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Curriculum Ideology, Pedagogy, and Interprofessional Collaboration: A Survey of Dietetics Educator's Views and Practices

Cassondra L. Strawser

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CURRICULUM IDEOLOGY, PEDAGOGY, AND INTERPROFESSIONAL

COLLABORATION: A SURVEY OF DIETETICS

EDUCATOR'S VIEWS AND PRACTICES

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Education

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Title: Curriculum Ideology, Pedagogy, and Interprofessional Collaboration: A Survey of
     Dietetics Educator's Views and Practices

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The researcher surveyed 126 members of the Nutrition and Dietetic Educators and Preceptors (NDEP) group from all six NDEP regions across the country to examine the relationship between their ideologies, commonly utilized pedagogical techniques, and collaborative experiences with colleagues from different professions. The study also examined the influence of factors such as administrative duties; age; faculty ranking; primary type of instruction provided; teaching experience; course level; university or college setting; average class size; and average teaching load.

Descriptive statistics show that the majority of respondents identified with the social efficiency ideology, followed by learner centered and social reconstruction. The majority of respondents taught face-to-face; a small proportion used a hybrid approach or taught fully online. The three most commonly utilized pedagogical techniques were lecture; open-class discussion; and small-group discussion. Flipped classroom and service-based learning were the least commonly utilized pedagogical techniques.

Inferential statistics and crosstabulation reveal that teaching face-to-face and teaching at the undergraduate level significantly predicted the use of lecture as a preferred pedagogical technique, while teaching at the graduate level was significantly associated with the use of open-class discussion. Teaching face-to-face significantly predicted lower levels of using flipped classroom and service-based learning. Teaching at the graduate level significantly predicted

greater odds of coauthorship with professionals outside of nutrition and dietetics and of

developing or supervising a community-based nutrition intervention with non-dietetics

professionals. Recommendations for dietetics faculty include incorporation of curriculum

ideological assessment as a reflective tool; professional development in the areas of curriculum

development, implementation, assessment, and the use of innovative pedagogical strategies; and

taking advantages of opportunities for interprofessional collaboration in teaching and research.

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CHAPTER ONE

INTRODUCTION

"Whoever our students may be, whatever the subject we teach, ultimately we teach who we are"

– Parker J. Palmer

Like all educators, dietetics professors have the ability to profoundly impact their students' lives. During their undergraduate education, dietetics students are exposed to much more than just course content: they are exposed to the values, traditions, and norms of their respectful university; department; and of the individual professors. While undergraduate dietetics programs must adhere to accreditation standards, professors still possess flexibility in making pertinent decisions regarding curriculum development, implementation, and assessment. Dietetics professors must also keep abreast of professional trends and factors related to curriculum development, such as changes in the US health care system and an increasingly collaborative work environment. Dietetics professors play a key role in shaping student's identities and contributing to the professionalization process as future dietitians. Therefore, it is worthwhile to study dietetics professors' curriculum ideological views; preferences for pedagogical techniques; and perceptions of interprofessional collaboration.

This chapter provides a background that includes information on the educational preparation of a Registered Dietitian Nutritionist (RDN) and the contributions of dietitians in health care. Literature regarding challenges of undergraduate dietetics curriculum development; interprofessional collaboration; and 21st century teaching strategies to support enhanced learning are described. The research problem is presented along with the proposed theoretical framework to study the problem. The purpose of the study and research questions; significance of the study;

and limitations and delimitations are described. This chapter concludes with key definitions of commonly used terms and the chapter summary.

Background

The Academy of Nutrition and Dietetics (AND) defines a Registered Dietitian Nutritionist (RDN) as a "food and nutrition expert" who has completed a minimum of a bachelor's degree in an accredited dietetics program and a supervised practice program (typically 6-12 months in length); passed a national registration exam; and maintains continuing professional education requirements ("What is a Registered Dietitian Nutritionist?," 2016). While the majority of RDN's work in disease prevention and treatment (often acute and long-term care settings, such as hospitals and health care facilities) many work in other settings such as public health; foodservice operations; "nutrition-related businesses and industries" that emphasize wellness promotion; private practices; and universities and research centers ("Work settings and areas of expertise for RDNs," 2016).

The Accreditation Council for Education in Nutrition and Dietetics (ACEND) is the accreditation agency used by the Academy for dietetics programs ("About ACEND," 2015). The 2017 ACEND accreditation standards for Nutrition and Dietetics Didactic programs (DPD) guide curriculum development, implementation, and assessment. Core knowledge requirements address key curricular areas such as communication skills; critical thinking skills; integration of research into practice; interprofessional relationships; and the roles of sustainability, food, and lifestyle choices in disease prevention (ACEND, 2016). These updated standards reflect current trends in health care and the dietetics profession, such as interprofessional collaboration, integrative health care, and increased awareness of environmental factors related to food and nutrition.

In addition, chronic disease rates that correlate with dietary and lifestyle factors (heart disease, diabetes, certain cancers, and obesity) are still of major concern in the US, with approximately half of the adult population diagnosed with one or more of these conditions in 2012 (CDC "Chronic Disease Overview," 2015). In the Academy's position paper titled "The Role of Nutrition in Health Promotion and Chronic Disease Prevention" dietitians were described as "critical members of health care teams" and the Medical Nutrition Therapy (MNT) services provided by dietitians were "cost-effective" in the treatment of obesity, diabetes, and heart disease (Leachman Slawson, Fitzgerald, & Morgan, 2013, pp. 972-975). Ideally, patients with chronic diseases are treated using a team approach which makes it necessary for dietitians to function effectively in an interdisciplinary health care setting.

Challenges of Curriculum Development

It appears as if the dietetics profession is at times operating under competing mindsets. As a result of the increased emphasis on disease treatment, dietitians are working more as clinical staff and may not be taking advantage of leadership and managerial opportunities (Nyland & Lafferty, 2012; Rhea & Bettles, 2012). However, there are differing opinions as to how to address the lack of role diversity within the profession. Some tout the importance of "rigorous scientific training" in order to work as part of interdisciplinary teams, with more emphasis on outcomes-based research to quantify the value of dietitians' services (Nyland & Lafferty, 2012, p. S92). On the other hand, Rhea and Bettles (2012) described a "preferred future" scenario where dietitians developed a more diverse skill set that included "team-building skills," "high levels of cultural competency" and greater "problem-solving skills" (p. S27). The authors cautioned that a lack of interest in food and culture will leave other practitioners with opportunities that dietitians may be less likely to embrace (Rhea & Bettles, 2012). Therefore,

dietetics educators must make decisions regarding the curriculum and supervised practice programs to adequately prepare future dietitians to meet these challenges.

Some within the profession fear that the curriculum has transitioned to more of a medical-based model with excessive emphasis on science and outcomes-based research (Capra, 2012; Cuddy, 2012; Gingras, Asada, Fox, Coveney, Berenbaum, & Aphramor, 2014; Sharp, 2012). Sharp's (2012) reflective piece included the observation that students often fail to see the connection between objective-based research and the "subjective experiences and relationships that our clients and patients have with food" (p. 36). Cuddy (2012) agreed and described an "increasingly scientistic" curriculum with a shift in perspectives from studying foods and the meaning of eating (to include cultural and societal views) to studying specific nutrients and disease – thereby increasing disconnect between mind and body (p. 41). Coveney (2011) points out the irony in that dietetics actually predates nutrition, which did not begin to flourish until the 19th century and was founded primarily in empirical science. Dietetics was much more holistic in linking physical health with mental and spiritual well-being (Capra, 2012). Capra claimed that "the 'art' (of dietetics) has been threatened by the hyper-emphasis on objective, randomized controlled trials and evidence-based practice" (p. 181).

Additional curricular challenges include creating opportunities for reflection and identity exploration; communication and empathy-building skills; and enhancing knowledge of food and cultures (Atkins & Gingras, 2009; Gingras, 2010; Gingras, Asada, Fox, Coveney, Berenbaum, & Aphramor, 2014; Kessler, Burns-Whitmore, & Wallace, 2010; McArthur, Greathouse, Smith, & Holbert, 2011; Sharp, 2012). Gingras (2010) conducted a qualitative study with dietitians in Canada that revealed that although practicing dietetics is highly emotional work, future dietitians are taught to be "objective" because "the objectiveness puts you on the same plane as the

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medical folk" (p. 442). In addition, she found that dietetic intern preceptors noted that most interns were competent in terms of technical knowledge and skills; however, they often struggled to "connect with others" (Gingras, 2010, p. 444).

Interprofessional Collaboration

Interprofessional education is an example of interdisciplinary curriculum development for healthcare professionals. DiMaria-Ghalili and colleagues (2014) encouraged including nutrition in the curriculum for the following disciplines: medicine, dentistry, nursing, and pharmacy. The author's stated there was a need for these professionals to learn about nutrition as it related to their individual disciplines; however, they cautioned that discipline-specific competencies needed to be established before interprofessional training took place (DiMaria-Ghalili, Mirtallo, Tobin, et al., 2014).

Concerns regarding non-dietetic student's perceptions of the dietetics profession were reported in interprofessional education studies (Earland, Gilchrist, McFarland, & Harrison, 2011; Smith & Christie, 2004). Smith and Christie (2004) conducted a case study that focused on collaboration between graduate physical therapy and nutrition students and found that some physical therapy students reported negative attitudes towards the nutrition students' contributions, mainly in the areas of knowledge and the ability to apply discipline-specific information stating. Researchers conducted a mixed-methods study of dietetic student's perceptions of an online interprofessional education module that revealed that the students perceived dietitian's role to be marginalized; therefore, some anticipated needing to promote the role of the dietitian more when beginning their internship (Earland et al., 2011). Vrchota (2011) reported similar findings such as student's lack of confidence and discomfort with communication with health care professionals, especially those in positions of power.

While practicing dietitians are often confident in their level of knowledge and technical skills research suggests that dietitians may struggle with obtaining recognition as part of an interdisciplinary team (Cantwell, Clarke, & Bellman, 2006; Dahlke, Wilson, & Brodnik, 2000). These examples illustrate potential concerns with interprofessional collaboration, both within the dietetics profession and during educational preparation as future dietitians.

Integrative Pedagogy Techniques

In the 21st century universities are encouraged to educate students to become future collaborators and problem-solvers, with an emphasis on knowledge that is both relevant and transferable for stakeholders outside of the academic setting (Russell, Wickson, & Carew, 2008). Twenty-first century skills are defined as a collective description of "knowledge, skills, and dispositions seen as prerequisites for success in the global workplace of the future" and are also known as the "4 C's:" "critical thinking and problem solving skills, communication skills, collaboration skills, and creativity and innovation skills" (Germaine, Richards, Koeller, & Schubert-Irastorza, 2016, p. 19). Twenty-first century skills are not learned in isolation from one another and are considered essential components of learning in order to understand relationships and "relevance of ideas to people and new situations" (Germaine et al., 2016, p. 26). As businesses and industries are no longer considered fragmented and departmentalized, students should no longer be educated in a similar fashion: teaching subjects in isolation from one another, without opportunities to foster connections and relationships between content as well as with non-academic experiences (Anderson, 2013; DeZure, Babb, & Waldmann, 2005).

Integrative learning experiences such as problem-based learning; service learning; and experiential learning foster positive outcomes such as increased ability to empathize and appreciation for multiple perspectives (Leveritt, Ball, & Desbrow, 2013; Moore & Andrews,

2012; Roofe, 2012). Integrative pedagogies may also enhance students' critical thinking skills (Wingert, Wasileski, Peterson, et al., 2014). Faculty reflexivity is a necessary component of developing integrative learning experiences for students. Booth (2011) found that faculty should consider what learning means to them and how the concept of expertise should be defined. As the dietetics profession evolves to embrace the 21st century, dietetics professors have the opportunity to reflect on the purposes of dietetics education and what it means to be a dietitian.

Problem

"Dietetics" was defined as "the professional discipline of applying and integrating scientific principles of food, nutrition, biochemistry, physiology, management, and behavioral and social sciences under different health, social, cultural, physical, psychological, and economic conditions for the proper nourishment, care, and education of an individual or group throughout the life cycle to achieve and maintain human health" ("Licensed Dietitian Act,"1999). The study of food and eating is complex; indeed, the dietetics curriculum should include multiple perspectives from the natural and social sciences, such as biology, chemistry, psychology, sociology and anthropology (Accreditation standards, 2012, p. 68). The following is an example of sociologists' interest in the discipline (Ward, Coveney, & Henderson, 2010):

> Whether the concerns are about lack of food, too much food, the quality and/or safety of food, how/what to feed family/children, or the symbolic meanings attached to different types of foods, the central issue is that we all, as human beings, have to eat in order to survive. (p. 347)

Dietetics was a discipline historically rooted in holistic healing; the idea that food was not merely for sustenance, but rather an integral component of mind-body wellness. Food and nutrition are not studied in isolation; rather, perspectives from the natural and social sciences are

necessary in order to promote health for all. Nutritional science redirected this focus to nutrients and how specific properties of foods could heal the human body. This resulted in the idea that we need to consume specific nutrients for a specific purpose, without considering cultural, sociological, and economic relevancy (Coveney, 2011; Gingras et al., 2014). The science behind nutrition is largely considered both valid and reliable using primarily quantitative, objective methodology. Some have expressed concerns that dietitians have become overly objective in their interactions with clients and patients, focusing more on evidence-based practices in lieu of communication and collaborative skills. The paradigm shift to the use of evidence-based practices; coupled with the profession's call for outcomes-based research to support the legitimacy of dietitians' services; has led some to question if the dietetics discipline has wandered too far from the original ideology.

Challenges of undergraduate dietetics curriculum development and implementation include balancing an increased emphasis on MNT and clinical nutrition with the need for more opportunities for student reflection and interprofessional collaboration. An increasingly diverse and aging population necessitate the ability of dietitians to adapt existing programs and to create new services to meet the public's needs (Nyland & Lafferty, 2012). Capra (2012) questioned whether it was favorable to continue to embrace dietitian's standards of practice when technology and the desire for interdisciplinary teamwork are increasingly preferred over expertise and competition.

Analysis of the Dietetics Workforce Demand Study revealed the need for more diverse employment opportunities within the profession, including participation in interdisciplinary teams (Nyland & Lafferty, 2012). Recommendations included a need for enhanced business skills and "rigorous scientific training" to work as part of interdisciplinary teams (Nyland &

Lafferty, 2012, S92). Indeed, a "feared future" scenario for the dietetics profession was one where overemphasis on clinical nutrition forced young, diverse students to choose between clinical dietetics programs and those that focused more on food (Rhea & Bettles, 2012). A responsive, flexible educational system allows future dietitians to acquire a much-needed skill set that includes problem-solving, team-building skills, and "high levels of cultural competency" (Rhea & Bettles, 2012, S27). An exploration of ideologies of dietitians in academia is warranted, as dietetics professors play key roles in shaping students' perceptions of self and of the dietetics profession (Atkins & Gingras, 2009; Sharp, 2012).

Educators could provide unique perspectives into the professionalization process of dietitians (Atkins & Gingras, 2009). Professors' beliefs regarding curriculum, teaching, and collaboration provide insights into how dietetics as a profession is viewed. One way to capture this information is to survey dietetics professors using a modified version of Schiro's Curriculum Ideology Inventory (2013) that includes pedagogical preferences, attitudes towards interdisciplinary collaboration, and demographics.

Theoretical Framework

The Curriculum Ideology Inventory and modified versions have been used in several research studies (Bhatt, 2013; Cotti, 1997; Cotti & Schiro, 2004; Farahani & Maleki, 2013; Mathew, 2014). Schiro's Curriculum Ideologies Inventory (2013) assessed for which ideologies participants most identify with: Scholar Academic, Social Efficiency, Learner Centered, and Social Reconstruction. It was possible for educators to associate with more than one ideology, and research suggested that curriculum ideologies often changed every 4 years or so, often accompanying life changes such as teaching a different grade level; changing jobs; or gaining

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new perspectives regarding students or communities (Schiro, 2013). Schiro (2013) emphasized the importance of understanding our underlying curricular beliefs.

Purpose of the Study

The purpose of this descriptive quantitative study was to use Schiro's Curriculum Ideology Inventory (2013) to describe as well as to examine the relationship between dietetic professors' ideologies, commonly utilized pedagogical strategies, and collaboration with colleagues from different professions. The study also examined the influence of factors such as administrative duties; age; faculty ranking; primary type of instruction; teaching experience; level of courses taught; university or college setting; average class size; and average teaching load.

Research Questions

The study was guided by the following research questions:

1. Based on Schiro's Curriculum Ideology Inventory (2013) which ideological positions do dietetics professors favor?

2. How do commonly identified curriculum ideological positions relate to pedagogical techniques used in the classroom and collaboration with professionals outside of dietetics?

   a. Is there a statistically significant association between dietetics professors' ideological positions and their choice of pedagogical techniques? Are there differences between ideology and pedagogical techniques?

   b. Is there a statistically significant association between dietetics professors' ideological positions and collaboration with professionals outside of dietetics? Are there differences between ideology and collaboration with professionals?

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3. What demographic factors are associated with dietetics professors' commonly identified curriculum ideological positions?

   a. Is there a statistically significant association between ideology and job description (teaching and teaching with administrative duties)?

   b. Is there a statistically significant association between ideology and age?

   c. Is there a statistically significant association between ideology and rank?

   d. Is there a statistically significant association between ideology and primary type of instruction provided (online; face-to-face; or hybrid)?

   e. Is there a statistically significant association between ideology and number of years teaching in higher education?

   f. Is there a statistically significant association between ideology and level of courses taught?

   g. Is there a statistically significant association between ideology and type of college or university setting?

   h. Is there a statistically significant association between ideology and class size?

   i. Is there a statistically significant association between ideology and teaching load?

4. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict commonly used pedagogical techniques?

5. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university

setting, level of courses taught, class size, and teaching load predict collaboration with professionals outside of dietetics?

Research Design

Quantitative research aims to "produce findings that are objective, reliable, valid, and reproducible" using a deductive approach (Pierce, 2013, p. 133). The researcher tests a theory or theories; identifies variables and relates these to the research questions; and collects and analyzes data "that either supports or refutes the theory" using statistical procedures (Creswell, 2014, p. 7). Survey research is a non-experimental design defined as providing a "quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2014, p. 13). Survey research was chosen to describe curriculum ideologies of dietetics professors and to examine potential relationships between several variables. This is an appropriate method to use when the population of interest is accessible; there is lack of substantial secondary data available regarding the research topic; and the researcher intends to generalize findings from the sample to the population (Rea & Parker, 2005).

Significance of the Study

Due to the recent adoption of the 2017 accreditation standards and proposed educational models, along with changes within both the dietetics profession and in health care, this study provides insights into how dietetics professors' view curriculum. The researcher was unable to locate studies that focused on dietetics professors' curriculum ideological views. Dietetics professors help shape students' identities and thereby contribute to the socialization process as future dietitians (MacLellan, Lordly, & Gingras, 2011). There was limited research related to commonly utilized pedagogical techniques in dietetics education and attitudes concerning

interprofessional collaboration. This study provides valuable insights into how dietetics professors view curriculum, pedagogy, and interprofessional collaboration.

Limitations

This study is subject to several limitations. A limitation of using an online survey with the NDEP group was that not all members of NDEP were teaching in higher education. Membership in NDEP is based on interest in education; therefore, some members may be community-based nutrition educators or may teach in areas outside of the parameters of the study design. Second, the survey was administered online so the researcher was not present to address any questions or to provide clarification of instructions. Schiro's Curriculum Ideology Inventory (2013) was originally developed using a pencil-and-paper format, and most studies that used the inventory or modified versions were done in-person using the paper format to develop a graph of preferences (Bhatt, 2013; Cotti, 1997; Cotti & Schiro, 2004; Schiro, 1992).

Sampling concerns associated with an online survey include systematic bias because some respondents prefer online surveys compared to others (Wright, 2005). Respondents who enroll for a chance to win a financial incentive may undermine the credibility of a survey, as many online surveys offer bogus claims to win prizes (Wright, 2005). To remove this particular limitation, the researcher used a university email and included detailed instructions for informed consent which enhanced the perceived credibility of the study. Finally, the survey responses provide a snapshot of respondent's views at that particular moment in time. This study did not assess ideological views over an extended period of time. Given that ideologies tend to change over time (Schiro, 1992) these results may not have been an accurate representation of respondents' ideological preference.

Delimitations

This study focused on current members of the dietetic practice group NDEP. For convenience purposes, this study did not include dietetics professors who were not members of NDEP. In addition, because one needs to be a member of the Academy of Nutrition and Dietetics (AND) in order to be a member of NDEP, this study automatically excluded dietetics professors who chose not to be members of AND. This study excluded professors from Dietetic Technician Programs (DT) because the study focused on educators of future Registered Dietitian Nutritionists (RDN) from undergraduate and graduate degree-granting institutions.

Definition of Terms

The following key terms have been more clearly defined in order to facilitate a greater understanding of the study:

1. Interdisciplinary: a "process for achieving an integrative synthesis" and "usually begins with a problem, question, topic, or issue" (Klein, 1990, p. 188).

2. Interprofessional education: Students from "two or more professions learn about, from, and with each other to enable effective collaboration and improve health care" (DiMaria-Ghalili et al., 2014, p. 1185S).

3. Outcomes-based research: "gathering of information on the effectiveness of usual or standard care;" deemed vital to the dietetics profession because it "demonstrates that dietetics professionals are the best sources of nutrition therapies and that these services are patient-centered, cost-efficient, and cost-effective" (Gardner, Rall, & Peterson, 2002, p. 65).

4. Scholar Academic ideology: educators who assume more of a hierarchical position within the classroom; greater emphasis on course content and knowledge acquisition (Schiro, 2013).

5. Social Efficiency ideology: educators focus more on performance-based learning; greater emphasis on demonstration of skills and modification of learning behaviors (Schiro, 2013).

6. Learner Centered ideology: educators focus on the individual learner's needs, to include consideration of developmental stage and modification of the learning environment; educators assume more of a facilitator role (Schiro, 2013).

7. Social Reconstruction ideology: educators focus more on curriculum development from a social perspective; educators facilitate student learning by encouraging problem-solving related to issues such as race, poverty, pollution, and economics (Schiro, 2013).

8. Academic rank: "the rank of a faculty member in a college or university, as professor, associate professor, assistant professor, or instructor" (dictionary.com).

9. Course level: defined as undergraduate (courses taken in preparation for a bachelor's degree); graduate (courses taken in preparation for a master's degree); or doctoral-level (courses taken in preparation for a doctoral degree).

10. University/college setting: defined as predominantly 2-year (public/private) or 4-year (public/private). Two-year institutions typically focus on transfer programs (with the intent of transferring credits to a 4-year institution) or serve as "terminal degree" programs whereby an associate's degree is awarded ("Different types of colleges and universities," 2018). Public universities receive funding primarily from government

sources; therefore, tuition is typically less compared to private universities, which are primarily funded from donations. However, both types of institutions must adhere to accreditation standards ("Different types of college and universities," 2018).

11. Average teaching load: defined as a range from 3 credits per semester to 12 credits or more per semester.

Summary

This chapter highlighted the significance of conducting a quantitative study that aimed to identify dietetics professors' curriculum ideological views, commonly utilized pedagogical techniques, and perceptions of interprofessional collaboration. The researcher defined *dietitian*, described the importance of dietitians' contributions to health care, and provided background information regarding accreditation standards of undergraduate dietetics programs in the US. The researcher described literature that emphasized the importance of studying dietetics professors' worldviews: this included current challenges of undergraduate dietetics curriculum development; the importance of interprofessional collaboration; and integrative pedagogical techniques for enhanced learning. The researcher briefly described Schiro's curriculum framework, as well as the limitations and delimitations of the study. Definition of key terms were provided to enhance understanding of the dietetics profession and background. Chapter two includes an in-depth literature review of the aforementioned areas.

CHAPTER TWO

REVIEW OF LITERATURE

The dietetics profession has undergone changes in terms of scope of practice; increased emphasis on evidence-based practices and outcomes-based research; and educational requirements of RDN's. Concurrent paradigm shifts in both health care and higher education (i.e. patient-centered care and learner-centered education), along with increased focus on interprofessional and interdisciplinary collaboration, necessitate a closer examination of dietetics professors' ideologies. Dietetics professors are responsible for curriculum development, implementation, and assessment. Their unique perspectives regarding teaching and learning shape key curricular and pedagogical decisions. However, there is a lack of literature regarding ideological views of curriculum, pedagogy, or collaboration across disciplines within higher education in dietetics. This chapter includes a brief examination of the history of dietetics; paradigm shifts within the dietetics and health care professions; recent accreditation standards; challenges of undergraduate dietetics curriculum development; support for a recommended skill set for RDN's; interprofessional and interdisciplinary collaboration; collaborative barriers in higher education; factors related to curriculum development; integrative curriculum and pedagogical techniques; and the theoretical framework used for this study.

