receive any compensation for participation? No compensation will be awarded for participating in this study.

Is there a different way for me to receive this compensation or the benefits of this study? Not applicable.

Who can I contact for information about this study?

Melissa Haswell

944 Outback Ridge

Midland, MI 48640

E-mail: palme2mm@cmich.edu

Phone: 989-859-5761

You are free to refuse to participate in this research project or to withdraw your consent and discontinue participation in the project at any time without penalty or loss of benefits to which you are otherwise entitled. Your participation will not affect your relationship with the institution(s) involved in this research project.

If you are not satisfied with the manner in which this study is being conducted, you may report (anonymously if you so choose) any complaints to the Institutional Review Board by calling XXX-XXX-XXXX, or addressing a letter to the Institutional Review Board, at Transformation University.

My signature below indicates that all my questions have been answered. I agree to participate in the project as described above.

_____ _____

Signature of Subject Date Signed

A copy of this form has been given to me. _____ Subject's Initials

_____ _____

Signature of Responsible Investigator Date Signed

APPENDIX C

INTERVIEW PROTOCOL

Questions for Interview I

1. How did you decide to become a college professor?

   Possible Probe:

   a. Was this your original career goal?

   b. Do you enjoy this profession?

   c. Do you have any second thoughts regarding this profession?

2. Tell me what it has been like to be a college professor today?

   Possible Probe:

   a. When you selected this profession was teaching or working with students your main goal?

   b. If teaching and/or working with students was not your main goal, then what was your goal?

3. How do you feel the members of your department or departmental by-laws affect the prioritization of your roles (service, teaching, research) as a faculty member?

   Possible Probes:

   a. Do you feel that one of these roles is valued more than the other(s)?

   b. If so, which one?

4. How do you define the scholarship of teaching?

   Possible Probe:

   a. Are you familiar with Boyer's description/definition of the scholarship of teaching?

b. Based on Boyer's definition, do you think your department would value this type of scholarship?

5. Describe your interpretation of an "expert" teacher.

Possible Probes:

a. What characteristics do you consider an expert teacher to possess?

b. Do you think an "expert" teacher should also conduct research in their discipline or focus on teaching?

c. Do you think your department values expert teachers?

6. What types of teaching methods do you use most frequently?

Possible Probes:

a. Do you use active learning methods? If so, which ones?

b. Do you use case studies or other critical thinking assignments?

c. Do you apply teaching methods based on science education research?

d. Do you use scientific teaching methods?

e. Do you apply/incorporate AAAS core competencies?

7. Are there important characteristics that college professors need to possess or to develop in order to be an effective teacher?

Possible Probes:

a. Which would you give the highest priority?

b. Are there characteristics that are specifically effective in teaching biology to undergraduate college students?

c. Do you think your department values the characteristics that you give highest priority?

8. Since you have begun teaching, in what types of professional development programs have you participated in?

Possible Probes:

a. Have you attended any the development of discipline-based teaching focused conferences or seminars? If so, what were they like?

b. Have you attended any programs that aid in the general development of course material and college-level teaching? If so, what where they like?

c. In your opinion, what should professional development programs focus on?

d. Do you use the teaching resources provided by the university's teaching excellence department?

e. Do you use personal reflection as part of your professional development?

9. Thinking back to the programs from the college/university that you attended for graduate school, did your program help or hinder your development as a college professor?

Possible Probes:

a. Did your content course work adequately prepare you for the subjects that you teach?

b. Did your program adequately prepare you for dealing with the cognitive needs of undergraduate students?

c. Did your program prepare you with teaching or course preparatory skills?

10. Of all of the activities that you perform in your role as a professor, which do you consider to be scholarly?

Possible Probes:

a. What types of activities do you think your department values as being scholarly?

b. What types of service work do you perform?

c. Do you have unpublished scholarly works such as development of an innovative technology, involvement in a local/community organization, or development of new teaching methods?

d. Do you consider teaching to be a scholarly activity? If so, what types of teaching "scholarship" are you involved in?

Questions for Interview II

1) How are new faculty members socialized? What is the initial socialization process beyond new employee orientation? What would you tell/share with new faculty members entering the department with regard to norms? Performance standards? A realistic job preview? Is there a clear dissemination of performance standards? Were expectations made clear? Was there an indication of the morale? How is the information disseminated (formal vs informal)? (Tierney, 1988; Rosch & Reich, 1996)

2) What are symbols of the department? (Tierney, 1988, p. 9)

   a. Stories?

   b. Activities?

   c. Camaraderie?

   d. Do you all feel like you are contributing to a greater good?

3) Adaptive activities → i.e. organizational planning, environmental analysis, innovation, & experimentation; do you think the department adapts creatively & sees themselves as an integral part of the larger institution? (Bolton & Boyer, 1973, p. 354).

4) How much emphasis is placed on interactions with undergrads versus graduate students? (scale 1-10) (Bolton & Boyer, p. 367)

5) Individual learning supports system learning; this can be used strategically by leadership to inform organizational learning. Do you have leaders in place that influence change by example or do faculty seem to work more as independent contractors? Do you think tenure-track faculty have stronger connection to the department? (Holyoke, et.al. 2012, p. 443-444).

   a. Is there more empowerment in the autonomy of your work because there is not direct supervision?

   b. Do you feel empowered?

6) How well do you integrate department/organizational goals with your personal goals?

7) What would you tell/share with new faculty entering the department?

APPENDIX D

DEMOGRAPHICS QUESTIONS

1. Please indicate your gender.
    a. Male
    b. Female

2. Please indicate your current age range:
    a. 25-35
    b. 35-25
    c. 45-55
    d. 55-65
    e. 65 or greater

3. Please indicate the ethnicity that best describes you.
    a. Caucasian
    b. Native American
    c. Asian
    d. Hispanic
    e. African American
    f. Other

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