History of Dietetics

The word *dietetics* comes from the Greek word "diete," meaning "daily governance of living" (Coveney, 2011, p. 2). Dietary practices were recorded as far back as the archaic period, when humans ate and drank according to their state of mind: for example, fasting was used during critical or impure states of mind and then food was introduced to support normality (Tremolieres, 1975). During the 5th century BC, Hippocrates wrote extensively on human

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nutrition (Tremolieres, 1975). He believed the human body could restore balance on its own, as the concept of maintaining melancholy with an appropriate balance of hot and cold foods was an accepted practice during this period (Tremolieres, 1975). Religious practices, such as hunger and abstinence, were influential components of the evolution of both dietetics and nutrition (Coveney, 2011). Up until approximately the 18th century, dietary practices were holistic; feeding the body was considered in the context of emotional, physical, spiritual and moral balance (Cannon, 2005; Capra, 2012; Coveney, 2011; Tremolieres, 1975).

The rise of nutrition science in the 18th century substantially narrowed perspectives as chemists, physiologists, and microbiologists made significant contributions in the areas of macro- and micronutrient discoveries and disease treatment (Cannon, 2005; Carpenter, 2003; Tremolieres, 1975). Coveney (2011) argued that *dietetics* and *nutrition* were vastly different, not only in terms of definition but epistemological underpinnings. He defined the terms as followed: "Dietetics is the art and science of healing through the management of diet, and nutrition is the science of the provision of cells and organisms of the material necessary to support life." (2011, p. 2).

Between the late 1700's – early 1900's, diseases caused by dietary deficiencies such as scurvy (Vitamin C), night blindness (Vitamin A), goiter (Iodine), beriberi (protein), and rickets (Vitamin D) were discovered (Carpenter, 2003a; Carpenter, 2003b). William Atwater (known as the "father of nutritional science") discovered the energy of fat, carbohydrates, and protein to be 9, 4 and 4 kcal/gram known as the "Atwater factors" still used today (Carpenter, 2003b, p. 977). The 1930's were dubbed as the "golden age of nutrition" as one major finding after another was discovered, namely vitamins and minerals (Carpenter, 2003c, p. 3031). Malnourished troops during World War II contributed to the push for fortification of foods, such as flour, along with

the development of the Recommended Dietary Allowances (RDA's) of nutrients (Stein, 2014). During the 1940's, dietitians were heavily recruited by the Army and subsequently the profession advanced with a formal definition of a dietitian and development of educational requirements that supported the professional title (Stein, 2014). During the mid-late 20th century, nutrition research shifted from the discovery of macro- and micronutrients and dietary deficiencies to prevention of chronic disease (Carpenter, 2003d).

In 1975, Tremolieres argued to return to a more holistic approach to disease treatment and prevention: "degenerative diseases of the heart and blood vessels" are really "disorders of adaptation to the conditions of life: obesity, digestive malfunctions, depression, anxiety, and drug addiction" (p. 107). Man struggled to survive the stresses of society which resulted in overconsumption of alcohol, sugar, and fat-a "sickness of the soul" (Tremolieres, 1975, p. 108). Thirty years later, Cannon (2005) made a similar assertion: nutrition as a science had become "less a philosophy of life, more an instrument of state" (p. 702). He argued:

> The discovery of the therapeutic power of antimicrobials, and thus the spectacular growth of the pharmaceutical industry, has led to the ascendency of modern medicine and therefore to the decline of public health and of social and environmental aspects of nutrition. (2005, p. 703)

Cannon (2005) feared that nutritional scientists were not properly trained to consider their research within contextual influences and the continued emphasis on randomized controlled trials and biased research funding would continue to limit the scope of nutrition into the 21st century. Carlisle and Hanlon (2014) agreed that four 'isms' (nutritionism, consumerism, individualism, and economism) exerted a profound influence on public health nutrition in the United States. Subjective individual experiences, to include cultural and shared meanings

associated with food and eating, were discredited in favor of nutrition science and economic incentives for food production and consumption (Carlisle & Hanlon, 2014). There is a growing body of literature that suggests public health nutritionists should consider perspectives from fields such as anthropology, history, psychology, and sociology (Carlisle & Hanlon, 2014).

Paradigm Shift Within the Dietetics Profession

Congress passed a Medicare Part B Medical Nutrition Therapy (MNT) provision in 2000 that allowed diabetes and renal disease MNT services to be covered under the care of a Registered Dietitian (Smith, Patrick, Michael, & Hager, 2005a). This was a turning point in the profession; services provided by dietitians were recognized as legitimate and effective in helping patients with chronic diseases. Along with greater third-party reimbursement opportunities for dietitians came greater pressure to prove dietitians' services as effective with documentation of patient outcomes (Byham-Gray, 2005). Outcomes-based research became a priority to "document the value and efficacy of dietetics services" (King, Byham-Gray, O'Sullivan Maillet, et al., 2014, p. 229). Dietitians were encouraged to become more involved in research, not only to demonstrate effectiveness of dietetics interventions but also to meet national demands of patient-centered health care outcomes (Byham-Gray, 2005; King et al., 2014). Smith and colleagues noted that in order for there to be continued demand for dietitians working in clinical settings, the following assertions needed to be justified: "Registered Dietitians perform MNT better than anyone else; MNT improves the quality of life; and MNT is cost effective" (2005a, p. 826).

Evidence-based practices (EBP) were further emphasized to demonstrate dietitians' trustworthiness and competence as health care professionals (Smith et al., 2005a). Smith and colleagues predicted a paradigm shift within the profession, where dietitians would perform

patient analysis using a systematic approach with evidence-based practices as a guide (2005b). Indeed, ACEND included EBP knowledge and skills competencies as part of educational standards beginning in 2008 (King et al., 2014). The development of the Nutrition Care Process (NCP) and International Dietetics and Nutrition Terminology (IDNT) provided standardized language for dietetics research and facilitated assessment of nutrition care outcomes (King et al., 2014). The NCP was essential in documenting the effectiveness of MNT, as well as in helping to set apart dietitians from other health care professionals (Smith et al., 2005, part 2). These examples illustrate the paradigm shift within the profession towards a more standardized, evidence-based approach to service.

Changing Needs of the Profession

Continued comparison of dietitians with other healthcare professionals led to critique of the educational preparation of dietitians (Skipper & Lewis, 2005). The authors argued that despite vast changes within the dietetics profession over the past 80 years, the educational requirements remained unchanged since 1928 (Skipper & Lewis, 2005). Current educational preparation includes a baccalaureate degree with six months of supervised practice-far less than eleven other health care professions (Skipper & Lewis, 2005). For dietitians working in MNT and "beyond entry-level," existing educational preparation would not be enough (Skipper & Lewis, 2005, p. 420).

In 2012, the Academy's Council on Future Practice (CFP) created a Visioning Report that outlined recommendations for the educational preparation of Registered Dietitians, including to increase the minimum educational level of RD's to a graduate degree ("Moving Forward"). The purpose of the CFP was to work in conjunction with the Commission on Dietetic Registration (CDR) and the Accreditation Council for Education in Nutrition and Dietetics

(ACEND) ("Moving Forward," 2012). The nine recommendations for curriculum revision were based on observations such as "entrants into the dietetics profession will need to be broadly educated for careers that will change many times to meet future needs…" and "providing opportunities to realize how theory relates to practice" ("Moving Forward," 2012, p. 15). According to the report, lack of marketing as "food and nutrition experts to external groups" continued to be a major challenge ("Moving Forward," 2012, p. 19).

After the release of the Academy's "Moving Forward" report, ACEND collected data from multiple sources such as environmental scans, stakeholder interviews, focus groups, and surveys to determine appropriate action for the future 2017 educational standards and degree-based requirements in a document titled "Rationale for Future Education Preparation of Nutrition and Dietetics Practitioners" (ACEND, 2015). Stakeholders and employers identified the following key examples in moving the profession forward: disease prevention and "integrative health care;" enhanced communication skills and "an improved ability to understand the patient's community and cultural ecosystem;" and a need to address gaps in current educational competencies such as "interprofessional work, basic food and culinary preparation and sustainability" (ACEND, 2015, p. 10). As such, ACEND recommended modification of educational requirements to fit the following model: high school and associate's degrees focused on basic skills to work in community and wellness settings; bachelor's preparation focused on science-based courses to work as dietetic technicians; and master's preparation as a generalist to work as a Registered Dietitian Nutritionist (RDN) (ACEND, 2015).

The Commission on Dietetic Registration (CDR) officially changed the degree requirements for RDN's from a minimum of a baccalaureate degree to a master's degree, beginning in 2024 (CDR, 2013). Unpublished open-ended survey responses from the Nutrition

and Dietetics Educators and Preceptors (NDEP) practice group's annual meeting in 2015 revealed concerns with ACEND and CDR's proposed changes. While some dietitians surveyed indicated a master's degree would bring recognition to the field, others expressed concerns with the mandate such as increased costs to students with minimal return in terms of increased salaries and job opportunities (survey, 2015).

Survey results from the 2015 Entry-Level Dietetics Practice Audit indicated that practicing, entry-level dietitians routinely analyzed and interpreted data and evidence-based research findings; collaborated with other health care professionals and community stakeholders; and developed educational materials for dietetics students, patients and employees (Griswold, Rogers, Sauer, Leibovitz, & Finn, 2016). This was in addition to common responsibilities of clinical dietitians (approximately 75% sampled), such as reviewing medical records, diagnosing nutrition problems, and calculating fluid and nutrient needs with the intent of modifying dietary recommendations (Griswold et al., 2016). Almost half of the 1,083 dietitians sampled had practiced for two years or less (Griswold et al., 2016). These results support the proposed curricular changes for integration of critical thinking and communication skills, as well as more attention to interprofessional collaboration.

Core knowledge requirements for the 2017 ACEND accreditation standards for Nutrition and Dietetics Didactic programs (DPD) addressed key curricular areas such as communication skills; integration of research into practice; interprofessional relationships; and the roles of sustainability, food, and lifestyle choices in disease prevention (ACEND, 2016). Specific knowledge requirements included the ability to "apply critical thinking skills;" "demonstrate effective and professional oral and written communication and documentation;" and "identify and describe the work of interprofessional teams and the roles of others with whom the

registered dietitian nutritionist collaborates in…" (ACEND, 2016). Student Learning Outcomes (SLO's) must be continuously assessed using a data-driven plan and a variety of educational approaches was recommended to meet learner needs (ACEND, 2016).

Changes within both the dietetics profession and health care have influenced dietetics curricula. Recent ACEND standards emphasized interprofessional collaboration; critical thinking skills; communication skills; and integrative healthcare. These changes warrant closer examination of dietetics curricula and educators responsible for curriculum design and implementation.

Dietetics Curriculum Development: A Balancing Act

Despite the Academy's continued emphasis on evidence-based practice and outcomes-based research in efforts to uphold dietitian's status as food and nutrition experts and to document the effectiveness of dietitians' services, some within and outside of the profession remain skeptical. For example, Capra (2012) argued the "focus on randomized controlled trials as the basis for evidence-based practice has taken hold in western nations and is constraining much of the 'art' of dietetics" (p. 181). She cautioned against the profession focusing too much on credentialing, narrow competencies and the scope of practice, as modern health care systems desire generalists and those who thrive in interdisciplinary settings (Capra, 2012, p. 181). The following section illustrates the challenges of dietetics curriculum development in the twenty-first century: balancing required knowledge and skill acquisition with educating future professionals who are open-minded, reflective, compassionate, and adaptable.

Reflection and Consideration of Multiple Perspectives

As described earlier in this chapter, there is a distinction between the fields of nutrition and dietetics. However, nutritional science remains influential in dietetics, especially in regards

to understanding the relationships between diet and disease. Liquori (2001) suggested that the positivist view associated with nutritional science-that research must be conducted in an objective, experimental manner using quantitative methodology-has perhaps shifted perspectives to viewing food as simply nutrients. From this perspective, dietitians are encouraged to separate food from emotions: "Food is our profession and we have shied away from it trying to compete with doctors and scientists" (Liquori, 2001, p. 244). In essence, dietetics educators must balance the inclusion of nutritional science in curricula with the art of practicing dietetics – which includes consideration of environmental and cultural aspects of eating and the ability to connect with clients.

Some dietetics educators fear a progression of the undergraduate curriculum towards a more medical-based model, similar to that of other health care professionals. For example, Sharp (2012) and Cuddy (2012) both addressed a perceived trend towards less curricular emphasis on building relationships with clients and patients in lieu of increased emphasis on evidence-based practices. As Sharp (2012) points out, there should be a continual focus on teaching students how to connect objective-based research with "subjective experiences and relationships that our clients and patients have with food" (p. 36). Cuddy (2012) agreed that the "increasingly 'scientistic' curriculum" shifts the focus from food, culture, and society to nutrients – thereby increasing disconnect between mind and body (p. 41).

Dietetic students bring previous life experiences to their educational environments which necessitates opportunities for reflection throughout the process of professional socialization (Lordly & MacLellan, 2012). Reflection is important to explore feelings about food and eating and how these feelings may impact future encounters with clients (Atkins & Gingras, 2009; Dejesse & Zelman, 2013; Gingras, 2010). Gingras (2010) used in-depth interviewing of twelve

dietitians in Canada to explore how dietitians perceived their undergraduate education and what it meant to be considered a dietitian (Gingras, 2010). The dietitians indicated a strong desire to help others, but experienced feelings of loss and frustration when their experiences with clients did not result in intended behavior changes (Gingras, 2010). The participants discussed their awareness of having been taught to be objective (similar to those in the medical profession) despite feeling that practicing dietetics was highly emotional work (Gingras, 2010).

Atkins and Gingras (2009) discovered similar results with an earlier qualitative phenomenological study conducted with 14 first-year and senior year dietetics students at a university in Canada (Atkins & Gingras, 2009). They found that study participants described feelings of isolation, competition, and a general disconnect between how they had felt about eating prior to entering the program and how they felt afterwards-mainly guilt, that only certain foods should be eaten and dietitians should be thin (Atkins & Gingras, 2009). The authors suggested that dietetics coursework often fails to address identity exploration and potential mismatches between what is learned and how students feel about their bodies and eating (Atkins & Gingras, 2009).

Dietitians' feelings concerning food, eating, and body image may carry over into the professional setting. Dejesse and Zelman (2013) conducted interviews with twelve mental health practitioners and ten Registered Dietitians on collaboration within health care teams in the treatment of eating disorders (Dejesse & Zelman, 2013). The most common concern expressed by both groups of professionals was doubting one another's expertise in treating eating disorders (Dejesse & Zelman, 2013). In addition, some mental health provider's questioned whether dietitians had resolved their own issues with weight and body image (Dejesse & Zelman, 2013). Some dietitians were viewed as espousing rigid beliefs regarding caloric restriction and weight

goals, subsequently "insufficiently attentive to their patients' emotional concerns related to food intake" (Dejesse & Zelman, 2013, p. 193). Presenting opportunities for reflection throughout dietetics education may expose students' perceptions of self, food, and eating.

Future RDN's routinely work in a variety of settings, but almost all aspects of the profession involve working with people. Opportunities for reflection, collaboration, and consideration of multiple perspectives continue to be important considerations for curriculum development.

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Recommended Skill-Set of Future Dietitians

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Enhanced Critical Thinking Skills

While knowledge and technical skills are routinely assessed in dietetics education, critical thinking abilities typically are not assessed (Schumacher, 2014). Schumacher (2014) used the California Critical Thinking Disposition Inventory (CCTDI) to assess the critical-thinking abilities of twelve dietetics interns enrolled in their final semester of three different internships in the Midwest. The CCTDI was used to assess dispositions such as inquisitiveness, truth-seeking, analyticity, and open-mindedness (Schumacher, 2014). Strength in critical thinking disposition was set at scores of 350 or higher; the average score of this particular sample was 318 (Schumacher, 2014). Interns scored highest in the area of inquisitiveness, with lowest scores in the area of truth seeking (Schumacher, 2014).

However, faculty in higher education often disagree as to how to best assess critical thinking skills and whether critical thinking skills are discipline-specific or considered a general skill (Nicholas & Raider-Roth, 2016). Researchers conducted interviews and focus groups with 17 faculty from the social sciences, natural sciences, and humanities from two different universities in the Midwest and Southwest on faculty perceptions regarding critical thinking

abilities (Nicholas & Raider-Roth, 2016). They found that faculty unanimously agreed that students lacked appropriate levels of critical thinking abilities (Nicholas & Raider-Roth, 2016). However, faculty found it difficult to describe how they would both facilitate and assess student enhancement of critical thinking skills (Nicholas & Raider-Roth, 2016). In addition, researchers found a disconnect between faculty and university approaches to fostering critical thinking: faculty focused on discipline-specific facets of critical thinking, while the universities assessed critical thinking from a general standpoint, sometimes using standardized testing (Nicholas & Raider-Roth, 2016).

Innovative pedagogical techniques such as integration of poetry, art, and storytelling in dietetics education may enhance critical thinking skills (Brady & Gingras, 2012; Huye, 2015). Brady and Gingras (2012) used a survey and focus groups to explore 10 undergraduate dietetics students' perceptions of the use of storytelling in an upper-level nutrition course in Canada. They found that in general, students enjoyed storytelling and discussed how this technique facilitated reflection and appreciation for others' experiences (Brady & Gingras, 2012). The use of storytelling helped bridge academic and "hands-on aspects of dietetic training and practice" (Brady & Gingras, 2012, p. 1). Huye (2015) used a questionnaire to assess 14 senior-level dietetics students' critical thinking as a result of the incorporation of poetry and art in a service-learning project. Students reported using reflection and consideration of multiple perspectives in the analysis of poetry and art (Huye, 2015). Students were able to connect content with "real-world issues" such as poverty and hunger using poetry and art (Huye, 2015, p. 284).

Enhanced Communication Skills

While health care employers still prioritize technical skills, they increasingly expect more "generic/soft skills" (Marais, Marais, Visser, Boome, & Taylor, 2012). 'Soft skills' such as

communication skills are an integral component of both training and routine practice of RDN's (Cant & Aroni, 2008; Ortman, Mann, & Fraser Arsenault, 2010; Whitehead, Langley-Evans, Tischler, & Swift, 2009). While the definition of *communication skills* varies widely, specific skills such as fostering empathy; attention to nonverbal cues; performing active listening; and effective use of open-ended questioning are often cited as important in developing positive relationships with clients (Cant & Aroni, 2008; Goodchild, Skinner, & Parkin, 2005; Hancock, Bonner, Hollingdale, & Madden, 2012; Whitehead et al., 2009). Ortman and colleagues (2010) conducted a qualitative study with 15 dietetic internship preceptors from a Canadian university and revealed that the most important skill for dietetic interns to master was interpersonal communication skills (Ortman et al., 2010). Cant and Aroni (2008) defined interpersonal communication skills as encompassing of verbal and nonverbal communication, combined with integration of personal values. Unfortunately, research is limited concerning communication between dietitians and clients in favor of research focusing on program outcomes (Cant & Aroni, 2008).

Whitehead and colleagues (2009) surveyed the British Dietetic Association's members to identify perceptions of communication skills training in the area of behavior change (Whitehead et al., 2009). Almost 98 percent of the 1,158 responses indicated communication skills were extremely important when performing consultations (Whitehead et al., 2009). However, time was the ultimate barrier for utilizing effective communication skills and participants considered post-registration training in this area to be extremely important (Whitehead et al., 2009).

The ability to empathize with clients is crucial to positive counseling experiences (Goodchild et al., 2005). Swift and colleagues (2013) surveyed 1,036 students from the Master of Nursing, Dietetics, and Medicine program, University of Nottingham to study communication

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skills in weight management. They found that students expressed frustration with lack of guidance regarding if or when to talk with a patient concerning their weight, and the best approach to use when discussing weight (Swift, Choi, Puhl, & Glazebrook, 2013). Ninety-five percent of participants requested additional training in this area with particular focus on empathy-building and the use of open-ended questioning (Swift et al., 2013).

Faculty perceptions regarding the teaching of communication skills are important to consider. Vrchota (2011) conducted a qualitative study that explored the teaching of communication skills in academia using interviews, classroom observations, and course materials of seven faculty members from a Midwestern university (Vrchota, 2011). Interestingly, the theme of 'confidence' was discussed; the interns were perceived to lack confidence, especially when communicating with professionals in positions of power (Vrchota, 2011). Vrchota (2011) found that faculty did not perceive lack of confidence to be associated with lack of knowledge and unfortunately, the internship experience did not seem to improve confidence levels.

Research regarding student attitudes towards learning effective communication skills is valuable. Power and Lennie (2012) conducted a quantitative study that assessed student attitudes towards learning communication skills in undergraduate dietetics programs in the United Kingdom. A total of 287 dietetics students completed the survey and results indicated there were no significant differences in attitudes towards learning communication skills between male and female students (Power & Lennie, 2012). However, first-and second-year students reported significantly higher scores compared to third and fourth year dietetics students, which indicated more positive attitudes (Power & Lennie, 2012). Researchers speculated lower scores in later years may have been attributed less to attitudes and more towards the manner in which

communication skills were taught and assessed (Power & Lennie, 2012). In addition, researchers noted their findings were inconsistent with previous literature which suggested practice placements and more experience enhanced positive attitudes towards learning communication skills (Power & Lennie, 2012).

Williams and colleagues surveyed 129 undergraduate dietetics students in Australia to assess learning styles. In general, researchers found that the group preferred "active-reflective learning" and a strong preference for verbal methods of teaching (Williams et al., 2012, p. 174). Other predominant learner characteristics included introverted, feeling, sensing, and judging (Williams et al., 2012). While the students preferred more analytical work, the authors suggested the dietetics curriculum should include more opportunities for communication and fostering empathy (Williams et al., 2012). Generally speaking, communication skills are paramount to success in every aspect of a RDN's career. The dietetics curriculum should continue to emphasize acquisition of interpersonal communication skills. The ability to empathize is crucial in fostering relationships with clients and must also be addressed at the curricular level.

Interprofessional Collaboration Awareness

Dietitians routinely work as health care professionals in a variety of settings. Specific to the health care fields, the concept of interprofessional education, training, and teamwork has gained popularity in the 21st century. Like interdisciplinary, the interprofessional collaborative process necessitates consideration of multiple perspectives or worldviews while working towards a shared or common goal. However, interprofessional education differs in that the emphasis is on the understanding and appreciation of professional roles (in particular, healthcare professions) and the shared goal is ultimately improved patient outcomes (DiMaria-Ghalili et al., 2014). Components of interprofessional education included emphasis on reflexivity, exploration of

professional attitudes and biases, and power and hierarchical positioning of professions (Khalili et al., 2013; Lash et al., 2014).

The concept of professionalism encompasses values, attitudes, and belief systems (Marais, Marais, Visser, Boome, & Taylor, 2012). Khalili and colleagues (2013) argued that a key aim of interprofessional education was to foster the development of both a professional identity as well as an interprofessional identity. The point was to challenge professionals to consider their pre-existing beliefs regarding other professions (including negative stereotypes) and ultimately foster a collaborative relationship with a variety of health care professionals (Khalili, Orchard, Spence Laschinger, & Farah, 2013).

Pecukonis and colleagues (2008) argued that the concept of professionalism "promotes competition rather than collaboration between health care providers" (p. 421). Professional culture (to include biases, power distribution, and beliefs) impacts professional practice; therefore, interprofessional education was recommended to promote interprofessional cultural competence (Pecukonis, Doyle, & Bliss, 2008). Interprofessional education is an example of an interdisciplinary curricular effort to promote collaboration between health care professionals (Delunas & Rouse, 2014).

In addition to promoting acceptance of different professional cultures, interprofessional education and training is in line with the current health care paradigm shift in the US. DeMatteo and Reeves (2013) pointed out that patients are increasingly considered educated consumers while the government works to empower individuals and cut costs; therefore, the health care provider-patient relationship has changed. Pecukonis (2014) agreed this shift in health care services essentially moves professions from "silos" with their own "turfs" to collaborative systems of health care practitioners (p. 60).

Few studies have been conducted with interprofessional education and dietetics students (Earland, Gilchrist, McFarland, & Harrison, 2011). Earland and colleagues (2011) conducted a mixed-methods study with eleven professions (including dietetics) to explore student perception of online IPE modules. Survey results indicated that the majority (75%) of 29 students did not believe the IPE modules enhanced their understanding of the role of the dietitian (Earland et al., 2011). The authors' attributed survey and focus group results related to the IPE scenarios to be reflective of what commonly happens in practice; dietitians have less input per patient, but "cover a larger number of clients and conditions than some other health professions" (Earland et al., 2011, p. 140).

Dietitians are increasingly recognized as valuable members of interdisciplinary healthcare teams (Dahlke, Wolf, Wilson, & Brodnik, 2000). Researchers conducted focus groups with clinical nutrition managers that focused on perceptions of interdisciplinary roles in acute-care settings (Dahlke et al., 2000). Forty-nine dietitians participated in eight focus groups; an overall theme was that dietitians were more focused on knowledge and how to "impress that knowledge on a group" versus collaboration (Dahlke et al., 2000, p. 456). While dietitians acknowledged they must be a more visible part of interdisciplinary teams, they discussed perceptions of lack of respect of their knowledge (Dahlke et al., 2000).

Researchers conducted a mixed-methods study using 153 questionnaires and 25 phone interviews from dietitians within the Clinical Managers practice group of the American Dietetic Association (Gardner, Rall, & Peterson, 2002). The purpose of the study was to identify and describe methods of interdisciplinary collaboration of dietitians involved in outcomes-based research (Gardner et al., 2002). Gardner and colleagues (2002) found that within the sample, dietitian involvement in research was almost always with other dietitians or with medical staff

(nurses, physicians, and/or dietetic interns or technicians). The researchers concluded that regarding outcomes-based research projects, dietitians may not be taking full advantage of collaborative opportunities (Gardner et al., 2002).

Exploration of power and hierarchy within health care professions is warranted as part of interprofessional education. Researchers developed case studies to enhance student's understanding of one another's disciplines and to increase communication skills between graduate-level physical therapy and dietetics students (Smith & Christie, 2004). Fourteen physical therapy students and seven dietetics students participated in the quantitative study (Smith & Christie, 2004). Survey results indicated positive experiences such as enhanced communication skills and overall greater understanding of one another's discipline (Smith & Christie, 2004). However, negative survey results revealed evidence of professional bias and lack of respect for dietitians' contributions as part of a health care team (Smith & Christie, 2004).

Power status of professions may influence the success of interprofessional collaborations. A mixed-methods study of 18 health care professionals from 4 different teams in Sweden revealed that the status of certain professions influenced the degree to which information from the particular profession was valued (Kvarnstrom, 2008). Knowledge contributions of individual team members was a major potential challenge, as well as general team dynamics and organizational influences (Kvarnstrom, 2008). McNeil and colleagues (2013) identified different worldviews and a general lack of understanding of professional values as major challenges in interprofessional communication. Lack of knowledge concerning professions' scopes of practice was another major barrier for collaboration (McNeil, Mitchell, & Parker, 2013). While interprofessional collaboration continues to be touted as increasingly important in 21st century

healthcare, barriers such as opposing worldviews; lack of respect and recognition; and lack of communication need to be addressed.

Interdisciplinary Collaboration in Higher Education and Beyond

Regardless of whether the interdisciplinary activity centers on curriculum development, teaching, research, or patient-centered outcomes, collaboration is an integral component of the process. Successful interdisciplinary collaboration necessitates the following: a supportive climate or culture; shared responsibility among all team members (i.e. non-hierarchical); strong communication skills; reflexivity; and awareness of and appreciation for different points of view (Borrego & Newswander, 2008; Hall et al., 2008; Oberg, 2009; Petri, 2010; Vanasupa, McCormick, Stefanco, Herter, & McDonald, 2012). Environmental considerations, personal qualities or characteristics, and group dynamics or interpersonal relationships are key factors involved in the collaborative process.

Andersen (2016) described interdisciplinary collaboration as "epistemically beneficial," in terms of combining manpower and materials with the intent of producing and widely dispersing new knowledge (p. 6). However, Andersen (2016) agreed that demands such as increased time and energy devoted to communication and project coordination needed to be considered as part of the cost-benefit analysis. Creating a climate conducive to interdisciplinary work is critical for successful collaboration. Oberg (2008) developed a framework for assessing "common ground" of interdisciplinary researchers (p. 409). The framework encouraged researcher reflexivity because disciplines are often unaware of their own traditions and decision-making strategies and how these differ from other disciplines (Borrego & Newswander, 2008; Oberg, 2008).

Awareness of disciplinary culture is key when participating in interdisciplinary collaboration. Using a case study approach, researchers found that faculty members from different disciplines who participated in transdisciplinary collaboration perceived epistemic differences to be their greatest challenge (Vanasupa et al., 2011). Faculty represented four very different "disciplinary cultures" and failed to not only examine their differences, but also to ensure that all members of the group were considered "co-creators with shared goals" (Vanasupa et al., 2011, p. 178). Researchers also found that lack of institutional incentives for interdisciplinary collaboration were challenges for the faculty (Vanasupa et al., 2011).

Borrego and Newswander (2008) agreed that in order to participate as an interdisciplinary collaborator, one must be willing to change his or her "epistemic lens" in order to suit the particular context (p. 125). This required participants to accept that their particular way of knowing and understanding was not the only way, and to recognize the inherent strengths and weaknesses of their approaches (Borrego & Newswander, 2008). Trust and respect were considered foundational to interdisciplinary collaborations because participants were not only depending on others to equally contribute to the workload, but also to contribute accurate and reliable disciplinary knowledge (Borrego & Newswander, 2008; Lordly, MacLellan, Gingras, & Brady, 2012).

Researchers explored interdisciplinary collaboration in undergraduate curriculum using semi-structured interviews with Science, Technology, Engineering, and Mathematics (STEM) and education faculty from five research-oriented universities in the US (Bouwma-Gearhart, Perry, & Presley, 2014). Bouwma-Gearhart and colleagues found that the use of "brokers" helped bridge the gap between unfamiliar knowledge and experience to help with the collaborative process (Bouwma-Gearhart et al., 2014, p. 41). Brokers are faculty from a variety

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of disciplines that facilitate stages of the research process such as building "simple awareness and respect for other types of knowledge" and valuing others' disciplinary research contributions (Bouwma-Gearhart et al., 2014, p. 42).

Faculty collaboration is often necessary across disciplines. Awareness of disciplinary norms and traditions, as well as attention to communication, continue to be important aspects to a successful collaborative endeavor. Reflection and appreciation for multiple perspectives are key in professional collaboration.

Factors Associated With Curriculum Development

There are many environmental factors that impact participation in-and success of-interdisciplinary work in higher education. At the university level, organizational and financial factors need to be considered, such as university incentives to participate in interdisciplinary teaching and research; overall administrative culture; and allocation of funds (Boden & Borrego, 2011; Bryant, Niewolny, Clark, & Watson, 2014; Eisen, Hall, Lee, & Zupko, 2009; Horn, 2013; Newswander & Borrego, 2009; Sanner & Deis, 2009). Individual characteristics, such as attitudes towards collaboration and ideologies or worldviews, may also impact pedagogical strategies used in the classroom.

Curriculum development in higher education is a collaborative process. Throughout the process, individual; departmental; and university-wide barriers exist and must be addressed. Additional factors such as the roles of society, industry, government, and educational leadership must also be considered throughout the curriculum development process (Ayub Khan & Smith Law, 2015). The following section discusses the collaborative process and factors typically associated with curriculum development in higher education.

Stakeholder input is essential for curriculum development. Wilson and colleagues (2015) conducted an action research study that described the curriculum review process of an indigenous heath curriculum in a nutrition and dietetics program at an Australian university (Wilson, Mehta, Miller, et al., 2015). They found that faculty and practicing dietitians collaborated throughout the curriculum review and development process (Wilson, Mehta, Miller, et al., 2015). Wilson and colleagues (2015) found that some faculty did not feel capable of teaching indigenous health without actual practice in the field, which made collaboration with practicing dietitians more important.

Personal philosophies regarding teaching and learning influence the curriculum development process. Venance and colleagues conducted a qualitative study using interviews to explore faculty perspectives regarding curricular change of an undergraduate medical program at a Canadian medical school (Venance, LaDonna, & Watling, 2014). Researchers noted that key curricular changes included integration of basic and clinical sciences; increased active learning opportunities; reduced lecture time; and enhanced focus on small-group, case-based teaching (Venance et al., 2014). They found that faculty teaching philosophies were largely driven by their own personal experiences with education and therefore, their approaches to teaching and learning varied widely (Venance et al., 2014). Accreditation mandates were major influential factors in curriculum change, as well as increased awareness of student-centered pedagogical approaches (Venance et al., 2014).

Departmental and university culture are important contributing factors in curriculum development. Emil and Cress (2014) conducted a case study to explore institutional and individual factors of faculty engagement in assessment (Emil & Cress, 2014). Interview results from seven faculty from a Curriculum and Instruction department in North America indicated

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organizational leadership as influential in curricular change, specifically deans and department chairs (Emil & Cress, 2014). However, researchers found that institutional culture was identified as most important in terms of creating opportunities for collaboration and program improvement (Emil & Cress, 2014).

Similar results were found when researchers conducted an action research study to describe the process of curricular redesign in the Department of Speech-Language Pathology and Audiology at the University of Limpopo in South Africa (Naude, Wium, & du Plessis, 2011). Naude and colleagues (2011) discovered that the three-phase process enhanced faculty's ability to work together as a team and challenged their creative and cognitive abilities (Naude et al., 2011). Faculty recommendations included the use of a task team to spearhead curricular redesign; external consultation; and organizational support for staff in terms of professional development and resources to implement changes (Naude et al., 2011).

Positive experiences with curriculum collaboration may center on daily informal interactions as well as departmental support (Briggs, 2007). Briggs (2007) interviewed departmental chairs and faculty from 44 departments across the US regarding their collaborative experiences with curriculum development within their respective departments. Colleagues reported high levels of camaraderie, including informal breakfast and lunch meetings, as instrumental in fostering a collaborative work environment (Briggs, 2007). Departmental support included strategically placing faculty offices in close proximity to one another, as well as promotion of team teaching and informal peer evaluation of teaching (Briggs, 2007).

Curriculum renewal is a dynamic process and one that should be responsive to change (McLeod & Steinert, 2015). McLeod and Steinert (2015) identified several key recommendations in their review of curriculum development: organize a strong renewal team;

identify pertinent trends within healthcare to ensure broad content exposure; use curriculum outcomes to drive teaching and learning; use evidence-based curricular models and learning theories; incorporate a variety of pedagogical strategies beyond simply lecturing; and focus on professional development to enhance faculty teaching.

Curriculum development is a collaborative process, where faculty across disciplines participate throughout the process using stakeholders (such as practicing dietitians). Additional factors such as societal and healthcare trends; accreditation standards; and departmental and university cultures and traditions must be considered. Personal teaching philosophies impact curriculum development, as these philosophies drive pedagogical and assessment techniques preferred by professors.

Higher Education in the 21st Century

Higher education in the 21st century has been confronted with many challenges. Boundaries that historically defined a college or university have largely been transformed or removed altogether, such as sole reliance on face-to-face instruction with academics as part of a traditional scholarly community (Bridges, 2000). Technological advances paved the way for distance education and alternative forms of communication between faculty and students; in addition, faculty and students alike became more diverse in terms of age, cultural backgrounds, residential status, and work-related experience (Bridges, 2000). Universities faced pressures to link higher education more closely with employer needs while increasing access to under-represented populations – all of which changed traditional ways of viewing 'university life' and therefore student experiences both within and outside of the classroom (Bridges, 2000).

In the 21st century universities are encouraged to educate students to become future collaborators and problem-solvers, with an emphasis on knowledge that is both relevant and

transferable for stakeholders outside of the academic setting (Russell, Wickson, & Carew, 2008). Curricular pressures consisted of emphasis on cross-curricular skills, such as communication and critical thinking; experiential learning and online learning; and subsequent turf wars, as faculty fought to retain their disciplines and universities resisted interdisciplinarity (Bridges, 2000). Twenty-first century skills are defined as a collective description of "knowledge, skills, and dispositions seen as prerequisites for success in the global workplace of the future" and are also known as the "4 C's": "critical thinking and problem solving skills, communication skills, collaboration skills, and creativity and innovation skills" (Germaine, Richards, Koeller, & Schubert-Irastorza, 2016, p. 19). Twenty-first century skills are not learned in isolation from one another and are considered essential components of learning in order to understand relationships and "relevance of ideas to people and new situations" (Germaine et al., 2016, p. 26).

Integrative Curriculum for 21st Century Learners

Complex problems necessitate perspectives from multiple disciplines (Boden & Borrego, 2011; Eisen et al., 2009; Klein, 1990; Klein, 2013). However, the 'integration' aspect is what differentiates multidisciplinary from interdisciplinary studies (Bryant, Niewolny, Clark, & Watson, 2014). Multidisciplinary research approaches are additive; disciplines continue to work within their knowledge frameworks and boundaries between disciplines remain stable (Murphy, 2011). In contrast, interdisciplinary approaches aim to "understand their own and other knowledge frameworks, develop integrated conceptual approaches, coordinate across multiple knowledge, and tend to synthesize results" (Murphy, 2011, p. 498).

While the term 'integration' is often included in definitions of interdisciplinary, there is a distinct difference between the two terms. Integrative learning is a broader term that refers to activities, strategies, and/or structures that bridge divides such as theory and practice or general

courses in higher education with major courses (Klein, 2005). Interdisciplinary studies would be considered a subset of integrative learning (Klein, 2005). Integration became a major focus in higher education in part because of the increase in fragmented knowledge or specialized fields, as well as heightened awareness of the need to address complex societal issues from multiple perspectives (Booth, 2011; Klein, 2005). In addition, students need to know how to synthesize theoretical knowledge with practical skills to confirm both their personal experiences as well as the validity of theory (Dinmore, 1997). Integration is the assimilation of experiential learning (practiced, non-disciplinary learning) with theoretical, or abstract, learning (Dinmore, 1997). Integrative learning is more constructivist in nature, where teachers take on more of a facilitator role and hierarchical barriers are removed (Dinmore, 1997; Klein, 2005).

Newell (2010) argued that while integrative learning and interdisciplinary studies are distinctly different, they should be considered analogous. Newell (2010) proposed that integrative learning should be defined as:

> Outside-the-classroom activity (off as well as on campus) that provides students with certain types of experiences that facilitate the integrative process, experiences through which they are confronted with new perspectives and are challenged to integrate insights from divergent perspectives (p. 8).

These activities and experiences reinforce similar hallmarks of interdisciplinary studies, such as critical thinking; fostering diversity; and in-depth exploration of multiple perspectives, to include an understanding of values and assumptions (Newell, 2010).

Definitions of integrated curriculum typically included the following aspects: the central curriculum would address multiple subjects; emphasize application-based, or project work; foster relationships among concepts from different subjects; and support inclusion of sources of

information beyond simply textbooks (Anderson, 2013). For example, researchers define pharmacy education integration as a "strategy for making educational experiences coherent, relevant, and engaging; connecting diverse disciplines; and facilitating higher-order learning" (Pearson & Hubball, 2012, p. 1). Researchers emphasized that curricular integration was intended to foster integrative learning and required deliberate efforts from faculty and students (Pearson & Hubball, 2012). Curricular integration includes horizontal and vertical dimensions: horizontal integration refers to integration across disciplines, while vertical integration includes not only the progression of the curriculum but emphasis on connections between theory and practice (Pearson & Hubball, 2012). Therefore, researchers argue that structural strategies (such as course sequencing and inclusion of activities that draw on prior knowledge in other disciplines) as well as integrative pedagogies (such as experiential and capstone learning activities) must be included (Pearson & Hubball, 2012).

Driving forces behind adoption of integrated curriculum in higher education include the desire to graduate "team players" who are willing and able to work in a multitude of settings (Anderson, 2013). As businesses and industries are no longer considered fragmented and departmentalized, students should no longer be educated in a similar fashion: teaching subjects in isolation from one another, without opportunities to foster connections and relationships between content as well as with non-academic experiences (Anderson, 2013; DeZure, Babb, & Waldmann, 2005). This includes opportunities to work with professionals in the field.

For example: the "theory-practice gap," where research findings are not routinely applied in practice settings, could be linked with difficulties integrating research core competencies in dietetics curriculum (Byham-Gray, 2005, p. 2). A focus on evidence-based practice necessitates the acquisition of research skills as part of dietetics education (Whelan, Thomas, & Madden,

2007). Whelan and colleagues (2007) used questionnaires to evaluate experiences of 110 dietetics students, 38 faculty and 31 external collaborators in student-led research projects at two universities in the United Kingdom. They found that project experiences that involved students, faculty and external collaborators resulted in students being more involved in all phases of the research process, including data collection, obtainment of ethics approval, and statistical analysis (Whelan et al., 2007).

Pedagogical Strategies for Integrative Learning

Integrative learning experiences foster positive outcomes such as enhanced learning, empathy, and appreciation for multiple perspectives (Leveritt, Ball, & Desbrow, 2013; Moore & Andrews, 2012; Roofe, 2012). Examples include problem or project-based learning; service learning; simulation; and flipped classroom. Researchers discussed their positive experiences coordinating a large quantity foods course that emphasized problem-based learning with multiple departments involved (Moore & Andrews, 2012). Moore and Andrews (2012) found that the majority of survey responses indicated the food and culture course prepared them well or very well to appreciate other cultures. Wingert and colleagues (2014) conducted a quantitative study using pre/post-test design that assessed integrative student learning in a "Food for Thought" cluster program at the University of North Carolina Asheville. The program was taught by seven faculty from different disciplines (economics, sociology, biology, chemistry, health and wellness, and foreign language) (Wingert et al., 2014). Researchers found that students enrolled in the cluster courses performed significantly higher overall on critical thinking and their scores increased with each additional cluster course taken (Wingert et al., 2014). In addition, results were independent of year enrolled (freshman, sophomore, junior, or senior) (Wingert et al., 2014). Leveritt and colleagues (2013) conducted a qualitative study with 25 master's degree

dietetics students from a university in Australia that used Kolb's four stages of experiential learning in a food science course (Leveritt et al., 2013). Students were assigned a modified diet to follow for 7 days and discussed their reflections with other students (Leveritt et al., 2013). He found that students reported enhanced learning overall and empathy for future clients who would be provided with these specialized diets (Leveritt et al., 2013).

Experiential learning provides opportunities for application in a real-world setting, thereby deepening understanding (Kanauss & Shupe, 2014). Service learning is an example of experiential learning and has been encouraged within dietetics curricula to provide a "higher level of competence for students" (Kanauss & Shupe, 2014, p. 17). Roofe (2012) conducted a mixed-methods study with 20 undergraduate dietetics students that focused on their experiences with service learning in a family-based nutrition and physical activity program. Roofe (2012) discovered overwhelmingly positive student experiences; one student commented they were not expecting to learn as much from the families as the families learned from them (Roofe, 2012). Senior dietetics students from a Midwestern university completed a service learning project for a local WIC clinic (Ozier, Henry, & Chilton, 2010). The project involved the use of focus groups of WIC staff and families in conjunction with the development of nutrition education materials and integration of behavioral theory (Ozier, Henry, & Chilton, 2010). Student reflection papers described positive outcomes such as "real world" hands-on public health experience; opportunities to connect theory with practice; and understanding the importance of assessment in developing educational materials (Ozier, Henry, & Chilton, 2010, p. S68).

The flipped classroom design is a blended learning model where content is online and face-to-face class time with instructors is devoted to active learning strategies (Gilboy, Heinerichs, & Pazzaglia, 2015). Positive student outcomes include greater opportunities for

knowledge application; the ability for students to work at their own pace; improved self-efficacy; and enhanced overall learning performance (Gilboy et al., 2015; Pannabecker, Barroso, & Lehmann, 2014; Thai, De Wever, & Valcke, 2017).

Nineteen students from a master's coordinated program used high-fidelity patient simulators (HPS) and were given self-efficacy scales at three different periods (Todd, McCarroll, & Nucci, 2016). Results indicated a statistically significant increase in student's self-efficacy before their clinical rotation, regardless of whether they had prior patient experience (Todd et al., 2016). Role-play simulations may be useful in helping students learn how to perform nutrition-focused physical exams (NFPE) (Tyler, 2017). Sixteen dietetics students enrolled in a combined internship/master's program at the University of Kansas Medical Center participated in a NFPE training program that utilized a standardized patient actor (Tyler, 2017). Pre and post-test surveys indicated that student's comfort levels in touch patients increased significantly, as well as their overall proficiency and confidence levels (Tyler, 2017).

The use of simulated patients with undergraduate dietetics students for the purposes of enhancing communication skills resulted in modest improvements (Gibson & Davison, 2015). Two-hundred and fifteen third-year dietetics students from a university in Australia participated in simulated patient Objective Structured Clinical Exams over a four-year period with the intent of practicing patient interaction (Gibson & Davison, 2015). Across the entire cohort, results indicated a modest but significant improvement in communication skills (Gibson & Davison, 2015). However, the authors caution that due to the excessive financial costs and time associated with the use of simulated patients, educators should carefully consider the benefits (Gibson & Davison, 2015).

Faculty reflexivity is a necessary component of developing integrative learning experiences for students. Guthman (2009) wrote a reflective article that detailed her experience of teaching a course on the politics of obesity. Guthman (2009) used student comments, journal entries, emails, and teaching assistant and guest lecturer observations to critically analyze the experience. Guthman (2009) challenged her students to view obesity from multiple perspectives of neoliberalism, consumerism, and political discourse. She noted that the majority of students were uncomfortable with the instructor and guest lecturers raising more questions versus providing potential answers or solutions (2009).

Booth (2011) conducted a qualitative study that explored the integrated learning experiences of six final-year history undergraduates from a research-intensive university in the UK. The researcher revealed the following themes from student interviews: students appreciated the role of the instructors as facilitators who created welcoming, non-intimidating spaces for open discussions and they described being exposed to ideas other than their own and having opportunities to debate as integral to fostering empathy and passion for learning (Booth, 2011). Booth described instructor interview themes to include the following challenges in transforming more discipline-based teaching towards integrative approaches: creating a "sense of community" for learners, especially with rising class sizes, and finding ways to enable students to connect academic with non-academic learning (Booth, 2011, p. 59). Notably, instructors realized they needed to maintain the same level of openness and take time to reflect as their own values and assumptions were challenged regarding "what learning meant and what constituted expertise" (Booth, 2011, p. 61).

However, the process of developing integrated curricula is not without significant barriers, namely a shift in faculty beliefs from the use of a predominantly didactic system to one

that is more constructivist (Anderson, 2013; DeZure, Babb, & Waldmann, 2005). Faculty professional development would need to address the following: acceptance of new pedagogical approaches, such as small-group learning and "experiential-oriented instruction;" assessment strategies, such as performance-based assessment and portfolios; and a willingness to obtain a working knowledge of other disciplines (Anderson, 2013).

Recent trends in both health care and higher education tout interprofessional and interdisciplinary collaboration; the former for practicing dietitians, and the latter for educators focusing on curriculum development, teaching, and research. Integrative curriculum and pedagogical techniques are recommended to bridge the gap between theory and practice and to foster critical thinking skills. As the dietetics profession moves forward in the 21st century, dietetics educators are challenged to reflect on their philosophical beliefs regarding teaching and learning. The following section outlines the theoretical framework used to design the research questions for this study.

Theoretical Framework

Ideology is defined as "a collection of ideas, a comprehensive vision, a way of looking at things, or a worldview that embodies the way a person or a group of people believes the world should be organized and function" (Schiro, 2013, p. 8). Curriculum ideologies "do not refer to all belief systems related to education" as people may behave differently depending upon whether they are considering curriculum from an administrator's perspective, an educator's perspective, or a parental perspective (Schiro, 2013, p. 10). Curriculum ideology awareness can help educators design instruction that is more in line with their views; enhance communication between colleagues regarding curricular issues and concerns; and empower educators to consider curricular pressures of society, so they can be put into perspective and addressed (Cotti & Schiro,

2004). The researcher used Schiro's Curriculum Ideology Inventory (2013) as a guiding framework for research question development and survey instrument design.

The Curriculum Ideology Inventory and modified versions have been used in several research studies (Bhatt, 2013; Cotti, 1997; Cotti & Schiro, 2004; Farahani & Maleki, 2013; Mathew, 2014). Schiro (1992) studied curriculum ideology using the biographical method with 76 graduate students enrolled in curriculum theory courses at Boston College. He found that participants shifted between the four ideologies at multiple points throughout their careers, often in congruence with a lifestyle change such as a change in their careers (Schiro, 1992). Cotti (1997) conducted a mixed-methods study that assessed 44 pre-service teachers' curriculum ideologies who were enrolled in a graduate curriculum theory course during the 1994-1995 academic year. The Curriculum Ideology Inventory was used at multiple points throughout the study, along with interviews; ideology life history examination; surveys; and master's comprehensive exam scores (Cotti, 1997). Cotti (1997) found that the overall philosophy of the teacher education program (Child-centered) significantly impacted the ideologies of the preservice teachers, and their clinical experiences did not typically reverse these ideologies.

The child-centered, or learner-centered, ideology tends to be the preferred ideology in some studies (Cotti & Schiro, 2004; Mathew, 2014). Cotti and Schiro (2004) used a modified version of the Curriculum Ideology Inventory known as the *Mathematics and Children's Literature Belief Inventory* to assess ideological views of 109 pre-service and 18 experienced teachers from two Northeastern Universities (Cotti & Schiro, 2004). Results indicated that 83% of pre-service teachers and 67% of experienced teachers identified primarily with the "Child Study" ideology, which was the predominant ideology of the teacher education programs where the students were enrolled (Cotti & Schiro, 2004). They found that all participants indicated their

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inventory graphs accurately represented their actual ideological preferences (Cotti & Schiro, 2004).

Mathew (2014) used Schiro's Curriculum Ideology Inventory in conjunction with a researcher-designed questionnaire to assess for readiness to implement Common Core Standards for Mathematics among 57 public school mathematics teachers in southern Maryland. He found that the most commonly preferred ideology was Learner-Centered (40%), followed closely by Social Efficiency (35%) (Mathew, 2014). Overall, teacher's preferred ideologies impacted their perceived ability to implement Common Core Standards for Mathematics, with a statistically significant effect (95% confidence level) for Scholar Academic ideology and Learner-Centered ideology (Mathew, 2014).

The Learner-centered ideology was also the most preferred by educators and parents in Bhatt's 2013 study. Bhatt (2013) used a modified version of the Curriculum Ideologies Inventory as part of a mixed-methods study to assess curricular ideologies and traditional Indian thought regarding curriculum with 100 early childhood educators and 100 parents. The inventory scores were closely in line with traditional aspects of Indian thought regarding learning, such as the idea that the teacher is more of a "friend, philosopher, and guide" (Bhatt, 2013, p. 160). Bhatt concluded with "curricular decisions regarding children seem to be characterized by ideological struggles…" and overall awareness of these ideologies could potentially lead to "better decision making and place the curriculum in resonance with societal values, beliefs and practices" (2013, p. 161).

Similar results were obtained by Farahani and Maleki (2013) who used Schiro's Ideology Inventory with 95 faculty members from the educational sciences department in Tehran universities. Sixty-nine percent of faculty members identified primarily with the Learner-

Centered ideology, with the Scholar Academic ideology preferred least (Farahani & Maleki, 2013). Researchers concluded the results may be indicative of a more student-centered learning environment in the educational departments of Tehran-based universities (Farahani & Maleki, 2013). In general, the educator's environment seems to influence the educator's preferred ideology, with the Learner-centered ideology most favored.

Summary

This chapter described the literature related to the major areas of the purpose of the study: curriculum ideology, pedagogical techniques, and interprofessional collaboration. The researcher provided a brief description of the history of the dietetics profession and then included examples concerning the recent accreditation standards and recommended educational models for future RDNs. The researcher described concerns with the current dietetics curriculum, such as overemphasis on objectivity and lack of opportunities for reflection. Recommendations for enhancements to the curriculum-such as focusing on critical thinking skills, communication skills, and interprofessional collaboration-were described in relation to twenty-first century skills for learners. The researcher introduced factors related to curriculum development in higher education, focusing on integrative curriculum development and integrative learning. Finally, Schiro's Curriculum Ideology Inventory (2013) was introduced as the theoretical framework for this study. Chapter three describes the research methodology used to collect data to answer the five research questions.

CHAPTER THREE

METHODOLOGY

Curriculum ideology is a topic that has largely been unexplored in higher education, especially within the field of dietetics education. Ideological influences, or worldviews, have the potential to impact course content and pedagogical strategies, as well as attitudes towards collaboration across disciplines. The ACEND 2017 standards included increased emphasis on interdisciplinary teamwork, as well as proposed changes to teach and assess critical thinking skills. These standards reinforce the changing dietetics profession for the 21st century. Therefore, it is important to consider dietetics professors ideological stances regarding the purpose of higher education; pedagogical strategies to maximize learning; and collaboration in an interdisciplinary healthcare environment. This chapter includes a restatement of the purpose of the study and research questions, and details regarding the design of the study. Characteristics of the population and sample are discussed as well as specific criterion used for sample selection. The design of the survey instrument is outlined, including considerations for reliability and validity. This chapter concludes with a description of data collection and statistical analyses procedures that were followed.

Purpose of the Study and Research Questions

The purpose of this descriptive quantitative study was to use Schiro's Curriculum Ideology Inventory (2013) to describe as well as to examine the relationship between dietetic professors' ideologies, commonly utilized pedagogical strategies, and collaboration with colleagues from different professions. The study also examined the influence of factors such as administrative duties; age; faculty ranking; primary type of instruction; teaching experience;

level of courses taught; university or college setting; average class size; and average teaching load.

The study was guided by the following research questions:

1. Based on Schiro's Curriculum Ideology Inventory (2013) which ideological positions do dietetics professors favor?

2. How do commonly identified curriculum ideological positions relate to pedagogical techniques used in the classroom and collaboration with professionals outside of dietetics?

   a. Is there a statistically significant association between dietetics professors' ideological positions and their choice of pedagogical techniques? Are there differences between ideology and pedagogical techniques?

   b. Is there a statistically significant association between dietetics professors' ideological positions and collaboration with professionals outside of dietetics? Are there differences between ideology and collaboration with professionals?

3. What demographic factors are associated with dietetics professors' commonly identified curriculum ideological positions?

   a. Is there a statistically significant association between ideology and job description (teaching and teaching with administrative duties)?

   b. Is there a statistically significant association between ideology and age?

   c. Is there a statistically significant association between ideology and rank?

   d. Is there a statistically significant association between ideology and primary type of instruction provided (online; face-to-face; or hybrid)?

e. Is there a statistically significant association between ideology and number of years teaching in higher education?

f. Is there a statistically significant association between ideology and level of courses taught?

g. Is there a statistically significant association between ideology and type of college or university setting?

h. Is there a statistically significant association between ideology and class size?

i. Is there a statistically significant association between ideology and teaching load?

4. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict commonly used pedagogical techniques?

5. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict collaboration with professionals outside of dietetics?

Study Design

Quantitative research aims to "produce findings that are objective, reliable, valid, and reproducible" using a deductive approach (Pierce, 2013, p. 133). The researcher tests a theory or theories; identifies variables and relates these to the research questions; and collects and analyzes data "that either supports or refutes the theory" using statistical procedures (Creswell, 2014, p. 7). Survey research is a non-experimental design defined as providing a "quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that

population" (Creswell, 2014, p. 13). This approach was chosen because the population of interest was accessible; there was a lack of substantial secondary data available regarding the research topic; and the researcher intended to generalize findings from the sample to the population (Rea & Parker, 2005).

The researcher chose to use a web-based survey because advantages included convenience, ease of use, cost-effectiveness, and increased confidentiality of participants using a secured server (McLaren, 2013; Rea & Parker, 2005; Siedlecki, Butler, & Burchill, 2015). In addition, electronic surveys may have a slightly higher return rate compared to mailed surveys (Siedlecki, Butler, & Burchill, 2015). Web-based surveys are subject to limitations; these include: lack of interviewer involvement, in terms of answering participants' questions directly or clarifying instructions; and bias, in terms of exclusion of participants who are not comfortable with using web-based surveys (McLaren, 2013; Rea & Parker, 2005). The researcher addressed these limitations using two phases of instrument testing to ensure questions lacked ambiguity and survey instructions were clear. These phases are described in greater detail later in the chapter.

Population and Sample

There are currently over 200 Didactic Programs in Dietetics (DPD) and 60 Coordinated Programs in Dietetics (CP) in the United States and 6 international programs that provide necessary dietetics coursework leading to undergraduate and graduate degrees and in the case of CP's, eligibility to sit for the registration exam ("ACEND," 2017). The Academy of Nutrition and Dietetics houses many dietetic practice groups, including the Nutrition and Dietetics Educators and Preceptors (NDEP) group ("AND Dietetic Practice Groups," 2017). NDEP has over 1,300 educators and preceptors across six geographical regions including international, with the following goals for the organization: "to recognize educators and preceptors as leaders of the

profession, support and advance nutrition and dietetic education programs, and support the purposes and goals of the Academy of Nutrition and Dietetics" ("NDEP," 2017). NDEP utilizes a listserv for its members and maintains an email directory, providing convenient access to dietetics educators across the country and overseas. The researcher aimed to obtain a minimum of 299 survey respondents. This estimate was based on Krejcie and Morgan's (1970) table for determining an appropriate sample size using a 95% confidence interval.

Sampling Procedures

The researcher used a purposive sample for this study which is a type of non-probability sampling where the researcher seeks participants who meet particular criteria (Siedlecki, Butler, & Burchill, 2015). Non-probability sampling is often appropriate for preliminary quantitative research, such as in hypotheses or questionnaire development (McLaren, 2013). A purposive sample was appropriate for this study because the researcher wanted to limit the sample to dietetics educators and it would have been difficult to identify the sample and obtain the necessary contact information without using the dietetic practice group NDEP. The researcher excluded professors from Dietetic Technician Programs (DT) because the study focused on educators of future Registered Dietitians/Registered Dietitian Nutritionists (RD/RDN) from undergraduate and graduate degree-granting institutions. The researcher attempted to secure representation from all 6 regions. Table 1 illustrates the NDEP region; total number of NDEP members as of December 2017; the projected number of survey respondents based on a 95% confidence interval; and the number of members who actually completed the survey.

Table 1

Projected Number of NDEP Members for Sample

NDEP Region	Total Number of Members (as of December 2017)	Projected number of survey respondents	Actual respondents
West Coast & International (WA, OR, ID, CA, NV, UT, AZ, AK, HI)	242	53	14
West Central (MN, IA, ND, SD, NE, KS, OK, TX, NM, CO, WY, MT)	208	47	24
North Central (WI, MI, IN, OH, WV, KY, TN)	220	51	22
South Central (IL, MO, AR, LA, MS, AL, GA)	212	47	21
North East (ME, NH, VT, NY, NJ, DE, CT, RI, MA)	213	48	18
South East (PA, MD, VA, NC, SC, FL, PR6)	237	53	26
Total:	1,332	299	125

Note. One respondent did not identify their region.

Instrumentation

The researcher modified Schiro's original Curriculum Ideologies Inventory (2013) (Appendix A). The researcher added original questions to assess for commonly utilized pedagogical techniques and collaboration across disciplines.

Schiro's Curriculum Ideologies Inventory (2013) identifies ideologies participants most identify with: scholar academic, social efficiency, learner centered, and social reconstruction. Educator's often associate with more than one ideology, and research suggests that curriculum ideologies tend to change every 4 years or so, often accompanying life changes such as teaching a different grade level; changing jobs; or gaining new insights regarding students or communities

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(Schiro, 2013). Schiro stresses the importance of focusing on ideology because intent, or philosophy, often contradicts actual behavior; therefore, it's important to understand our underlying beliefs regarding curriculum.

The researcher obtained written permission from SAGE publications (Appendix B) to modify and utilize Schiro's inventory. The researcher modified parts 2, 3, 5, and 6 of the original inventory to read *student/young adult* instead of *child/childhood*. The slight change in wording was necessary because the survey respondents all taught in higher education. The original inventory was otherwise left intact to reflect the six sections known as: Part 1 (Purpose), Part 2 (Teaching), Part 3 (Learning), Part 4 (Knowledge), Part 5 (Young adulthood), and Part 6 (Evaluation). Awareness of curriculum ideology has the potential to influence instructional design; therefore, the researcher included a question regarding assessment of commonly utilized pedagogical techniques of study participants (Schiro, 2013).

Curriculum and instructional design can be collaborative processes. There is a lack of research that describes these processes in dietetics education. The researcher was interested in determining if there was a relationship between professors' collaborative experiences with other disciplines (or lack thereof) and ideological and pedagogical preferences. The fields of nutrition and dietetics encompass viewpoints form multiple disciplines; therefore, the researcher included a survey question that pertained to professors' experiences with teaching and research with colleagues from different disciplines. The researcher obtained feedback from an education professor and from the Applied Research Lab (ARL) in the initial development of the survey instrument.

Validity and reliability. Validity and reliability are important considerations when conducting quantitative research. The researcher employed multiple steps to enhance content

validity. Litwin (1995) defined content validity as "a subjective measure of how appropriate the items seem to a set of reviewers who have some knowledge of the subject matter" (p. 35). External validity is defined as "whether or not the results can be safely generalized and/or extended to other settings, areas, populations or groups" (Pierce, 2013, p. 136). External validity was addressed with the use of a purposive sample where participants shared similar characteristics of the study population. The survey instrument was administered using Qualtrics software. The researcher utilized the ARL for assistance with Qualtrics software for survey administration.

Phase one. The researcher used a two-phase approach to establish validity. In phase one, the researcher met individually with four current dietetics professors from the Department of Food and Nutrition at Indiana University of Pennsylvania to review the initial survey. The professors answered the survey questions alongside the researcher using a think-aloud approach, noting where inconsistencies existed and questions seemed ambiguous (Appendix C). The researcher revised the survey based on the recommendations provided by the professors and the ARL.

Based on McLaren's recommendation (2013) the researcher used ranking statements where ordering was needed and extended the number of categories when using Likert scales. The completed survey, Curriculum Ideology, Pedagogy, and Interprofessional Collaboration: Dietetics Educators' Views and Practices (CIPIC) contains 22 questions total: 1 criteria, 6 ranking, 2 Likert scale, 11 demographic, and 2 follow-up questions (Appendix D). Table 2 illustrates how survey items align with each research question.

Table 2

Survey Item Alignment With Research Questions

Research Questions	Survey Items
1. Based on Schiro's Curriculum Ideology Inventory (2013) which ideological positions do dietetics professors favor?	4.1, 5.1, 6.1, 7.1, 8.1, 9.1
2a. Is there a statistically significant association between dietetics professors' ideological positions and their choice of pedagogical techniques? Are there differences between ideology and pedagogical techniques?	4.1 – 9.1; 11.1
2b. Is there a statistically significant association between dietetics professors' ideological positions and collaboration with professionals outside of dietetics? Are there differences between ideology and collaboration with professionals?	4.1 – 9.1; 11.3, 11.4
3a. Is there a statistically significant association between ideology and job description (teaching and teaching with administrative duties)?	3.1; 4.1 – 9.1
3b. Is there a statistically significant association between ideology and age?	4.1 – 9.1; 11.5
3c. Is there a statistically significant association between ideology and rank?	4.1 – 9.1; 11.6
3d. Is there a statistically significant association between ideology and primary type of instruction provided (online; face-to-face; or hybrid)?	4.1 – 9.1; 10.1
3e. Is there a statistically significant association between ideology and number of years teaching in higher education?	4.1 – 9.1; 11.7
3f. Is there a statistically significant association between ideology and level of courses taught?	4.1 – 9.1; 11.8
3g. Is there a statistically significant association between ideology and type of college or university setting?	4.1 – 9.1; 11.9
3h. Is there a statistically significant association between ideology and class size?	4.1 – 9.1; 11.10

3i. Is there a statistically significant association between ideology and teaching load?	4.1 – 9.1; 11.11
4. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict commonly used pedagogical techniques?	3.1, 4.1 – 9.1, 10.1, 11.1, 11.5, 11.6, 11.7 11.8, 11.9, 11.10, 11.11
5. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict collaboration with professionals outside of dietetics?	3.1, 4.1 – 9.1, 10.1, 11.3, 11.4, 11.5, 11.6, 11.7 11.8, 11.9, 11.10, 11.11

Survey item 2.1 of the survey instrument was a criteria question related to current teaching status; respondents needed to be currently teaching at least part-time. If the respondent answered "no," they were exited from the survey. Survey item 3.1 assessed whether or not the respondent participated in administrative duties, in addition to teaching. Questions 4.1-9.1 referred to the curriculum ideology inventory and assessed for beliefs regarding the purpose of education; the role of a teacher; learning; knowledge; young adulthood development; and evaluation. Question 10.1 was developed using a 7-point Likert scale to assess for commonly utilized instructional method: face-to-face, online, or hybrid method. Question 11.1 assessed for commonly utilized pedagogical strategies using a 5-point Likert scale, with a total of 11 options: lecture, open-class discussion, small-group discussion, simulation, flipped classroom, writing intensive/writing-across-curriculum, individual presentations, group presentations, project-based learning, service-based learning, and other. These categories were chosen based on a review of the literature and recommendations from professors during the validation phase.

Questions 11.3 and 11.4 were developed as yes/no response items and assessed for participation in collaborative activities with colleagues outside of the fields of nutrition and dietetics. Per recommendation from the consulting statistician, survey item 11.4 was excluded from statistical analysis due to redundancy; it yielded responses similar to item 11.3. Survey items 11.5-11.12 assessed for demographic data such as age, rank, number of years teaching in higher education, level of courses taught, university setting, approximate class size, average teaching load, and NDEP region. Following the demographic questions, survey respondents were provided with their curriculum ideology scores and definitions of the four categories: scholar academic, social efficiency, learner centered, and social reconstruction. At the conclusion of the survey, respondents were given a question (17.1) regarding intent to participate in a future interview pertaining to curriculum development (yes/no). The final question (18.1) pertained to participation in a random drawing for a 25 dollar gift card to Amazon.

Phase two - Pilot testing. Approval to conduct the study was obtained through IUP's Institutional Review Board (IRB) for the Protection of Human Subjects. For reliability (consistency) testing following IRB approval, the researcher pilot tested the survey with a convenience sample of dietetics faculty members across Pennsylvania. Pilot testing of surveys is highly recommended to prevent item non-response and question ambiguity (McLaren, 2013). The sample was chosen based on recommendations from the IUP professors who participated in the validation phase and from members of Northwest Pennsylvania Academy of Nutrition and Dietetics, a local dietetics organization. Professors from the following accredited dietetics programs were contacted: Indiana University of Pennsylvania, Seton Hill, University of Pittsburgh, Penn State University, West Chester University of Pennsylvania, La Salle University, and Marywood University. The researcher also contacted the directors of six different districts

from the Pennsylvania Academy of Nutrition and Dietetics to forward the pilot test survey to their members who met the criteria for pilot-testing: a dietetics professor who was teaching at least part-time.

Each survey respondent was asked to forward the survey to a colleague who also met the criteria for pilot-testing. Twenty-three professors completed the pilot-test survey. Out of the 23 responses, four were excluded because they did not meet the criteria of teaching at least part-time. Two were excluded because they did not complete the survey (25% completed). The final sample size for the pilot test was 17. The researcher did not modify survey items because there were no technical issues reported with the survey administration and no suggestions for improvement were provided by respondents.

Data Collection Procedures

After the pilot test phase, the researcher sent an email to the representative from ACEND who manages the NDEP listserv and email directory. This representative served as the intermediary to ensure that the survey was administered to the entire population and to provide name recognition. Rather than provide the researcher with access to individual emails, the representative forwarded the information to the NDEP chair for approval. This information included an introduction to the study with the survey link and informed consent details (Appendix E). After the email was approved by the NDEP chair (Appendix F), the representative emailed the survey link with instructions and informed consent as an email blast to all NDEP members (week one). Two more reminder emails were sent as email blasts to all NDEP members at the beginning of weeks two and three of data collection. To enhance response rate and ensure representation from all six regions, the researcher posted reminders to the open NDEP forum twice (see Appendix G). The forum posts included a tally of participation from each of the six

NDEP regions: West Coast, West Central, North Central, South Central, North East, and South East. The researcher reminded respondents that they had a chance to win an Amazon gift card, and the region with the most respondents at the end of data collection would receive a fifty-dollar check as a donation.

After reading the informed consent, survey respondents had the option of selecting the next button to proceed with the survey or to simply exit the survey. Respondents were assured of anonymity and no identifiable information was collected as part of the survey responses. Survey respondents were given their curriculum ideology inventory scores upon completion of the survey. Respondents had the option of providing their email addresses at the conclusion of the survey if they were interested in participating in a future interview pertaining to curriculum development; however, this information was collected in a separate survey and was in no way related to the data collection. Information collected for the random drawing for the gift card was also collected separately from the survey data. The estimated time for completion of the survey was approximately 20-25 minutes.

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Data Analysis Procedures

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Survey responses were downloaded to SPSS. The Statistical Package for the Social Sciences (SPSS) version 25 was used for data analysis. Data cleaning were initially conducted with the assistance of the ARL, and performed a second time with the assistance of a statistician. A total of 260 survey responses were collected, which was a 19.5% response rate. Questions 11.1 and 11.3 were used as the dependent variables; therefore, respondents with missing data for these questions were automatically excluded (n = 132). According to Allison (2002), missing data for dependent variables must be removed using casewise deletion in order to prevent inaccurate variance estimates. Additionally, two more cases were removed due to missing data for

independent variables, questions 11.6 and 11.7. This was considered systematic missing data; according to Allison (2002), when data is not Missing Completely at Random (MCAR) for either independent or dependent variables the data should be removed using casewise deletion. The overall sample size was 126 (48.5% data attrition).

In preparation for multivariate analyses, data was additionally modified regarding the use of dichotomous variables and dummy variables. According to Ritchey (2008), dummy coding of multiple category nominal-level variables is necessary as part of regression in order to model linear relationships between the dummy independent variables and dependent variables. Therefore, question 11.9 (type of university) was broken into a series of dummy variables. Additionally, the respondents' ideology scores (scholar academic, learner centered, social reconstruction, social efficiency, and more than one ideology) were converted into a series of dummy variables. Question 10.1 (face-to-face, online, or hybrid) was collapsed into dichotomous variables (from a 7-point Likert scale) that indicated either agreement or disagreement.

Table 3 lists the statistical analyses that were used for each research question. An alpha level of .05 was used for all statistical analyses. For research question number one, descriptive statistics were used to determine which categories of the Curriculum Ideologies Inventory (scholar academic, learner centered, social reconstruction, social efficiency, or more than one ideology) dietetics professors favored. The researcher initially used an algorithm provided by the ARL to determine with category(s) the respondents most agreed with regarding curriculum ideology. However, initial descriptive statistics revealed an error so the researcher hand-scored the six ideology inventory questions of the 260 respondents using Schiro's inventory score sheet (Appendix B).

Table 3

Survey Items and Analytic Procedures Alignment With Research Questions

Research Questions	Survey Items	Analytic Procedure
1. Based on Schiro's Curriculum Ideology Inventory (2013) which ideological positions do dietetics professors favor?	4.1, 5.1, 6.1, 7.1, 8.1, 9.1	Descriptive statistics (Frequency, Measures of Central Tendency, Measures of Dispersion)
2a. Is there a statistically significant association between dietetics professor's ideological positions and their choice of pedagogical techniques? Are there differences between ideology and pedagogical techniques?	4.1 – 9.1; 11.1	One-way ANOVA
2b. Is there a statistically significant association between dietetics professor's ideological positions and collaboration with professionals outside of dietetics? Are there differences between ideology and collaboration with professionals?	4.1 – 9.1; 11.3	Chi Square Test for Independence
3. What demographic factors are associated with dietetics professors' commonly identified curriculum ideological positions? a. Job description b. Age c. Rank d. Primary type of instruction e. Number of years teaching f. Level of courses taught g. University setting h. Average class size i. Teaching load	3.1; 4.1 – 9.1; 10.1; 11.5 – 11.11	Chi Square Test for Independence

4. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict commonly used pedagogical techniques?	3.1, 4.1 – 9.1, 10.1, 11.1, 11.5, 11.6, 11.7 11.8, 11.9, 11.10, 11.11	Multiple Linear Regression
5. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict collaboration with professionals outside of dietetics?	3.1, 4.1 – 9.1, 10.1, 11.3, 11.5, 11.6, 11.7 11.8, 11.9, 11.10, 11.11	Binary Logistic Regression

For research question two (a) one-way ANOVA was used because the researcher was studying group differences between one continuous dependent variable (pedagogical technique) and a three-or-more category, nominal-level independent variable (ideology) with the goal of analysis to "determine reliability of mean group differences" (Tabachnick & Fidell, 2007, p. 29). According to Allen and Seaman (2007), Likert scales may be treated as continuous variables provided the assumptions of normality have been met; however, "while Likert scale variables usually represent an underlying continuous measure, analysis of individual items should use parametric procedures only as a pilot analysis" (Allen & Seaman, 2007, p. 65). According to Tabachnick & Fidell (2007), variables are treated as continuous if the underlying scale is believed to be continuous but the measured scale is ordinal; with a large number of categories (5+); and data meet assumptions of the analysis. For example; question 10.1 was designed as a 7-

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point Likert scale that represented whether or not participants agreed/disagreed with teaching face-to-face; online; or using a hybrid method. Because the options ranged from *strongly agree* to *strongly disagree*, these were considered an ordinal variable because there was *order* to the level of the characteristic (Fink, 2003). However, question 11.1 was developed using a 5-point Likert scale of *never* to *always*. In this situation, the Likert scale was considered a *continuous* variable because never and always were theoretically on a continuum where there were infinite options between never and always. Therefore, while the actual measurement was ordinal in nature, the underlying concept was considered continuous and therefore treated as a continuous variable.

For research questions two (b) and three, The Chi Square Test of Independence was used to study the relationships between a categorical independent variable and a categorical dependent variable with each variable having two or more categories (Pallant, 2016). In chi square analysis, observed frequencies are compared to expected frequencies (null hypothesis); the null hypothesis is retained if the value is small and if the value is large, the null hypothesis is rejected (Tabachnick & Fidell, 2007) which means the two variables are related.

For research question four, Multiple Linear Regression (MLR) was used because the researcher studied the degree of the relationship between multiple continuous independent variables with one continuous dependent variable by "creating a linear combination of independent variables to optimally predict the dependent variable" (Tabachnick & Fidell, 2007, p. 29). The goal was to understand how much variance in the dependent variable was explained by the independent variables by assessing the model as a whole, as well as the individual contributions of each independent variable (Pallant, 2016).

For research question five, binary logistic regression was used because the researcher was interested in predicting group membership with a goal of creating a linear combination of "the odds of being in one group" (Tabachnick & Fidell, 2007, p. 30). Binary logistic regression uses multiple continuous and/or nominal independent variables with one nominal dependent variable (Pallant, 2016).

Summary

There is limited research regarding curriculum ideological views, commonly utilized pedagogical techniques, and interprofessional collaboration among dietetics professors. This chapter included research questions designed to explore these areas. The researcher used a modified version of Schiro's Curriculum Ideology Inventory (2013) with additional questions related to pedagogy, collaboration, and demographic information to collect quantitative data from a purposive sample of dietetics professors from across the country using the dietetic practice group NDEP. The researcher used a two-phase approach to validate the instrument. The researcher used the SPSS version 25 software for data analysis. Descriptive statistics, one-way ANOVA, the Chi Square Test for Independence, multiple regression and logistic ordinal regression were used. In Chapter Four, the researcher will describe how to answer the five research questions.

CHAPTER FOUR

RESULTS

In the past decade, the dietetics profession has undergone changes to include

prioritization of evidence-based practices and scope of practice. In addition, proposed curricular

changes from ACEND (2016) included awareness of interprofessional collaboration; enhanced

critical thinking and communication skills; and awareness of environmental aspects of food and

nutrition. Dietetics faculty aim to balance changes within the profession along with accreditation

standards when developing curriculum and designing instructional methods. These changes

necessitated a closer look at dietetics faculty perceptions of curriculum ideology, pedagogy, and

collaboration. Chapter one outlined the problem; purpose of the study; and the five research

questions. Chapter two provided an in-depth review of the literature to support the rationale for

the study. Chapter three detailed the methodology used and steps taken to design the survey

instrument and collect data. This chapter presents a description of the sample; rationale for

statistical methods chosen; and the results of data analysis organized by research question. Data

were analyzed using SPSS version 25. An alpha value of .05 was used for all statistical analyses.

Description of Survey Respondents' Demographic Characteristics

While 260 respondents completed the survey, only 126 were retained for analysis.

Descriptive statistics were used (mean, SD, frequency distributions) to analyze demographic

data. NDEP serves six regions and the researcher attempted to obtain representation from all six:

west coast, west central, north central, south central, north east and south east. Survey item 11.12

refers to NDEP region. Table 4 shows the number of respondents from each of the six NDEP

regions, in descending order of frequency. The south east region (PA, MD, VA, NC, SC, FL, and

PR6) had the greatest proportion of respondents (n = 26; 20.8%), followed by the west central

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region (MN, IA, ND, SD, NE, KS, OK, TX, NM, CO, WY, and MT) (n = 24; 19.2%) and the

north central region (WI, MI, IN, OH, WV, KY, and TN) (n = 22; 17.6%). For this particular

survey item, one individual did not respond.

Table 4

Total Survey Respondents Categorized by NDEP Region

Sample Distribution by Region	n	%
South East (PA, MD, VA, NC, SC, FL, PR6)	26	20.8
West Central (MN, IA, ND, SD, NE, KS, OK, TX, NM, CO, WY, MT)	24	19.2
North Central (WI, MI, IN, OH, WV, KY, TN)	22	17.6
South Central (IL, MO, AR, LA, MS, AL, GA)	21	16.8
North East (ME, NH, VT, NY, NJ, DE, CT, RI, MA)	18	14.4
West Coast (WA, OR, ID, CA, NV, UT, AZ, AK, HI, International)	14	11.2
*Total	125	

Note. One respondent did not answer this question.

Survey item 2.1 assessed whether or not faculty held administrative duties in addition to

teaching. Table 5 shows that slightly more than half (55.6%) of faculty held an administrative

position (i.e. Department Chair or DPD Director) in addition to teaching.

Table 5

Percentage of Survey Respondents who Hold Administrative Positions

Do you currently hold an administrative position?	n	%
Number of Faculty who hold administrative position	70	55.6
Number of Faculty	56	44.4
Total	126	

Survey items 11.5, 11.6, 11.7 and 11.9 assessed faculty demographic characteristics.

Table 6 presents frequencies and percentages of faculty age; rank; number of years teaching in

higher education; and respective university setting. Overall, the sample was relatively evenly

distributed according to age; rank; and number of years teaching in higher education.

Approximately one-third of respondents were between the ages of 50-59 (n = 41; 32.5%),

followed by 30-39 years (n = 31; 24.6%) and 60-69 years (n = 29; 23%) respectively.

Approximately one-third of respondents were at the rank of assistant professor (n = 47; 37.3%),

followed by instructor/adjunct (n = 39; 31%) and associate professor (n = 22; 17.5%). There was

good representation of early career educators (10 years teaching experience or less).

Approximately 26.2% taught between 11-20 years (n = 33); and 24.6% of respondents taught 21

years or more (n = 31). The majority of respondents taught in a 4-year public institution (70.6%).

Table 6

Descriptive Characteristics of Survey Respondents (Survey Items 11.5, 11.6, 11.7 and 11.9)

Descriptive characteristics	n	%
Age		
20-29	2	1.6
30-39	31	24.6
40-49	19	15.1
50-59	41	32.5
60-69	29	23.0
70+	4	3.2
Rank		
Instructor/Adjunct Faculty	39	31.0
Assistant Professor	47	37.3
Associate Professor	22	17.5
Professor	18	14.3
No. Years Teaching in Higher Ed.		
0-5	26	20.6
6-10	36	28.6
11-15	20	15.9
16-20	13	10.3
21-25	15	11.9
26+	16	12.7
University Setting		
4-yr., Public	89	70.6
4-yr., Private	34	27.0
2-yr., Public	3	2.4
2-yr., Private	0	0.0

Survey items 11.8, 11.10, and 11.11 assessed for average course level, teaching load, and class size. Table 7 presents frequencies and percentages of these descriptive characteristics. The vast majority of respondents taught undergraduate courses (n = 122; 96.8%). Approximately one-third of respondents taught graduate courses (n = 80; 36.5%). A small proportion taught doctoral-level courses (n = 8; 6.3%). The majority of respondents had an average class size of 10-30 students (n = 79; 62.7%), followed by 31-40 students (n = 23; 18.3%). The majority of respondents had an average teaching load of 9-12 credits per semester (n = 77; 61.2%), followed by 6 credits per semester (n = 27; 21.4%).

Table 7

Descriptive Characteristics of Survey Respondents Workload (Survey Items 11.8, 11.10, and 11.11)

Descriptive characteristics	n	%
*Levels of Courses Taught		
Undergraduate	122	96.8
Graduate	80	36.5
Doctoral	8	6.3
Average Class Size		
<10 students	1	.8
10-20 students	34	27.0
21-30 students	45	35.7
31-40 students	23	18.3
41-50 students	11	8.7
51+ students	12	9.5
Average Teaching Load		
3 credits/semester	15	11.9
6 credits/semester	27	21.4
9 credits/semester	39	31.0
12 credits/semester	38	30.2
13+ credits/semester	7	5.6

Note. For survey item 11.8, respondents were able to select multiple categories; therefore, the total does not equal 100%.

Survey item 10.1 provided faculty with an opportunity to select the type of instruction

they typically provided: face to face, online, or hybrid. Table 8 presents a summary of their

responses. The majority of the respondents either *agreed* or *strongly agreed* that they taught

primarily face-to-face courses (n = 88; 69.8%), followed by hybrid (a combination of face-to-

face instruction and online instruction) (n = 16; 12.7%) and fully online teaching (n = 14;

11.1%).

Table 8

Respondents' Self-Reported Primary Type of Instruction

Comparison of Primary Type of Instruction	Agree/Strongly Agree	
	n	%
Face-to-face (F2F)	88	69.8
Hybrid (combination F2F & Online)	16	12.7
Online	14	11.1

Survey Respondents' Pedagogical Techniques and Collaborative Practices

Survey item 11.1 provided faculty with an opportunity to describe how frequently they

used different pedagogical techniques. A 5-point Likert scale ranging from *never* to *always/used

daily* was used to elicit data. Table 9 presents frequencies and percentages organized by

pedagogical strategy. The most frequently used pedagogical technique was lecture (n = 61 daily,

n = 53 weekly), followed by open-class discussion (n = 49 daily, n = 59 weekly) and small-group

discussion (n = 21 daily, n = 55 weekly). Service-based learning (n = 49) and the flipped

classroom method (n = 44) were the two most common techniques that were rated as *never used*

by faculty.

Table 9

Respondents' Commonly Utilized Pedagogical Strategies

Comparison of pedagogical strategies	Used daily/ every class		Used weekly		Used monthly		Used 1-2x/ semester		Never used	
	n	%	n	%	n	%	n	%	n	%
Lecture	61	48.4	53	42.0	5	3.96	6	4.8	1	.79
Open-class Discussion	49	38.8	59	46.8	12	9.52	4	3.2	2	1.58
Small-group Discussion	21	16.6	55	43.6	33	26.2	13	10.3	4	3.17
Simulation	2	1.58	23	18.2	32	25.4	38	30.2	31	24.6
Flipped Classroom	7	5.50	23	18.2	20	15.9	32	25.4	44	34.9
Writing-Intensive/WAC	4	3.17	24	19.0	25	19.8	36	28.6	37	29.4
Individual Presentations	1	.79	12	9.5	23	18.3	70	55.6	20	15.9
Group Presentations	1	.79	6	4.76	25	19.8	73	57.9	21	16.6
Project-based Learning	6	4.76	33	26.2	37	29.4	36	28.6	14	11.1
Service-based Learning	2	1.58	12	9.5	19	15.0	44	34.9	49	38.8

Table 10 presents the descending order of means for the pedagogical strategies, illustrating that lecture; open-class discussion; and small-group discussion were the three most commonly utilized pedagogical techniques. All three strategies are more teacher-centered, while the least chosen selected strategies (flipped classroom, presentations, and service-learning) necessitate more self-directed learning and facilitation by the instructor.

Table 10

Commonly Utilized Pedagogical Strategies: Descending Order of Means With Standard Deviations

Pedagogical techniques	M	SD
Lecture	4.33	.828
Open-class discussion	4.18	.852
Small-group discussion	3.60	.989
Project-based learning	2.85	1.081
Simulation	2.42	1.098
Writing-intensive/WAC	2.38	1.186
Flipped-classroom	2.34	1.279
Individual presentations	2.24	.862
Group presentations	2.15	.780
Service-based learning	2.00	1.035

For survey item 11.3 respondents were asked to indicate whether or not they had participated in five different activities that may be with professionals outside of the fields of nutrition and dietetics. Table 11 presents a summary of participation.

Table 11

Respondents' Participation in Collaborative Activities With Non-Dietetics Professionals

Participation in collaborative activities	n	%
Provided guest speakers	102	81.0
Coauthored a research proposal	72	57.1
Presented at a conference	71	56.3
Co-developed community-based nutrition programs	60	47.6
Co-taught a course with a colleague	44	34.9

Table 11 shows that the vast majority of the respondents invited guest speakers from outside of the fields of nutrition and dietetics (n = 102; 81%). Approximately half of the respondents had coauthored a grant or research proposal with colleagues outside of the

profession (n = 72; 57.1%), followed closely by presentation at a conference whose audience primarily included professionals outside of dietetics (n = 71; 56.3%).

Data Analysis by Research Question

The following statistical analyses were used to answer five research questions, described in greater detail, in this section: Descriptive statistics (means, frequencies, percentages, and standard deviations); one-way ANOVA; Chi-Square Test of Independence; Multiple Linear Regression; and Binary Logistic Regression. The following variables were considered nominal independent variables for the purposes of statistical analysis: job description, primary type of instruction, and type of university setting. Curriculum ideological preference was considered both a nominal independent and dependent variable, based upon the research question. Collaboration with non-dietetics professionals was considered a nominal dependent variable. The following were considered ordinal independent variables: age, faculty rank/title, number of years teaching in higher education, level of courses taught, class size, and average teaching load. Commonly utilized pedagogical technique was considered a continuous dependent variable.

Research Question One: Ideology Scores

Research question number one explores which curriculum ideology dietetics professors most identified with. Data generated through survey items 4.1 through 9.1 were used to determine a frequency count for five categories: social efficiency, learner centered, social reconstruction, scholar academic, and more than one ideology. For this particular research question, the researcher used individual item scores for survey items 4.1-9.1 and hand-scored the inventories of the 260 respondents using Schiro's Curriculum Ideology Inventory score sheet; only 126 of these were retained for the final analysis. Table 12 provides a brief description of the four different categories.

Table 12

Schiro's Four Categories of Curriculum Ideological Preferences

Category	Description
Scholar academic	Educator assumes hierarchical position; considered disciplinary expert. Primary intent is to transmit knowledge to the student. Curricular emphasis on course content and sequence.
Learner centered	Educator considered a facilitator; strong emphasis on the learner and modification of the learning environment. Flexible curriculum that emphasizes creativity and critical thinking.
Social efficiency	Educator focused more on motivating students to modify learning behaviors. Curriculum centers on achieving learning objectives and skill acquisition.
Social reconstruction	Educator facilitates learning through problem-solving. Curriculum centers on problem(s) that must be addressed through societal change; often issues of poverty, race, pollution, and/or economic concerns.

Note. Adapted from *Curriculum theory: Conflicting visions and enduring concerns* (2nd. ed.) by M. S. Schiro (2013).

Table 13 shows that two-fifths of the survey respondents favored social efficiency (n = 50, 39.7%), followed by learner centered (n = 25; 19.8%) and social reconstruction (n = 23; 18.3%). The least prevalent was scholar academic (n = 15; 11.9%). Some respondents' scores resulted in a tie, whereby they obtained equal scores for two different ideology categories. These scores were included in the *more than one ideology* category (n = 13; 10.3%).

Table 13

Respondents' Preferred Curriculum Ideology Organized by Schiro's Categories

Curriculum ideological preference	n	%
Social efficiency	50	39.7
Learner centered	25	19.8
Social reconstruction	23	18.3
Scholar academic	15	11.9
More than one ideology	13	10.3
Total	126	

Research Question Two (a): Relationship Between Ideology and Pedagogy

The first part of research question two examines the relationship between ideology scores and preferred pedagogical techniques used. Data generated through survey items 4.1 through 9.1 and 11.1 were used to answer this research question (see Appendix D). The research ran a series of one-way ANOVA to compare the independent variables of ideological preference (scholar academic; learner-centered; social efficiency; social reconstruction; and more than one preference) with the dependent variable, pedagogical technique. One-way ANOVA was appropriate to use for the first part of research question two because the researcher was interested in determining differences in group means using a continuous dependent variable and independent variables with more than two categories (Healey, 2009). The greater the difference between categories (measured as means) compared to the differences within categories (measured by standard deviation) the more likely the null hypothesis of "no difference" can be rejected (Healey, 2009, p. 236). ANOVA is robust to violations of assumptions, provided the groups are similar in size (Healey, 2009). One of the ten ANOVA produced significant results which are presented in Table 14. Table 14 illustrates that among the ten different pedagogical techniques presented, one-way ANOVA indicated a significant difference for simulation only (F (4, 141) = 3.501; p = 0.010). Due to significance results for ANOVA; combined with Levene's test for homogeneity of variance which showed that the data were homoscedastic (F (4, 121) = 1.208; p = 0.311); it was appropriate to analyze post-hoc tests (Tukey's HSD).

Table 14

One-way Analysis of Variance (ANOVA): Use of Pedagogical Strategies

Variable and source	SS	MS	$F_{(4, 141)}$	p	η^2
Lecture					
Between	1.53	0.38	0.55	0.698	0.02
Within	84.13	0.70			
Open-class discussion					
Between	5.02	1.26	1.77	0.139	0.06
Within	85.78	0.71			
Small-group discussion					
Between	7.85	1.96	2.08	0.088	0.06
Within	114.31	0.95			
Simulation					
Between	15.63	3.91	3.50	0.01*	0.10*
Within	135.08	1.12			
Flipped classroom					
Between	12.25	3.06	1.93	0.11	0.06
Within	192.08	1.59			
Writing-intensive/ writing across curriculum					
Between	5.16	1.29	0.92	0.458	0.03
Within	170.56	1.41			
Individual presentations					
Between	4.94	1.24	1.70	0.154	0.05
Within	87.91	0.73			
Group presentations					
Between	1.07	0.27	0.43	0.786	0.01
Within	75.07	0.62			

Project-based learning					
Between	2.40	0.60	0.50	0.733	0.02
Within	143.74	1.19			
Service-based learning					
Between	3.36	0.84	0.78	0.542	0.03
Within	130.64	1.08			

Note. p < .05

Means and standard deviations of ideological preference and pedagogical technique are presented in Table 15.

Table 15

Means and Standard Deviations for Respondent's use of Commonly Identified Pedagogical Strategies: Categorized by Ideological Preference

	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	M	SD	M	SD	M	SD	M	SD	M	SD
Lecture	4.13	0.92	4.32	0.90	4.48	0.59	4.36	0.88	4.15	0.80
Open-class discussion	4.00	0.85	4.52	0.65	4.30	0.97	4.02	0.92	4.15	0.56
Small-group discussion	3.20	1.01	4.00	0.91	3.48	1.04	3.52	1.00	3.85	0.80
Simulation	2.53	1.13	2.96	1.21	1.83	0.83	2.40	1.07	2.38	0.96
Flipped classroom	2.13	1.30	2.80	1.44	2.65	1.34	2.06	1.06	2.23	1.42
Writing-intensive/ writing across curriculum	2.33	1.11	2.68	1.11	2.26	1.29	2.22	1.23	2.69	1.03
Individual presentations	2.27	0.88	2.16	0.85	1.87	0.63	2.38	0.92	2.46	0.88
Group presentations	2.00	0.85	2.16	0.80	2.13	0.69	2.14	0.76	2.38	0.96
Project-based learning	3.07	1.10	3.00	1.04	2.87	1.10	2.76	1.08	2.62	1.19
Service-based learning	1.67	0.72	1.88	1.17	1.96	0.98	2.14	1.13	2.15	0.80

Post-hoc multiple comparisons using the Tukey HSD test (95% confidence intervals) revealed learner centered teachers (M = 2.96, SD = 1.21) were more likely to use simulation as a pedagogical technique compared to social reconstruction-oriented teachers (M = 1.83, SD = .83). Despite reaching statistical significance ($p = .01$), the effect size calculated as eta squared (η^2) was .10. Eta-squared compares the sizes of effects within a study (Lakens, 2013). According to eta squared, only 10% of the variance in the use of simulation was attributed to identification as a learner-centered teacher or a social reconstruction teacher.

Data revealed no significant group differences between the five categories of ideological preferences and utilization of the following pedagogical techniques: lecture, open-class discussion, small group discussion, flipped classroom, writing-intensive, individual presentations, group presentations, project-based learning and service-based learning. With the exception of the small significant effect of learner centered and social reconstruction-oriented teachers with the use of simulation, there was no statistically significant association between ideological preference and utilization of these ten pedagogical techniques.

Research Question Two (b): Relationship Between Ideology and Interprofessional Collaboration

The second part of research question two examines the association between dietetics professors' ideological preferences and collaborative experiences with professionals outside of the fields of nutrition and dietetics. Data generated through survey items 4.1-9.1 and 11.3 were used to answer this research question (see Appendix D). The researcher ran a series of crosstabulations to explore the relationship between the nominal independent variables (scholar academic, learner centered, social efficiency, social reconstruction, and more than one ideology) and the nominal dependent variables (coauthorship, co-teaching, use of guest speaker, co-

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development/supervision, and presentations). The Chi-Square Test of Independence was used to test the significance of the crosstabulation tables; this test can be used examine the relationships between discrete (nominal and ordinal) independent variables and nominal dependent variables (Pallant, 2016). The assumptions for Chi-Square analysis were met; these include random samples; "independent observations," where data from each case cannot influence another case; and five or more frequencies per cell (Pallant, 2016, p. 215).

Table 16 illustrates the results of the crosstabulation of coauthorship with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (4, $N = 126$) = 5.093, $p = .278$); there was no observed relationship between ideological preference and coauthorship of a research proposal with colleagues outside of nutrition and dietetics.

Table 16

Crosstabulation of Ideological Preference With Participation in Coauthorship

Coauthored	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	3	20	9	36	12	52.2	24	48	6	46.2
Yes	12	80	16	64	11	47.8	26	52	7	53.8

Model χ^2	5.093
Model p	0.278
Model df	4

Table 17 presents the crosstabulation of co-teaching with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (4, $N = 126$) = 2.989, $p = .560$); there was no

statistically significant relationship between ideological preference and co-teaching with colleagues outside of nutrition and dietetics.

Table 17

Crosstabulation of Ideological Preference With Co-Teaching

	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
Co-taught	n	%	n	%	n	%	n	%	n	%
No	10	66.7	16	64	18	78.3	29	42	9	69.2
Yes	15	33.3	25	36	23	21.7	50	58	13	30.8
Model χ^2	2.989									
Model p	0.560									
Model df	4									

Note. One cell (10.0%) has an expected count of less than 5.

Table 18 illustrates the crosstabulation of providing guest speakers with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (4, $N = 126$) = 3.004, $p = .557$); therefore, there was no statistically significant relationship between ideological preference and providing guest speakers outside of nutrition and dietetics.

Table 18

Crosstabulation of Ideological Preference With use of Guest Speakers

Guest speaker	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	1	6.7	7	28	4	17.4	9	18	3	23.1
Yes	14	93.3	18	72	19	82.6	41	82	10	76.9
Model χ²	3.004									
Model *p*	0.557									
Model *df*	4									

Note. Four cells (40.0%) have expected counts of less than 5.

Table 19 illustrates the crosstabulation of program development with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (4, $N = 126$) = 4.891, $p = .299$); therefore, there was no statistically significant relationship between ideological preference and community-based nutrition program development or supervision with professionals outside of nutrition and dietetics.

Table 19

Crosstabulation of Ideological Preference With Co-development of a Community-based Nutrition Intervention

Developed	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	10	66.7	15	60	14	60.9	22	44	5	38.5
Yes	5	33.3	10	40	9	39.1	28	56	8	61.5
Model χ²	4.891									
Model *p*	0.299									
Model *df*	4									

Note. Zero cells (0.0%) have expected counts of less than 5.

Table 20 illustrates the crosstabulation of conference presentations with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (4, $N = 126$) = 1.093, $p = .895$); therefore, there was no statistically significant relationship between ideological preference and presentations at conferences with audiences of primarily non-dietetics professionals.

Table 20

Crosstabulation of Ideological Preference With Presented at a Conference with Non-Dietetics Professionals

Presented	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	7	46.7	12	48	11	47.8	19	38	6	46.2
Yes	8	53.3	13	52	12	52.2	31	62	7	53.8
Model χ²	1.093									
Model *p*	0.895									
Model *df*	4									

Note. Zero cells (0.0%) have expected counts of less than 5.

Overall, chi-square results confirmed that there is no statistically significant relationship between ideological preference and participation in activities with non-dietetics professionals to include: coauthorship; use of guest speakers; co-teaching; co-development or supervision of a community-based nutrition intervention or program; and presentation at a conference whose audience primarily includes non-dietetics professionals.

Research Question Three: Relationship Between Demographic Factors and Ideology

Research question three examines the association between demographic factors and dietetics professors' favored ideologies. Data generated through survey items 3.1; 4.1-9.1; 10.1; and 11.4-11.11 were used to answer this research question (see Appendix D). The researcher ran a series of crosstabulations to explore the relationship between the nominal and ordinal independent variables (job description, age, rank, primary type of instruction, number of years teaching in higher education, course level, university setting, class size, and average teaching

load) and the nominal dependent variable (scholar academic, learner centered, social efficiency, social reconstruction, and more than one ideology). The Chi-Square Test of Independence was used to test the significance of the crosstabulation tables and was appropriate to study the relationships between discrete (nominal and ordinal) independent variables and nominal dependent variables (Pallant, 2016). Assumptions for Chi-Square analysis were met and included: random samples, "independent observations" where data from each case cannot influence another case, and five or more frequencies per cell (Pallant, 2016, p. 215).

Table 21 illustrates the crosstabulation of administrative position with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (4, $N = 126$) = 4.229, $p = .376$); therefore, there was no statistically significant relationship between whether or not professors held administrative positions in addition to teaching and their ideological preference.

Table 21

Crosstabulation of Ideology Preference and Holding an Administrative Position

Hold admin. position?	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	6	8.6	15	21.4	12	17.1	27	38.6	10	14.3
Yes	9	16.1	10	17.9	11	19.6	23	41.1	3	5.4
Model χ^2	4.229									
Model p	0.376									
Model df	4									

Note. Zero cells (0.0%) have expected counts of less than 5.

Table 22 illustrates the crosstabulation of age with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (20, N = 126) = 26.458, p = .151); therefore, there was no statistically significant relationship between professors' age and their ideological preference.

Table 22

Crosstabulation of Ideological Preference and Age of Respondents

Age	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
20-29	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0
30-39	2	6.5	7	22.6	8	25.8	9	29.0	5	16.1
40-49	0	0.0	7	36.8	4	21.1	5	26.3	3	15.8
50-59	5	12.2	5	12.2	6	14.6	23	56.1	2	4.9
60-69	7	24.1	5	17.2	4	13.8	11	37.9	2	6.9
70+	1	25.0	0	0.0	0	0.0	2	50.0	1	25.0
Model χ^2	26.458									
Model p	0.151									
Model df	20									

Note. Twenty cells (66.7%) have expected counts of less than 5.

Table 23 illustrates the crosstabulation of faculty rank, or title, with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (20, N = 126) = 10.240, p = .595); therefore, there was no statistically significant relationship between faculty rank (instructor/adjunct, assistant professor, associate professor, professor) and their ideological preference.

Table 23

Crosstabulation of Ideological Preference and Faculty Rank

Rank	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
Instructor/adjunct	3	7.7	7	17.9	9	23.1	16	41.0	4	10.3
Assistant professor	6	12.8	11	23.4	11	23.4	14	29.8	5	10.6
Associate professor	4	18.2	2	9.10	2	9.10	11	50.0	3	13.6
Professor	5	11.1	5	27.8	1	5.6	9	50.0	1	5.6

Model χ^2	10.240
Model p	0.595
Model df	20

Note. Eleven cells (55.0%) have expected counts of less than 5.

Table 24 illustrates the crosstabulation of teaching experience with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (20, $N = 126$) = 29.378, $p = .081$); therefore, there was no statistically significant relationship between professor's level of teaching experience in higher education, measured by years, and their ideological preference.

Table 24

Crosstabulation of Ideological Preference and Number of Years Teaching in Higher Education

No. years	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
0-5	0	0.0	9	34.6	6	23.1	8	30.8	3	11.5
6-10	6	16.7	3	8.3	10	27.8	13	36.1	4	11.1
11-15	0	0.0	4	20.0	6	30.0	7	35.0	3	15.0
16-20	3	23.1	2	15.4	1	7.7	6	46.2	1	7.7
21-25	3	20.0	3	20.0	0	0.0	9	60.0	0	0.0
26+	3	18.8	4	25.0	0	0.0	7	43.8	2	12.5
Model χ^2	29.378									
Model p	0.081									
Model df	20									

Note. Twenty-one cells (70.0%) have expected counts of less than 5.

Table 25 illustrates the crosstabulation of university setting with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (8, $N = 126$) = 11.972, $p = .152$); therefore, there was no statistically significant relationship between whether or not professors taught at 2-year public or private colleges or universities or 4-year public or private colleges or universities and their ideological preference.

Table 25

Crosstabulation of Ideological Preference and University Setting

Setting	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
4-yr., public	8	9.0	18	20.2	16	18.0	41	46.1	6	6.7
4-yr., private	6	17.6	6	17.6	6	17.6	9	26.5	7	20.6
2-yr., public	1	33.3	1	33.3	1	33.3	0	0.0	0	0.0
2-yr., private	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Model χ^2	11.972									
Model *p*	0.152									
Model *df*	8									

Note. Seven cells (46.7%) have expected counts of less than 5.

Table 26 illustrates the crosstabulation of average class size with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (20, $N = 126$) = 25.786, $p = .173$); therefore, there was no statistically significant relationship between average class size and professor's ideological preference.

Table 26

Crosstabulation of Ideological Preference and Average Class Size

No. students	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
< 10	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0
10-20	4	11.8	8	23.5	3	8.8	12	35.3	7	20.6
21-30	8	17.8	8	17.8	9	20.0	19	42.2	1	2.2
31-40	1	4.3	5	21.7	7	30.4	8	34.8	2	8.7
41-50	0	0.0	2	18.2	2	18.2	5	45.5	2	18.2
51+	2	16.7	2	16.7	2	16.7	6	50.0	0	0.0

Model χ^2	25.786				
Model *p*	0.173				
Model *df*	20				

Note. Twenty-two cells (73.3%) have expected counts of less than 5.

Table 27 illustrates the crosstabulation of average teaching load with ideology. The Pearson Chi-Square value was not statistically significant (χ^2 (16, $N = 126$) = 21.679, $p = .154$); therefore, there was no statistically significant relationship between professors' average teaching load (3-13 or more credits) and their ideological preference.

Table 27

Crosstabulation of Ideological Preference and Average Teaching Load per Semester

No. credits/semester	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
3 credits	0	0.0	2	13.3	5	33.0	7	46.7	1	6.7
6 credits	3	11.1	7	25.9	1	3.7	10	37.0	6	22.2
9 credits	9	23.1	6	15.4	8	20.5	14	35.9	2	5.1
12 credits	2	5.3	8	21.1	7	18.4	18	47.4	3	7.9
13+ credits	1	14.3	2	28.6	2	28.6	1	14.3	1	14.3

Model χ^2	21.679
Model p	0.154
Model df	16

Note. Sixteen cells (64.0%) have expected counts of less than 5.

Tables 28 and 29 illustrate the crosstabulation of course level (undergraduate or graduate) with ideology. The Pearson Chi-Square values were not statistically significant for undergraduate teaching (χ^2 (4, $N = 126$) = 1.492, $p = .746$) or graduate teaching (χ^2 (4, $N = 126$) = 5.884, $p = .208$); therefore, there was no statistically significant relationship between whether or not professors taught at the undergraduate or graduate level and their ideological preference.

Table 28

Crosstabulation of Ideological Preference and Undergraduate Teaching Experience

Teach at undergraduate level?	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	1	25.0	1	25.0	0	0.0	2	50.0	0	0.0
Yes	14	11.5	24	19.7	23	18.9	48	39.3	13	10.7
Model χ²	1.942									
Model *p*	0.746									
Model *df*	4									

Note. Five cells (50.0%) have expected counts of less than 5.

Table 29

Crosstabulation of Ideological Preference and Graduate Teaching Experience

Teach at graduate level?	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	5	10.9	6	13.0	13	28.3	17	37.0	5	10.9
Yes	10	12.5	19	23.8	10	12.5	33	41.3	8	10.0
Model χ²	5.884									
Model *p*	0.208									
Model *df*	4									

Note. One cell (10.0%) has an expected count of less than 5.

Tables 30-32 illustrate the crosstabulation of primary type of instruction provided (online, face-to-face, or hybrid) with ideology. The Pearson Chi-Square values were not statistically significant for online teaching (χ^2 (4, N = 126) = 8.618, p = .071); face-to-face teaching (χ^2 (4, N = 126) = 1.221, p = .875); or hybrid teaching (χ^2 (4, N = 126) = 8.052, p = .090). Therefore, there was no statistically significant relationship between whether or not professors taught primarily online; face-to-face; or using a hybrid approach and their ideological preference.

Table 30

Crosstabulation of Ideological Preference and Fully Online Teaching Experience

Majority of courses taught online?	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	11	9.8	22	19.6	23	20.5	43	38.4	13	11.6
Yes	4	28.6	3	21.4	0	0.0	7	50.0	0	0.0
Model χ^2	8.618									
Model p	0.071									
Model df	4									

Note. Four cells (40.0%) have expected counts of less than 5.

Table 31

Crosstabulation of Ideological Preference and Face to Face Teaching Experience

Majority of courses taught face to face?	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	6	15.8	8	21.1	6	15.8	15	39.5	3	7.9
Yes	9	10.2	17	19.3	17	19.3	35	39.8	10	11.4
Model χ²	1.221									
Model *p*	0.875									
Model *df*	4									

Note. Two cells (20.0%) have expected counts of less than 5.

Table 32

Crosstabulation of Ideological Preference and Hybrid Teaching Experience

Majority of courses taught using hybrid approach?	Scholar academic		Learner centered		Social reconstruction		Social efficiency		More than one	
	n	%	n	%	n	%	n	%	n	%
No	14	12.7	22	20.0	18	16.4	47	42.7	9	8.2
Yes	1	6.3	3	18.8	5	31.3	3	18.8	4	25.0
Model χ²	8.052									
Model *p*	0.090									
Model *df*	4									

Note. Four cells (40.0%) have expected counts of less than 5.

A series of crosstabulations with Chi-Square Tests of Independence were conducted to determine the relationship between nominal and ordinal-level independent variables (job description, age, rank, type of instruction, number of years teaching in higher education, course level, university setting, class size, and teaching load) and the nominal dependent variable, ideological preference. Data revealed that demographic characteristics were not significantly associated with any of the ideological preferences (scholar academic, learner centered, social efficiency, social reconstruction, and more than one ideology).

Research Question Four: Prediction of Pedagogical Technique

Research question four examines if various demographical variables and ideological preference predicted pedagogical technique. Data generated through survey items 3.1; 4.1-11.1; and 11.5-11.11 were used to answer this question. A multiple linear regression analysis was run to predict the dependent variable, pedagogical technique, using the proposed model independent variables. The nominal and ordinal independent variables used were ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load. The continuous dependent variable was pedagogical technique. There were ten pedagogical techniques (lecture, open-class discussion, small-group discussion, simulation, flipped-classroom, writing-across-curriculum, individual presentations, group presentations, project-based learning, and service-based learning) that were used in the multiple linear regression model.

In standard multiple regression, all the independent variables (predictors) are entered into the regression model at once, and then each independent variable is evaluated in terms of how well it predicts the dependent variable, independent of the other predictors (Tabachnick & Fidell,

2007). The independent variables may or may not be correlated with one another and this analysis does not imply cause and effect (Tabachnick & Fidell, 2007). Assumptions for multiple linear regression included adequate sample size; no multicollinearity (where independent variables were highly correlated with one another); normality; and homoscedasticity (similar variation of residuals for predicted dependent variable) (Pallant, 2016).

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 33 significantly predicted respondents' use of lecture as a pedagogical strategy. The results of the regression indicated that the Omnibus *F*-Test in Table 33 was statistically significant ($F = 5.400$; $df = 17, 108$; $p < 0.001$), which confirms that the independent variables presented in the model overall were a better fit for regression analysis compared to a model with no independent variables. The coefficient of determination, also known as the R^2 value, was 0.459. According to this value, 45.9% of the variance of using lecture as a pedagogical strategy was explained by the independent variables in the regression model. The largest Beta (B) value in a regression equation shows which independent variable makes the strongest contribution in the explanation of the variance in a dependent variable, while controlling for variance of other variables (Pallant, 2016). For this particular research question, *teaching at an undergraduate level* equation (B = 2.444; $p < 0.001$) predicted higher levels of using lecture as a pedagogical strategy, even after accounting for the impact of the other predictors. In addition, agreement that the majority of courses are taught face-to-face (B = .358; $p < .040$) predicted higher levels of using lecture as a pedagogical technique, even after accounting for the impact of other predictors in the equation. None of the other independent variables were statistically significant predictors of the dependent variable lecture in this particular regression analysis.

Table 33

Multiple Linear Regression Analysis: Predictors of Using Lecture as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	1.934	0.587	0.001
Hold an administrative position	-0.194	0.126	0.127
Age	-0.037	0.069	0.593
Title	0.030	0.074	0.682
Number of years taught	0.027	0.056	0.635
Class size	0.032	0.051	0.538
Teaching load	0.106	0.056	0.060
Teach at undergraduate	2.444	0.366	0.000*
Teach at graduate	-0.138	0.140	0.328
Agree that the majority of courses are taught online	-0.264	0.247	0.287
Agree that the majority of courses are taught face-to-face	0.358	0.172	0.040*
Agree that the majority of courses are taught using a hybrid approach	-0.055	0.208	0.792
Teach at a four year public institution	-0.673	0.424	0.115
Teach at a four year private institution	-0.622	0.435	0.155
Scholar Academic	0.115	0.269	0.670
Learner Centered	0.236	0.236	0.318
Social Reconstruction	0.213	0.238	0.372
Social Efficiency	0.293	0.221	0.189
F	5.400		0.000
df	17, 108		
R²	0.459		

Note. p < .05

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 34 significantly predicted respondents' use of open-class discussion as a pedagogical strategy. The results of the regression indicated that the Omnibus *F*-Test in Table 34

was statistically significant ($F = 1.838$; $df = 17, 108$; $p = .032$), which meant that the independent

variables presented in the model overall were a better fit for regression analysis compared to a

model with no independent variables. The coefficient of determination, also known as the R^2

value, was 0.224. According to this value, 22.4% of the variance of using open-class discussion

as a pedagogical strategy was explained by the independent variables in the regression model.

The largest Beta (B) value in a regression equation shows which independent variable makes the

strongest contribution in the explanation of the variance in a dependent variable, while

controlling for variance of other variables (Pallant, 2016). For this particular research question,

teaching at a graduate level equation (B= .373; $p = .033$) predicted higher levels of using open-

class discussion as a pedagogical strategy, even after accounting for the impact of the other

predictors. In addition, teaching at a four-year public institution (B= -1.087; $p = .040$) predicted

lower levels of using open-class discussion as a pedagogical technique, even after accounting for

the impact of other predictors in the equation. None of the other independent variables were

statistically significant predictors of the dependent variable open-class discussion in this

particular regression analysis.

Table 34

Multiple Linear Regression Analysis: Predictors of Using Open-class Discussion as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	3.985	0.724	0.000
Hold an administrative position	-0.178	0.156	0.257
Age	-0.075	0.084	0.374
Title	0.145	0.091	0.115
Number of years taught	0.035	0.069	0.615
Class size	0.004	0.063	0.944
Teaching load	0.073	0.069	0.294
Teach at undergraduate	0.544	0.452	0.231
Teach at graduate	0.373	0.173	0.033*
Agree that the majority of courses are taught online	-0.209	0.304	0.494
Agree that the majority of courses are taught face-to-face	0.154	0.212	0.471
Agree that the majority of courses are taught using a hybrid approach	-0.055	0.256	0.830
Teach at a four year public institution	-1.087	0.523	0.040*
Teach at a four year private institution	-0.797	0.536	0.140
Scholar Academic	-0.185	0.332	0.578
Learner Centered	0.324	0.291	0.267
Social Reconstruction	0.243	0.294	0.411
Social Efficiency	-0.059	0.273	0.830
F	1.838		0.032
df	17, 108		
R^2	0.224		

Note. p < .05

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 35 significantly predicted respondents' use of small group discussion as a pedagogical strategy. The results of the regression indicated that the Omnibus *F*-Test in Table

35 was statistically non-significant ($F = 1.443$; $df = 17, 108$; $p > 0.05$), which means that the

predicted regression model was not fit to proceed.

Table 35

Multiple Linear Regression Analysis: Predictors of Using Small-Group Discussion as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	2.677	0.853	0.002
Hold an administrative position	-0.246	0.184	0.183
Age	-0.086	0.099	0.387
Title	0.032	0.107	0.767
Number of years taught	0.059	0.081	0.466
Class size	0.051	0.074	0.495
Teaching load	-0.062	0.081	0.443
Teach at undergraduate	0.786	0.532	0.143
Teach at graduate	0.407	0.203	0.047*
Agree that the majority of courses are taught online	0.015	0.358	0.967
Agree that the majority of courses are taught face-to-face	0.103	0.250	0.680
Agree that the majority of courses are taught using a hybrid approach	0.050	0.302	0.869
Teach at a four year public institution	0.012	0.615	0.985
Teach at a four year private institution	0.574	0.631	0.365
Scholar Academic	-0.585	0.391	0.137
Learner Centered	0.240	0.342	0.485
Social Reconstruction	-0.181	0.346	0.602
Social Efficiency	-0.169	0.321	0.599
F	1.443		0.078
df	17, 108		
R^2	0.201		

Note. p < .05

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 36 significantly predicted respondents' use of simulation as a pedagogical strategy.

Table 36

Multiple Linear Regression Analysis: Predictors of Using Simulation as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	1.931	0.961	0.047
Hold an administrative position	-0.004	0.207	0.986
Age	0.056	0.112	0.617
Title	-0.053	0.121	0.663
Number of years taught	0.095	0.092	0.301
Class size	0.021	0.084	0.799
Teaching load	-0.004	0.091	0.961
Teach at undergraduate	-0.008	0.600	0.989
Teach at graduate	0.164	0.229	0.475
Agree that the majority of courses are taught online	-0.592	0.404	0.146
Agree that the majority of courses are taught face-to-face	-0.443	0.281	0.118
Agree that the majority of courses are taught using a hybrid approach	0.144	0.340	0.672
Teach at a four year public institution	0.181	0.693	0.795
Teach at a four year private institution	0.352	0.711	0.621
Scholar Academic	0.142	0.441	0.748
Learner Centered	0.650	0.386	0.095
Social Reconstruction	-0.435	0.390	0.268
Social Efficiency	0.069	0.362	0.849
F	1.368		0.167
df	17, 108		
R²	0.177		

Note. p < .05

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The results of the regression indicated that the Omnibus *F*-Test in Table 36 was statistically non-significant ($F = 1.368$; *df* = 17, 108; $p > 0.05$), which means that the predicted regression model was not fit to proceed.

Table 37 illustrates the results of a standard multiple linear regression analysis between the dependent variable flipped-classroom and the independent variables listed in Table 37. The results of the regression indicated that the Omnibus *F*-Test was statistically significant ($F = 3.149$; *df* = 17, 108; $p < .001$), which meant that the independent variables presented in the model overall were a better fit for regression analysis compared to a model with no independent variables. The coefficient of determination, also known as the R^2 value, was 0.331. According to this value, 33.1% of the variance of using flipped-classroom as a pedagogical strategy was explained by the independent variables in the regression model. The largest Beta (B) value in a regression equation shows which independent variable makes the strongest contribution in the explanation of the variance in a dependent variable, while controlling for variance of other variables (Pallant, 2016). Faculty title, or rank, (B = .297; $p = .021$) predicted higher levels of using flipped-classroom as a pedagogical strategy, even after accounting for the impact of the other predictors. In addition, agreement of teaching the majority of courses face-to-face (B= -1.283; $p < .001$) predicted lower levels of using flipped classroom as a pedagogical technique, even after accounting for the impact of other predictors in the equation. None of the other independent variables were statistically significant predictors of the dependent variable flipped-classroom in this particular regression equation.

Table 37

Multiple Linear Regression Analysis: Predictors of Using a Flipped Classroom as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	2.471	1.009	0.016
Hold an administrative position	0.373	0.217	0.088
Age	0.033	0.118	0.780
Title	0.297	0.127	0.021*
Number of years taught	-0.081	0.096	0.404
Class size	0.143	0.088	0.106
Teaching load	0.002	0.096	0.983
Teach at undergraduate	-1.025	0.629	0.106
Teach at graduate	0.124	0.240	0.607
Agree that the majority of courses are taught online	-0.472	0.424	0.268
Agree that the majority of courses are taught face-to-face	-1.283	0.295	0.000*
Agree that the majority of courses are taught using a hybrid approach	0.150	0.357	0.675
Teach at a four year public institution	0.326	0.728	0.655
Teach at a four year private institution	0.570	0.747	0.447
Scholar Academic	-0.123	0.462	0.791
Learner Centered	0.537	0.405	0.187
Social Reconstruction	0.509	0.409	0.216
Social Efficiency	-0.159	0.380	0.676
F	3.149		0.000
df	17, 108		
R²	0.331		

Note. p < .05

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 38 significantly predicted respondents' use of writing intensive/writing across curriculum as a pedagogical strategy. The results of the regression indicated that the

Omnibus *F*-Test in Table 38 was statistically non-significant ($F = 1.529$; $df = 17, 108$; $p > 0.05$),

which means that the predicted regression model was not fit to proceed.

Table 38

Multiple Linear Regression Analysis: Predictors of Using Writing Across Curriculum as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	3.164	1.027	0.003
Hold an administrative position	-0.404	0.221	0.071
Age	0.133	0.120	0.270
Title	0.206	0.129	0.113
Number of years taught	0.010	0.098	0.919
Class size	-0.068	0.089	0.446
Teaching load	0.143	0.098	0.146
Teach at undergraduate	-1.171	0.641	0.070
Teach at graduate	-0.095	0.245	0.698
Agree that the majority of courses are taught online	0.062	0.432	0.886
Agree that the majority of courses are taught face-to-face	-0.414	0.301	0.172
Agree that the majority of courses are taught using a hybrid approach	-0.174	0.364	0.632
Teach at a four year public institution	0.322	0.741	0.665
Teach at a four year private institution	0.352	0.760	0.644
Scholar Academic	-0.897	0.471	0.060
Learner Centered	-0.191	0.412	0.644
Social Reconstruction	-0.445	0.417	0.288
Social Efficiency	-0.764	0.387	0.051
F	1.529		0.098
df	17, 108		
R^2	0.067		

Note. p < .05

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 39 significantly predicted respondents' use of individual presentations as a pedagogical strategy.

Table 39

Multiple Linear Regression Analysis: Predictors of Using Individual Presentations as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	2.006	0.727	0.007
Hold an administrative position	0.154	0.156	0.327
Age	0.080	0.085	0.349
Title	0.052	0.091	0.571
Number of years taught	-0.005	0.069	0.947
Class size	-0.030	0.063	0.636
Teaching load	0.041	0.069	0.555
Teach at undergraduate	-0.234	0.454	0.608
Teach at graduate	0.166	0.173	0.339
Agree that the majority of courses are taught online	0.532	0.305	0.084
Agree that the majority of courses are taught face-to-face	0.118	0.213	0.579
Agree that the majority of courses are taught using a hybrid approach	0.209	0.257	0.419
Teach at a four year public institution	-0.394	0.524	0.454
Teach at a four year private institution	0.195	0.538	0.717
Scholar Academic	-0.268	0.333	0.423
Learner Centered	-0.159	0.292	0.587
Social Reconstruction	-0.316	0.295	0.286
Social Efficiency	0.099	0.274	0.717
F	1.965		0.020
df	17, 108		
R^2	0.236		

Note. p < .05

The results of the regression indicated that the Omnibus *F*-Test in Table 39 was statistically significant ($F = 1.965$; $df = 17, 108$; $p = .020$); however, it appeared that these values were misleading because none of the independent variables presented in the model were statistically significant predictors of the dependent variable. It was possible that the model constant ($p < .05$) influenced the misleading values of the Omnibus *F*-test. Therefore, the predicted regression model was not fit to proceed.

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 40 significantly predicted respondents' use of group presentations as a pedagogical strategy. The results of the regression indicated that the Omnibus *F*-Test in Table 40 was statistically non-significant ($F = 1.424$; $df = 17, 108$; $p > 0.05$), which means that the predicted regression model was not fit to proceed.

Table 40

Multiple Linear Regression Analysis: Predictors of Using Group Presentations as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	1.356	0.681	0.049
Hold an administrative position	-0.023	0.147	0.877
Age	0.133	0.079	0.097
Title	-0.055	0.086	0.519
Number of years taught	-0.032	0.065	0.626
Class size	0.014	0.059	0.814
Teaching load	-0.135	0.065	0.039*
Teach at undergraduate	0.701	0.425	0.102
Teach at graduate	0.147	0.162	0.365
Agree that the majority of courses are taught online	0.031	0.286	0.915
Agree that the majority of courses are taught face-to-face	0.060	0.199	0.762
Agree that the majority of courses are taught using a hybrid approach	0.110	0.241	0.648
Teach at a four year public institution	-0.019	0.491	0.969
Teach at a four year private institution	0.522	0.504	0.302
Scholar Academic	-0.307	0.312	0.328
Learner Centered	0.013	0.273	0.963
Social Reconstruction	-0.073	0.276	0.793
Social Efficiency	-0.040	0.257	0.877
F	1.424		0.139
df	17, 108		
R^2	0.183		

Note. p < .05

A standard multiple regression analysis was used to investigate whether the independent variables listed in Table 41 significantly predicted respondents' use of project-based learning as a pedagogical strategy. The results of the regression indicated that the Omnibus *F*-Test in Table

41 was statistically non-significant ($F = 1.021$; $df = 17, 108$; $p > 0.05$), which means that the

predicted regression model was not fit to proceed.

Table 41

Multiple Linear Regression Analysis: Predictors of Using Project-Based Learning as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	1.983	0.969	0.043
Hold an administrative position	-0.141	0.208	0.501
Age	-0.081	0.113	0.473
Title	0.003	0.122	0.983
Number of years taught	0.143	0.092	0.123
Class size	0.032	0.084	0.702
Teaching load	0.046	0.092	0.616
Teach at undergraduate	-0.864	0.604	0.156
Teach at graduate	0.266	0.231	0.252
Agree that the majority of courses are taught online	0.052	0.407	0.899
Agree that the majority of courses are taught face-to-face	0.377	0.284	0.187
Agree that the majority of courses are taught using a hybrid approach	0.571	0.343	0.099
Teach at a four year public institution	0.450	0.699	0.521
Teach at a four year private institution	0.772	0.717	0.284
Scholar Academic	0.498	0.444	0.265
Learner Centered	0.474	0.388	0.225
Social Reconstruction	0.489	0.393	0.216
Social Efficiency	0.276	0.365	0.452
F	1.021		0.441
df	17, 108		
R^2	0.139		

Note. p < .05

Table 42 illustrates the results of a standard multiple linear regression analysis between the dependent variable service-based learning and the independent variables (ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load). The Omnibus F-Test in Table 42 was statistically significant ($F = 2.006$; $df = 17, 108$; $p = .017$), which means that the independent variables presented in the model overall were a better fit for regression analysis compared to a model with no independent variables. The coefficient of determination, also known as the R^2 value, was 0.240. According to this value, 24.0% of the variance of using service-based learning as a pedagogical strategy was explained by the independent variables in the regression model. The largest Beta (B) value in a regression equation shows which independent variable makes the strongest contribution in the explanation of the variance in a dependent variable, while controlling for variance of other variables (Pallant, 2016). Holding an administrative position (B= .512; $p = .007$) predicted higher levels of using service-based learning as a pedagogical strategy, even after accounting for the impact of the other predictors. In addition, agreement of teaching the majority of courses face-to-face (B= -.572; $p = .027$) predicted lower levels of using service-based learning as a pedagogical technique, even after accounting for the impact of other predictors in the equation. None of the other independent variables were statistically significant predictors of the dependent variable service-based learning in this particular regression equation.

Table 42

Multiple Linear Regression Analysis: Predictors of Using Service-Based Learning as a Pedagogical Strategy

Variable	B	SE(B)	p
Constant	1.638	0.871	0.063
Hold an administrative position	0.512	0.187	0.007*
Age	0.056	0.102	0.584
Title	0.040	0.110	0.713
Number of years taught	0.067	0.083	0.420
Class size	-0.086	0.076	0.259
Teaching load	0.058	0.083	0.488
Teach at undergraduate	0.165	0.543	0.761
Teach at graduate	0.118	0.208	0.571
Agree that the majority of courses are taught online	-0.390	0.366	0.289
Agree that the majority of courses are taught face-to-face	-0.572	0.255	0.027*
Agree that the majority of courses are taught using a hybrid approach	0.066	0.308	0.832
Teach at a four year public institution	-0.355	0.628	0.573
Teach at a four year private institution	0.168	0.645	0.794
Scholar Academic	-0.338	0.399	0.399
Learner Centered	-0.033	0.349	0.925
Social Reconstruction	0.193	0.353	0.585
Social Efficiency	0.302	0.328	0.359
F	2.006		0.017
df	17, 108		
R^2	0.240		

Note. p < .05

Research Question Five: Prediction of Interprofessional Collaboration

Research question five predicts the odds of respondents collaborating with non-dietetics professionals in a variety of teaching and research activities that may be typical in a higher

education setting. Data generated through survey items 3.1; 4.1-10.1; 11.3; and 11.5-11.11 were used to answer this research question (see Appendix D). Binary logistic regression was used to predict the odds of participation in collaborative activities (known as the dependent variable) using the following nominal and ordinal independent variables: ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load. The dependent variable (collaboration) was a dichotomous variable with yes/no response options. Binary logistic regression was appropriate to use because the goal was to predict the odds of a linear relationship between multiple nominal and/or ordinal independent variables with a nominal dependent variable that has two categories (Pallant, 2016). Binary logistic regression is more flexible in that the focus is on the probability of a particular outcome for each case, with no assumptions of normality; linearity; or equal variances (Pallant, 2016).

Table 43 presents the results of binary logistic regression to predict the probability of coauthorship with non-dietetics professionals using the independent variables, known as predictors (ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load). The first value of interest was the Chi-Square Goodness of Fit Omnibus Test of Model Coefficients which provided an overall indication of how well the model performed; in order to proceed, a statistically significant value was needed (Pallant, 2016). The Omnibus Test of Model Coefficients in Table 43 was statistically significant ($X^2 = 33.621$; $df = 17$; $p = .009$). The next value of interest was the Nagelkerke R^2 in Model 1 which indicated the amount of variation in the dependent variable explained by the model (min of 0, max of 1) (Pallant, 2016). The Nagelkerke R^2 in Model 1 value was .314, which suggested

that 31.4% of the variance in the dependent variable coauthorship was due to the independent variables in the equation. The *exp(ß)* values were the odds ratios for each independent variable, and the *ß* values were those that were used in the regression equation to calculate the probability of a case falling into a specific category (Pallant, 2016). A (+) or (-) *ß* value indicated increased or decreased likelihood odds ratio (Pallant, 2016). A positive and statistically significant relationship ($p < .001$) existed between teaching at the graduate level and coauthorship, which meant that teaching at the graduate level increased the proportional odds of coauthorship. The formula to derive this effect was $(e^{1.801} - 1)(100) = 505.57\%$, which resulted in increased odds of coauthorship by a factor of five, or 505%. None of the other independent variables emerged as statistically significant predictors of the dependent variable coauthorship in this regression analysis.

Table 43

Binary Logistic Regression Analysis: Predictors of Coauthorship of a Research Proposal

Variable	β	$exp(\beta)$	p
Constant	-1.101	2.043	0.590
Hold an administrative position	-0.275	0.470	0.559
Age	-0.256	0.244	0.295
Title	0.329	0.263	0.211
Number of years taught	0.242	0.203	0.233
Class size	0.015	0.179	0.932
Teaching load	-0.131	0.201	0.515
Teach at undergraduate	-0.226	1.442	0.876
Teach at graduate	1.801	0.495	0.000*
Agree that the majority of courses are taught online	-0.755	0.880	0.390
Agree that the majority of courses are taught face-to-face	-0.160	0.613	0.794
Agree that the majority of courses are taught using a hybrid approach	-0.149	0.715	0.835
Teach at a four year public institution	0.766	1.570	0.625
Teach at a four year private institution	0.415	1.607	0.796
Scholar Academic	1.472	1.054	0.163
Learner Centered	0.113	0.829	0.892
Social Reconstruction	0.153	0.809	0.850
Social Efficiency	-0.364	0.768	0.636
X^2 Goodness of Fit	33.621		0.009
df	17		
Nagelkerke R^2	0.314		

Note. $p < .05$

Table 44 illustrates results of binary logistic regression analysis of the dependent variable co-teaching using the independent variables (ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of

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college or university setting, level of courses taught, class size, and teaching load) as predictors. The Chi-Square Goodness of Fit Omnibus Test of Model Coefficients was statistically non-significant ($X^2 = 9.009$; $df = 17$; $p > .05$).

Table 44

Binary Logistic Regression Analysis: Predictors of Co-teaching with Non-Dietetics Colleagues

Variable	β	$exp(\beta)$	p
Constant	-1.896	2.071	0.360
Hold an administrative position	0.553	0.430	0.199
Age	0.037	0.231	0.874
Title	0.214	0.242	0.378
Number of years taught	-0.051	0.183	0.782
Class size	0.026	0.168	0.878
Teaching load	0.211	0.190	0.266
Teach at undergraduate	1.061	1.355	0.434
Teach at graduate	-0.227	0.463	0.623
Agree that the majority of courses are taught online	0.108	0.796	0.892
Agree that the majority of courses are taught face-to-face	-0.647	0.558	0.247
Agree that the majority of courses are taught using a hybrid approach	0.159	0.678	0.815
Teach at a four year public institution	-0.900	1.486	0.545
Teach at a four year private institution	-0.972	1.516	0.522
Scholar Academic	0.087	0.917	0.925
Learner Centered	0.250	0.788	0.751
Social Reconstruction	-0.499	0.843	0.554
Social Efficiency	0.571	0.746	0.444
X^2 Goodness of Fit	9.009		0.940
df	17		
Nagelkerke R^2	0.095		

Note. p < .05

Therefore, the predicted regression model was not used to calculate the probability of co-teaching with non-dietetics professionals.

Table 45 illustrates results of binary logistic regression analysis of the dependent variable, providing guest speakers outside of the fields of nutrition and dietetics, using the independent variables (ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load) as predictors. The Chi-Square Goodness of Fit Omnibus Test of Model Coefficients was statistically non-significant ($X^2 = 11.583$; $df = 17$; $p > .05$). As a result, the predicted regression model was not used to calculate the probability of providing guest speakers outside of the fields of nutrition and dietetics.

Table 45

Binary Logistic Regression Analysis: Predictors of Providing Guest Speakers Outside of Dietetics in Courses

Variable	β	$exp(\beta)$	p
Constant	39.413	27870.707	0.999
Hold an administrative position	0.591	0.520	0.256
Age	0.113	0.279	0.686
Title	0.308	0.306	0.313
Number of years taught	-0.321	0.239	0.178
Class size	-0.143	0.202	0.479
Teaching load	0.012	0.228	0.957
Teach at undergraduate	-18.523	18670.913	0.999
Teach at graduate	0.299	0.564	0.596
Agree that the majority of courses are taught online	0.322	1.305	0.805
Agree that the majority of courses are taught face-to-face	-0.724	0.729	0.321
Agree that the majority of courses are taught using a hybrid approach	-0.357	0.832	0.668
Teach at a four year public institution	-19.173	20692.344	0.999
Teach at a four year private institution	-19.428	20692.344	0.999
Scholar Academic	1.377	1.323	0.298
Learner Centered	-0.422	0.873	0.628
Social Reconstruction	0.309	0.936	0.741
Social Efficiency	0.346	0.848	0.684
X^2 Goodness of Fit	11.583		0.825
df	17		
Nagelkerke R^2	0.141		

Note. p < .05

Table 46 presents the results of binary logistic regression analysis to predict the probability of development or supervision of a community-based nutrition intervention with non-dietetics professionals using independent variables (ideological position, job description, age,

rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load) as predictors. The first value of interest in Table 46 was the Chi-Square Goodness of Fit Omnibus Test of Model Coefficients which provided an overall indication of how well the model performed; in order to proceed, a statistically significant value was needed (Pallant, 2016). The Omnibus Test of Model Coefficients was statistically significant ($X^2 = 32.976$; $df = 17$; $p = .011$). The next value of interest was the Nagelkerke R^2 in Model 1 which indicated the amount of variation in the dependent variable explained by the model (min of 0, max of 1) (Pallant, 2016). The Nagelkerke R^2 in Model 1 value was .307, which suggested that 30.7% of the variance in the dependent variable was due to the independent variables in the equation. The *exp(ß)* values were the odds ratios for each independent variable, and the *ß* values were those that were used in the regression equation to calculate the probability of a case falling into a specific category (Pallant, 2016). A (+) or (-) *ß* value indicated increased or decreased likelihood odds ratio (Pallant, 2016). A positive and statistically significant relationship ($p < .001$) existed between teaching at the graduate level and intervention development/supervision, which means that teaching at the graduate level increased the proportional odds of developing or supervising a community-based nutrition intervention with non-dietetics professionals. The formula to derive this effect was $(e^{1.388} - 1)(100) = 300.67\%$, which resulted in increased odds of co-development or supervision by a factor of three, or 301%. None of the other independent variables emerged as statistically significant predictors of the dependent variable in this regression equation.

Table 46

Binary Logistic Regression Analysis: Predictors of Developed or Supervised a Community Nutrition Intervention With Non-Dietetics Professionals

Variable	β	$exp(\beta)$	p
Constant	-0.923	1.996	0.644
Hold an administrative position	0.623	0.444	0.161
Age	-0.021	0.246	0.931
Title	-0.272	0.267	0.308
Number of years taught	0.386	0.204	0.058
Class size	-0.199	0.180	0.270
Teaching load	0.099	0.203	0.625
Teach at undergraduate	1.039	1.218	0.394
Teach at graduate	1.388	0.499	0.005*
Agree that the majority of courses are taught online	0.225	0.864	0.794
Agree that the majority of courses are taught face-to-face	-0.322	0.620	0.603
Agree that the majority of courses are taught using a hybrid approach	1.171	0.761	0.124
Teach at a four year public institution	-0.970	1.405	0.490
Teach at a four year private institution	-1.287	1.462	0.379
Scholar Academic	-1.319	0.957	0.168
Learner Centered	-1.100	0.850	0.195
Social Reconstruction	-0.466	0.846	0.581
Social Efficiency	-0.075	0.783	0.923
X^2 Goodness of Fit	32.976		0.011
df	17		
Nagelkerke R^2	0.307		

Note. p < .05

Table 47 illustrates the results of binary logistic regression analysis of the dependent

variable, presenting at a conference whose audience primarily consisted of non-dietetics

professionals, using the independent variables (ideological position, job description, age, rank,

primary type of instruction provided, number of years teaching in higher education, type of

college or university setting, level of courses taught, class size, and teaching load) as predictors.

Table 47

Binary Logistic Regression Analysis: Predictors of Presented at a Conference of Primarily Non-Dietetics Professionals

Variable	β	$exp(\beta)$	p
Constant	-0.803	1.958	0.682
Hold an administrative position	-0.152	0.424	0.719
Age	-0.169	0.229	0.460
Title	0.438	0.249	0.079
Number of years taught	0.108	0.187	0.562
Class size	-0.331	0.173	0.055
Teaching load	-0.064	0.188	0.733
Teach at undergraduate	-0.306	1.435	0.831
Teach at graduate	0.308	0.456	0.500
Agree that the majority of courses are taught online	1.182	0.877	0.177
Agree that the majority of courses are taught face-to-face	0.712	0.599	0.234
Agree that the majority of courses are taught using a hybrid approach	1.606	0.780	0.040*
Teach at a four year public institution	0.925	1.452	0.524
Teach at a four year private institution	0.339	1.496	0.820
Scholar Academic	0.182	0.876	0.836
Learner Centered	0.037	0.789	0.962
Social Reconstruction	0.482	0.783	0.539
Social Efficiency	0.608	0.732	0.406
X^2 Goodness of Fit	20.635		0.243
df	17		
Nagelkerke R^2	0.203		

Note. p < .05

The Chi-Square Goodness of Fit Omnibus Test of Model Coefficients in Table 47 was statistically non-significant ($X^2 = 20.635$; $df = 17$; $p > .05$). As a result, the predicted regression model was not used to calculate the probability of presenting at a conference whose audience consisted primarily of professionals outside of the fields of nutrition and dietetics.

Summary

Out of 260 total survey responses, a total of 126 respondents were statistically analyzed to answer five research questions. Descriptive and inferential statistics were used to explore the research questions. Descriptive statistics revealed that the majority of the respondents identified with the social efficiency ideological category, followed by the learner centered ideological category. A series of One-way ANOVAs revealed learner-centered faculty were more likely to use simulation as a pedagogical technique than social reconstruction-oriented faculty. Chi-Square analysis revealed no statistically significant associations between faculty ideological preferences and collaboration with non-dietetics professionals in a variety of research, teaching, and program development situations. Additional Chi-Square analysis revealed no statistically significant associations between demographic factors and ideological preference. Regression analyses showed several statistically significant results related to prediction of pedagogical techniques and collaboration with professionals outside of nutrition and dietetics. Chapter five includes the discussion and recommendations for further research.

CHAPTER FIVE

DISCUSSION

The dietetics profession is evolving to meet the demands of health care and an increasingly complex and diverse society with evolving dietary needs and concerns. RDN's are expected to apply evidence-based practices in a wide variety of clinical settings, which necessitates a strong knowledge based in both MNT and the natural sciences such as chemistry, microbiology, and human physiology and anatomy. In addition, RDN's routinely work with the public not only in the dissemination of nutrition information but also to help facilitate behavior change; in other words, dietitians serve as both educators and counselors, dependent upon the setting and individual or group goals. Therefore, theory and practice are foundational to our profession. In this chapter, the researcher presents a brief overview of the purpose, quantitative research design and research questions, and discussion of the results. Recommendations for administrators and faculty and recommendations for future research are included.

Integrative healthcare, wellness promotion, and technological advances are examples of opportunities for RDN's to expand their knowledge base to better serve the public. Recent accreditation standards address the importance of consideration of environmental factors as they relate to food and eating; critical thinking and communication skills; and interprofessional collaboration as examples of increasingly important areas within our profession to be addressed in dietetics curricula (ACEND, 2016). As our profession evolves to address these unique opportunities, our views regarding the education of future dietitians must be considered.

In order to explore dietetics professors' views regarding dietetics curriculum, the researcher surveyed professors from the NDEP group of AND using a modified, online version of Schiro's Curriculum Ideology Inventory known as the CIPIC. The researcher included

questions regarding the use of common pedagogical techniques and participation in interprofessional collaboration, as these areas relate to curriculum development, implementation, and assessment. The purpose of this quantitative study was to describe as well as to examine the relationship between dietetic professors' ideologies, commonly utilized pedagogical strategies, and collaboration with colleagues from different professions using an online survey. Additionally, this study examined the influence of factors such as administrative duties; age; faculty rank, or title; primary type of instruction provided; teaching experience; level of courses taught; university or college setting; average class size; and average teaching load.

The researcher used descriptive and inferential statistics to answer the following research questions:

1. Based on Schiro's Curriculum Ideology Inventory (2013) which ideological positions do dietetics professors favor?

2. How do commonly identified curriculum ideological positions relate to pedagogical techniques used in the classroom and collaboration with professionals outside of dietetics?

    a. Is there a statistically significant association between dietetics professors' ideological positions and their choice of pedagogical techniques? Are there differences between ideology and pedagogical techniques?

    b. Is there a statistically significant association between dietetics professors' ideological positions and collaboration with professionals outside of dietetics? Are there differences between ideology and collaboration with professionals?

3. What demographic factors are associated with dietetics professors' commonly identified curriculum ideological positions?

a. Is there a statistically significant association between ideology and job description (teaching and teaching with administrative duties)?

b. Is there a statistically significant association between ideology and age?

c. Is there a statistically significant association between ideology and rank?

d. Is there a statistically significant association between ideology and primary type of instruction provided (online; face-to-face; or hybrid)?

e. Is there a statistically significant association between ideology and number of years teaching in higher education?

f. Is there a statistically significant association between ideology and level of courses taught?

g. Is there a statistically significant association between ideology and type of college or university setting?

h. Is there a statistically significant association between ideology and class size?

i. Is there a statistically significant association between ideology and teaching load?

4. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict commonly used pedagogical techniques?

5. Does ideological position, job description, age, rank, primary type of instruction provided, number of years teaching in higher education, type of college or university setting, level of courses taught, class size, and teaching load predict collaboration with professionals outside of dietetics?

Summary of Findings

A total of 126 respondents from all six regions of NDEP were included in this study. The majority of the respondents were instructors or assistant professors between the ages of 50-69 years. More than half of the respondents taught for 15 years or less and held administrative duties in addition to teaching. Three-quarters of the respondents taught primarily undergraduate, face-to-face courses in 4-year public universities with an average teaching load of 9-12 credits per semester and 10-30 students per course. A summary of the key research findings is included below:

1. The predominant curriculum ideological preference of respondents was social efficiency, followed by learner centered and social reconstruction.

2. There were no statistically significant associations between demographic characteristics and ideological preference of respondents.

3. There were no statistically significant associations between ideological preference and commonly utilized pedagogical techniques, with the exception of simulation: learner centered teachers were more likely to use simulation compared to social reconstruction-oriented teachers. However, this was a small effect.

4. The most commonly preferred pedagogical technique was lecture, followed by open-class discussion and small-group discussion. The two least-commonly utilized techniques were flipped-classroom and service-based learning.

5. Teaching at the undergraduate level and teaching face-to-face were statistically significant predictors of using lecture as a preferred pedagogical technique. Teaching face-to-face predicted lower levels of using both flipped-classroom and service-based learning as preferred pedagogical techniques.

6. Faculty rank was a predictor of using the flipped-classroom model. Holding an administrative position in addition to teaching was a predictor of using service-based learning.

7. Teaching at the graduate level was a statistically significant predictor of using open-class discussion as a preferred pedagogical technique, while teaching at a 4-year institution decreased the odds of using open-class discussion.

8. There were no statistically significant associations between ideological preference and participation in interprofessional collaborative activities. However, teaching at the graduate level significantly predicted greater odds of coauthoring a research publication with colleagues outside of the fields of nutrition and dietetics. In addition, teaching at the graduate level significantly predicted greater odds of developing or supervising a nutrition intervention with colleagues outside of the fields of nutrition and dietetics.

Discussion of Findings

Dietetics educators are responsible for curriculum development, implementation, and assessment. In addition to adherence of accreditation standards, dietetic educators must balance departmental and university-wide curriculum expectations with professional trends and the unique learning styles and expectations of their students. Time constraints; budgetary concerns; lack of university-wide incentives for interprofessional collaboration; and personal philosophies regarding teaching and learning all impact curricular and pedagogical decisions, to include interprofessional collaboration in teaching and research. The findings presented earlier have been organized into three main sections: Ideology, Pedagogy, and Interprofessional Collaboration, and discussed in the following section.

Ideological Preference

Ideology is defined as "a collection of ideas, a comprehensive vision, a way of looking at things, or a worldview…" (Schiro, 2013, p. 8). In an educational setting, there are different and often competing ideologies regarding curriculum and pedagogy. In fact, it is not uncommon for groups to subtly attempt to change other's thinking so that they accept a particular ideology – often resulting in feelings of "self-righteousness or insecurity and confusion" (Schiro, 2013, p. 9). In higher education, ideological views are explicitly stated in examples such as teaching philosophies and research interests, but are more implicit in the context of the hidden curriculum, where teacher/student relationships set the stage for the "socialization dimension that is transmitted to the students" (Oren Semper & Blasco, 2018). Researchers maintain that in order to make the hidden curriculum explicit to facilitate student learning, faculty must be open to changing themselves, not just their students:

> …teachers must ask themselves, and discuss with students, in what ways the curriculum
> they teach represents the dominant ideological interests in the society in question, and
> how their institution legitimates these forms of knowledge as 'truths.' (Oren Semper &
> Blasco, 2018, p. 491)

In 2013 Schiro created an inventory that included four curriculum ideology categories: educators who embrace the scholar academic ideology tend to prioritize course content and sequencing, with the intent of transmitting knowledge to the student, who is typically more of a passive learner. Learner centered educators take on more of a facilitator role in the classroom and tend to design curriculum and instructional strategies that emphasize creativity and critical-thinking, while keeping the unique needs of the learners in mind. Educators who identify with the social efficiency ideology tend to focus more on motivating students to change learning

behaviors using performance-based learning techniques and skill acquisition. And finally, social reconstruction-oriented educators design curriculum and instruction around problem-solving, often concerning issues related to the environment; race; poverty; and/or economics.

Previous research maintains that curriculum ideology often changes at multiple points in an educator's career, often in congruence with life changes such as a change in the grade level taught; a change in position, such as moving from teaching to administration or vice versa; or with changes in one's personal life, such as having children (Schiro, 1992). It was not uncommon for educators to identify with more than one ideology (Schiro, 2013). In addition, the overarching philosophy of one's teacher education program often influenced personal ideologies (Cotti, 1997; Cotti & Schiro, 2004). In fact, Venance and colleagues (2014) suggest that teaching philosophies (to include pedagogy) were largely determined by one's own experiences with education. Several scholars found that the learner centered ideology was often most favored by educators, which may have been reflective of the ideology of the teacher education program (Bhatt, 2013; Farahani & Maleki, 2013; Mathew, 2014).

Research questions one, two, and three were designed to describe the curriculum ideological preferences of respondents and to determine if associations existed between ideology and demographic characteristics; pedagogical technique; and participation in interprofessional collaboration. Descriptive statistics were used to determine the proportion of respondents in five different ideological categories, based on Schiro's Curriculum Ideology Inventory (2013): scholar academic; learner centered; social efficiency; social reconstruction; and more than one ideology.

This study revealed that many more respondents preferred the social efficiency ideology (approximately 40%), followed by learner centered (approximately 20%) and social

reconstruction (approximately 18%). Hallmarks of the social efficiency ideology include emphasis on performance-based learning and skill acquisition (Schiro, 2013). While these findings are not consistent with previous research in the field of education, the results are not entirely surprising.

The social efficiency ideology could be more widespread because it reflects the professional expectations of the accrediting body of dietetics programs, ACEND. ACEND standards emphasize knowledge acquisition and demonstration of specific competencies necessary to perform as an entry-level RDN (ACEND, 2018). Given that undergraduate dietetics programs must adhere to these standards, it seems likely that some dietetics educators would favor an ideology that focuses more on performance-based learning and skill demonstration. The fact that the respondents were voluntary members of NDEP, which is committed to the advancement of dietetic educational programs, could also have influenced their ideological scores. While this study did not reveal a statistically significant association between respondents' age and ideological preference, the crosstabulation Table on p. 88 revealed an interesting trend; the majority (13 out of 15) of self-reported scholar academics were ages 50 and older and the majority of respondents who identified with social efficiency ideology (36 out of 50) were also ages 50 and older.

Notably, the scholar academic category was the least preferred (approximately 12%) followed closely by the category more than one ideology (approximately 10%). The scholar academic ideology aligns with more of a hierarchical position in education, whereby the teacher is considered the expert and the purpose of education is to disseminate knowledge to the student (Schiro, 2013). It is possible this was the least preferred ideology due to the changing landscape of education, whereby students are encouraged to actively participate in the learning process and

there is greater emphasis on transferable knowledge and skills for the purposes of teamwork and problem-solving (Germaine et al., 2016; Russell, Wickson, & Carew, 2008).

Researchers conducted a qualitative study using content analysis of 63 teaching philosophy statements of recipients of the USDA's Excellence in College and University Teaching in the Food and Agricultural Sciences award from 2000-2010 (Sankey & Foster, 2012). Results revealed the four most commonly cited themes of exemplary instructors were: student-centeredness, provision of opportunities to learn inside and outside of the classroom, expertise in content area, and addressing different learning styles with varying pedagogical techniques (Sankey & Foster, 2012). Similarly, both the learner centered and social reconstruction ideologies are described as more student-centered, flexible and adaptive to the learner's needs (Schiro, 2013). However, there are key distinctions between the two ideologies regarding knowledge and views of learners. The learner centered ideology focuses more on individual's interpretation of what knowledge is and personal responses to learning experiences, whereas social reconstruction ideology focuses more on individual's interpretation of knowledge as a function of society and an individual's beliefs regarding their ability to improve society (Schiro, 2013, p. 212). Therefore, learner centered educators focus more on learners "as they are" and social reconstruction educators focus on learners "as they ought to be" (Schiro, 2013, p. 227). Similar ideological views have been discussed in the literature, such as referring to educators as "agents for social change" and challenging students to question the values and practices of society (Baumgartner, Bay, Lopez-Reyna, Snowden, & Maiorano, 2015, p. 52; Kanuka, Smith, & Kelland, 2013).

Data for this study revealed no statistically significant associations between curriculum ideological preference and any of the aforementioned descriptors; however, crosstabulation

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tables revealed a few interesting trends. Respondents who identified primarily with the learner centered and social reconstruction ideologies were primarily assistant professors (28% of learner centered respondents were associate or full professors, and 13% of social reconstruction respondents were associate or full professors). In addition, social reconstruction respondents were the only group with no professors with 21 years or more teaching experience; in fact, approximately 70% of social reconstructions reported 10 years or less teaching experience in higher education. In comparison to the other four categories, a higher percentage of respondents who identified with the social reconstruction ideology (approximately 57%) indicated they did not teach graduate-level courses. In contrast, Sankey and Foster's (2012) sample consisted of primarily associate and full professors (approximately 95%); with an average of 24 years of teaching experience; who taught 1-2 graduate courses per year, on average. Data from this study suggest possible trends within particular ideological preferences that could be explored with future research.

Ideology and Pedagogical Preference

Post-secondary students in the 21st century need to be educated to consider multiple perspectives and to think critically; to be excellent communicators; to be creative and adaptable; and to function as team players in an increasingly collaborative society (Anderson, 2013; DeZure et al., 2005; Germaine et al., 2016; Russell et al., 2008). As previously discussed, integrative teaching strategies foster positive student learning outcomes related to these 21st century skills (Leveritt et al., 2013; Moore & Andrews, 2012; Roofe, 2012; Wingert et al., 2014). Schiro (2013) outlined the common teaching methods associated with the four major ideological preferences: scholar academics are considered disciplinary experts and as such tend to focus on the use of lectures, supervised practice, and Socratic discussion; social efficiency educators are

considered managers of classrooms and focus on motivating students using active learning

strategies, whereby students practice behaviors and skills with adequate feedback; learner

centered educators are considered nurturers or facilitators and plan instruction around the

developmental needs of the students and the learning environment, often described as a more

tailored approach to education; and social reconstructionist-oriented educators tend to focus on

"meaning making" to ensure that students recognize and build upon previous knowledge, with a

strong emphasis on contextual learning (i.e. culture and society) (p. 179).

This study revealed only one statistically significant association between ideological

preference and pedagogical technique: learner centered educators were more likely to use

simulation compared to social reconstruction-oriented educators. This was considered a small

effect. Comparison of means and standards deviations of the ten different pedagogical techniques

with ideological preference did not reveal any meaningful patterns. In 2009 Reig and Wilson

found that lecture was considered largely ineffective by higher education faculty and was

infrequently chosen in favor of discussion and problem-solving techniques. In contrast, this study

revealed that lecture, open-class discussion, and small-group discussion were consistently the

three most popular pedagogical techniques across all ideology categories.

There is empirical evidence to support that faculty attitudes and behaviors serve as

barriers to integrative curriculum development, including the adoption of varied instructional

techniques (Anderson, 2013; DeZure, Babb, & Waldmann, 2005; Reid, 2014). Specific faculty

barriers to the adoption of varied instructional strategies included low self-efficacy; perceived

ineffectiveness of the technique; a general resistance to change; and lack of participation in

professional development opportunities (Reid, 2014). Regarding the integration of service

learning, faculty described perceived benefits as enhanced student knowledge and the potential

to create meaningful collaborations with the surrounding community (Darby & Newman, 2014).

However, identified faculty barriers to the use of service learning and simulation included time

and resources (Darby & Newman, 2014; Gibson & Davison, 2014). Service learning was the

least popular among scholar academics; learner centered educators; and educators who identified

with more than one ideology. Simulation was the least popular with social reconstruction

educators; and flipped classroom was the least popular with social efficiency educators. While

these results were not statistically significant, it is possible that individual faculty barriers

inhibited the use of these strategies more so than ideological preference.

It is possible that other factors besides ideology influence the selection of pedagogical

techniques such as: departmental culture, university or college-wide expectations, class size,

course level, and familiarity with or professional development in the use of a variety of

pedagogical techniques. It is also possible that ideological preferences do not necessarily

translate into what is practiced. For example, faculty may identify with a particular ideology but

due to their teaching environment they may need to adopt the practices of a different ideology

(Schiro, 2013). In fact, the most commonly cited reason for changing one's curriculum ideology

is "the changing of the school or school system in which an educator works" (p. 259).

Previous research indicated that pedagogical preferences were typically based upon the

educator's conceptions of teaching; in other words, if an educator considered the purpose of

teaching to be to impart knowledge to the student, they were more likely to adopt a teacher-

centered approach to education (Postareff, Lindblom-Ylanne, & Nevgi, 2007). Contrary to

previous research, ideological preference did not emerge as a predictor of pedagogical technique.

Other individual factors, such as respondents' age and number of years teaching in higher

education, also did not predict pedagogical technique.

Based on the results of this study, it appears that the context in which respondents' teach plays a bigger role in predicting pedagogical technique. For example, in this study the researcher discovered that teaching at the undergraduate level and teaching face-to-face both predicted higher levels of using lecture as a preferred pedagogical technique. In contrast, teaching face-to-face predicted lower levels of using both the flipped classroom technique and integration of service learning into the classroom. Venance and colleagues (2014) noted that changes at the curricular level influenced changes in pedagogical strategies; however, faculty preferences for teaching strategies varied widely and were also dependent on external factors such as accreditation mandates and awareness of different strategies. Reid (2014) reported similar contextual barriers related to adoption of instructional technologies, in terms of administrative barriers such as lack of support, leadership, and incentives; and university-wide or institutional barriers such as universities shifting to more of a business model, resulting in increased conflict between administration and academics. Universities are focusing more on measuring student learning and some faculty perceive a reduction in autonomy (Reid, 2014). It is possible that teaching undergraduates in a face-to-face setting is more convenient using lecture, as undergraduate courses tend to be more content-driven and are often larger in size. This assumption is supported by an additional result for this research question: teaching at a four-year public university predicted lower levels of using open-class discussion, while teaching at the graduate level predicted higher levels of using open-class discussion. Graduate courses are often smaller in size with greater emphasis on exploration of ideas and concepts, perhaps making discussions more appropriate and feasible to use as a pedagogical technique.

Previous research indicated a positive effect of pedagogical training on faculty self-efficacy and shifting towards a more student-centered approach to teaching (Postareff,

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Lindblom-Ylanne, & Nevgi, 2007). Faculty awareness of pedagogical strategies beyond lecturing could be a contributing factor; if faculty lack pedagogical training, this could certainly impact their pedagogical choices in the classroom. Regarding flipped classroom and serving learning, perhaps the lack of integration of these techniques in a face-to-face setting is due to a lack of training as well as time constraints. According to Heffernan (2001) one of the greatest obstacles for service learning integration is time and external pressures of the university. This study did not assess for educational background or professional development in pedagogy, nor did the survey include a question or questions related to faculty barriers to teaching.

Faculty rank was a significant predictor of the use of the flipped classroom technique. This result-combined with results from questions two (a) and three that showed that learner centered and social reconstruction-oriented faculty who were primarily instructors and assistant professors reported higher means for the use of flipped classroom-suggests that lower ranked faculty may be more likely to integrate this technique. Research related to the use of flipped classroom often focuses on positive student outcomes versus factors associated with faculty adoption of flipped classroom (Gilboy et al., 2015; Pannabecker et al., 2014; Thai et al., 2017). This study did not assess for faculty attitudes regarding pedagogy, only whether or not they used common techniques and how often. It would be interesting to explore faculty attitudes regarding the integration of newer techniques such as the flipped classroom.

According to Heffernan, service learning puts the community at the center of the learning process and therefore challenges faculty to "reconceptualize not only their curriculum, but also their disciplinary training and their role as educators" (2001, p. 2). Results of this study suggest that holding an administrative position in addition to teaching predicts higher levels of using service learning. Perhaps a deeper level of reflection is associated with holding a dual-role in

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education: that of an administrator and of an educator. Schiro (2013) pointed out that ideological views are indeed related to our role(s) in education: as curriculum "practitioners, evaluators, disseminators, advocators, and theorists" (pp. 7-8).

Ideology and Participation in Interprofessional Collaboration

There is a growing body of literature that emphasizes the importance of interprofessional collaboration. Dietitians are considered integral members of health care teams and the services they provide are considered highly beneficial and cost-effective in the treatment of chronic disease (Leachman Slawson et al., 2013). Additionally, the 'preferred future' scenario described by Rhea and Bettles (2012) for the dietetics profession includes a skill-set focused on team-building, problem-solving, and enhanced cultural competency. Interprofessional education as part of dietetics curricula could provide opportunities for skill development in these areas.

A key component of interprofessional collaboration is reflexivity, particularly in regards to one's beliefs, attitudes, and values regarding their respective profession (Khalili et al., 2013). Some studies involving interprofessional educational experiences with dietetics students suggested concerns with ambiguity regarding a dietitian's role in a health care team, as well as professional bias and lack of respect concerning dietetics knowledge contributions (Earland et al., 2011; Smith & Christie, 2004). Beyond reflexivity and awareness of professional roles and biases, successful interprofessional collaboration requires strong communication skills; a supportive climate; and a willingness to consider multiple (and often competing) views (Borrego & Newswander, 2008; Vanasupa et al., 2012). For example, researchers discovered that institutional culture was the most important factor to impact integrative curriculum development; specifically, leadership provided by department deans and chairs (Emil & Cress, 2014).

Recently updated accreditation standards include competencies that reinforce the importance of interdisciplinary and interprofessional collaboration in a variety of settings (ACEND, 2016). The ability to collaborate and work successfully in a team is increasingly important in today's workforce, particularly in health care (Nelms, Sucher, & Lacey, 2016, p. 10). Future health care professionals are encouraged to learn with and from one another one for the purpose of improved patient outcomes, known as interprofessional education (DiMaria-Ghalili et al., 2014; Leachman Slawson et al., 2013). However, interdisciplinary and interprofessional collaboration is not exclusive to a health care setting. With greater emphasis on transferable skills and educating students to work in an increasingly collaborative environment, universities must adapt their curricula and departmental structures to support faculty collaboration both within and across departments and programs. However, the collaborative process is not without barriers such as university and departmental support, as well as individual characteristics such as a willingness to consider perspectives of different disciplines and strong communication skills (Borrego & Newswander, 2008; Oberg, 2008; Vanasupa et al., 2011).

Part of the second research question was designed to determine if there was an association between ideological preference and collaboration with colleagues outside of dietetics in a variety of teaching, research, and interprofessional activities. Statistical analyses for this study revealed no significant associations between ideological preference and participation in selected interprofessional activities. The vast majority of all respondents had provided guest speakers for their courses outside of dietetics (3/4 or more of respondents from each ideological category). Generally speaking, more respondents indicated participation in co-authorship; the use of guest speakers; and presenting at conferences outside of dietetics compared with co-teaching and co-development or supervision. Perhaps the use of guest speakers was easier and therefore

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was chosen more frequently in comparison to the other activities. Co-teaching may have been more difficult due to university constraints, in terms of resources. Co-development or supervision of a nutrition intervention with colleagues outside of dietetics may not have been chosen as frequently due to the research interests of the professor, as well as scheduling conflicts. Considering half of the respondents held administrative positions in addition to full teaching loads, perhaps opportunities for collaborations outside of higher education were not feasible.

Considering previous research related to interprofessional collaboration, these results could be interpreted in several different ways. This survey did not assess for environmental factors related to collaboration, such as university and departmental incentives and overall attitudes concerning interprofessional collaboration; therefore, it is possible that the respondents' work environments impacted their participation in collaborative activities more so than ideology. Additional factors such as time constraints and personal beliefs regarding professions outside of nutrition and dietetics were not assessed in this survey. Therefore, it is possible that respondents were not involved in some of these activities because they did not feel they were relevant to the courses they were teaching or were relevant to their career goals. It is possible that the five options provided (coauthorship, co-teaching, presentations, co-development/supervision, and guest speakers) were not entirely inclusive of what the respondents may have experienced with collaboration. For example: maybe the respondents' experiences with interprofessional collaboration occurred in clinical settings, or while serving on committees.

In higher education, faculty are responsible for focusing on teaching; scholarship; and service. While different universities may place greater emphasis on one area over another, the general expectation is that tenure-track and tenured faculty will strive to achieve proficiency in

all three areas. Analysis of data for this study revealed two statistically significant results: teaching at the graduate level increased the odds of coauthorship with non-dietetics professionals, and teaching at the graduate level increased the odds of co-developing or supervising a community nutrition intervention with colleagues outside of nutrition and dietetics. One potential reason for these findings is that faculty who teach graduate level courses may be more proactive about research in general, based on tenure and promotion requirements or a genuine interest in research. Participation in community nutrition intervention development or supervision could potentially lead to a research endeavor (i.e. a grant or outcomes-based project); perhaps this is why there are increased odds for both coauthorship and co-development/supervision with colleagues outside of the fields of food and nutrition. University and departmental support of interdisciplinary and interprofessional collaboration is cited as an important determining factor in successful collaborations (Briggs, 2007; Emil & Cress, 2014). It is possible that the respondents who taught at the graduate level were affiliated with larger universities with more proactive environments that foster interdisciplinary and interprofessional collaboration.

Recommendations for Administration and Faculty

Results of this study did not reveal significant associations between ideology and pedagogy or interprofessional collaboration. However, as previously discussed dietetics curriculum development is a complex process because educators must balance adherence to accreditation standards while meeting expectations of an evolving US health care system. Various stakeholder groups have identified key areas for inclusion in dietetics curricula, such as communication and critical thinking skills and opportunities for interprofessional collaboration (ACEND, 2015).

Based on the results of this study, a small proportion of faculty are experimenting with different pedagogical strategies outside of lecture and discussion. This section outlines researcher recommendations for university administration and faculty to encourage the utilization of pedagogical techniques and facilitation of interprofessional collaboration.

Recommendations for Administrators and Departmental Chairs:

- Provide professional development opportunities for dietetics faculty that focus on alternatives to traditional pedagogical techniques such as lecture. Pedagogical techniques such as experiential learning, flipped classroom, and simulation have enhanced student learning outcomes to include fostering of empathy; student self-efficacy; appreciation for multiple perspectives; and provide opportunities to apply knowledge in "real-world" settings (Gilboy et al., 2015; Leveritt et al., 2013; Moore & Andrews, 2012; Ozier et al., 2010; Roofe, 2012; Todd et al., 2016). These professional development sessions provide faculty with opportunities to learn about and practice with these techniques before implementing in a classroom setting.

- Consider the importance your university or college places on teaching in the promotion and tenure process. According to Fenton and Gallant (2016), tensions often exist between faculty and administration due to university expectations for effective teaching while the actual "tenure and promotion process emphasizes research, grants, and publications" (p. 6).

- Support informal departmental peer evaluations and offer incentives for the use of team-teaching and experiential learning strategies (Briggs, 2007). Institutional incentives to encourage faculty to adopt varied pedagogical strategies include course release time;

faculty recognition; and encouragement from departmental leaders (Darby & Newman, 2014).

- Modify physical spaces by strategically placing offices where faculty can easily communicate with one another to encourage collaboration (Briggs, 2007).

- Support faculty participation in interdisciplinary and interprofessional collaborations both within, and outside of, the university or college setting. Institutional culture is paramount in fostering opportunities for collaboration (Briggs, 2007; Emil & Cress, 2014).

Recommendations for Faculty:

- Take time to reflect. Dietetics as a discipline is complex: it is a discipline rooted in science and objectivity, but the 'art' of practicing dietetics is highly subjective because food and eating are tied to emotions, culture, and environmental aspects which cannot be overly simplified (Capra, 2012; Cuddy, 2012; Liquori, 2001; Sharp, 2012). Dietetics educators should consider exploring their attitudes and beliefs regarding the purpose of dietetics education and what it means to be an educator in a field that is rapidly evolving to meet the needs of an incredibly diverse population. Therefore, reflection offers opportunities for educators to explore their perceptions regarding curriculum development and preference for pedagogical techniques (Booth, 2011; Kanuka, Smith, & Kelland, 2013).

- Assess your attitude regarding innovative teaching strategies and your personal comfort zone. Moving from a primarily didactic teaching approach (i.e. lecture) to more of a facilitative or constructivist style requires a willingness to learn and to invest the necessary time and effort to change (Anderson, 2013; DeZure, Babb, & Waldmann, 2005).

- Seek educators who utilize a variety of pedagogical techniques in their classes and ask for advice on implementation and assessment. This study confirmed that lecture and open- and small-group discussion were the predominant pedagogical techniques utilized by dietetics faculty. However, there is an abundance of literature outside the field of dietetics related to the integration of varied pedagogical techniques. According to Reid (2014) faculty often prefer to learn how to utilize new strategies from other colleagues, in the form of mentoring, versus attending larger, more formal professional development trainings.

- Take advantages of opportunities to learn from and to collaborate with other professionals, both within and outside of higher education. Interprofessional collaboration is promoted in health care and RDN's are considered integral members of health care teams (Nelms, Sucher, & Lacey, 2016, p. 5). As a result, there is a growing need for interprofessional education and collaboration in dietetics curricula (DiMaria-Ghalili et al., 2014). Similarly, institutes of higher education must address societal pressures to educate students to become better team players and collaborators, with strong communication and critical thinking skills that extend beyond their respective disciplines (Anderson, 2013; Bridges, 2000; Germaine et al., 2016; Russell, Wickson, & Carew, 2008). If dietetics faculty are educating students on the value and importance of team work and collaboration, it only makes sense to practice what is preached within and outside of higher education.

- Present at conferences outside of nutrition and dietetics; this creates opportunities to meet professionals in related fields who would be interested in research or teaching collaborations. Networking events, including professional development trainings and

workshops, also provide access to dietetics practitioners who may be interested in visiting classes as a guest speaker, which could ultimately lead to a professional collaboration.

- Faculty who desire to participate in interprofessional collaboration-whether it is in an educational, research, or practical field experience setting-should take time to learn about the disciplines of the professionals with whom they will be working with and to consider their own disciplinary norms and values (Oberg, 2008; Vanasupa et al., 2011). This is an important and often overlooked phase in the collaborative process (Vanasupa et al., 2011). Taking time to understand aspects of other disciplines is essential to recognize that our way of knowing and doing is not always the only way; and to foster trust and respect among colleagues, which is foundational to positive collaborative experiences (Borrego & Newswander, 2008).

Dietetics as a discipline is far-reaching, and inclusive of perspectives from both natural and social sciences. Consideration of perspectives outside of our own serve to inform and enhance our own thinking, which in turn may positively influence our teaching. Collaborations across the aisle open doors to research opportunities as well. Practicing dietitians may be considered part of the curriculum development team, as they can provide unique perspectives that many faculty may not possess: practical field experience. Their contributions are invaluable from both teaching and research perspectives.

Recommendations for Future Research

This study provided descriptive data that warrants a closer examination with further studies. Due to limited research in this area, the CIPIC online survey could be distributed to a much larger audience: dietetics professors nationwide. During the data collection phase, the researcher was contacted by several NDEP members asking why the survey was not distributed

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to faculty from Dietetic Technician Registered programs. This may be a consideration for future studies, as it appears this category of respondents is interested in providing their input on this topic.

In regards to survey design, researchers may want to consider a few modifications before distributing the CIPIC. First, the ideology questions (4-9) were designed using a drag and drop feature for respondents to rank order their preferences. A major drawback with this design is that if respondents agreed with the original order of the statements (and therefore, did not drag and drop the options) Qualtrics counted this as a missed question. Therefore, it was impossible for the researcher to determine if the question was an actual missing response or if the respondent simply agreed with the original order of the options. Considering the high proportion of missing answers from respondents in this study, the researcher recommends a different format for the ideology questions when using this survey online. Second, the researcher did not include a question or questions related to the overarching ideology of respondents' institution to serve as a basis for comparison. This may be helpful, as previous research has shown that ideological preference is related to institutional environment (Cotti, 1997; Cotti & Schiro, 2004; Farahani & Maleki, 2013).

Lastly, researchers may find the traditional paper-and-pencil format more appropriate for studies employing smaller sample sizes in order to analyze ideological graphs as the original inventory was intended to be used. This is an easier way to analyze respondent scores where more than one ideology is selected. The researcher encountered difficulties with computer-generated coding to calculate an ideology 'score'; hence, the reason the ideological questions were hand-scored. Therefore, future studies using the CIPIC survey should carefully consider

how to code for the addition of a computer-generated score as a substitution for hand-scoring results.

Future research could build upon the results of this study by using different methodological approaches. Qualitative studies could expand on data collected in all 3 areas: curriculum ideology, pedagogy, and interprofessional collaboration. Respondents would have the opportunity to elaborate on preliminary results, such as interpretation of ideological scores (approve/disapprove) and provide concrete examples to support their scores. Exploration of the concept of dual roles (i.e. holding an administrative position in addition to teaching) in relation to ideology, pedagogy, and collaboration is suggested as a result of this study. A qualitative approach would allow the researcher to understand why particular pedagogical techniques were selected and to identify any potential barriers for adoption of innovative pedagogical techniques. Finally, a qualitative study could explore the concept of interprofessional collaboration with dietetics professors: which activities they are more likely to participate in and why, as well as to identify any potential barriers for participation and the influences of contextual factors, such as departmental and university incentives or barriers.

Researchers could employ a mixed-methods approach to this topic using the CIPIC (paper or online); interviews with selected respondents; and analyses of curriculum vitae (CV) and individual teaching philosophies. This approach combines quantitative and qualitative perspectives for a more comprehensive view of the problem (Creswell, 2015). These sources would serve as validation of ideological scoring while providing a richer context of the teaching and collaborative environments in higher education. CV's would provide vital information in the analyses, such as publication experience; educational background; and professional

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development. Teaching philosophy statements would provide greater insights into curriculum ideological views and the use of pedagogical techniques.

Conclusions

The dietetics profession is advancing to meet the demands of an increasingly diverse society with unique health care needs. As our health care system aims to focus on patient-centered care with improved patient outcomes, the role of a dietitian in acute and long-term care settings continues to advance. Likewise, dietitians are presented with unique career opportunities in essential practice areas such as health and wellness promotion; school nutrition; private practice; and education and research. These 21st century career opportunities necessitate skills beyond dietetics-specific knowledge and competencies: critical thinking, communication, collaboration, and creativity. Interdisciplinary and interprofessional collaboration are essential aspects of evolving dietetics practice. The ability to work with others, both within and outside of one's profession, requires strong communication and critical thinking skills. Creativity enhances out-of-the-box thinking and is a necessary skill when working with diverse populations.

As the profession advances, dietetics curricula must also change to ensure future dietitians are prepared to meet society's expectations of competent food and nutrition professionals. Recent accreditation standards highlight the importance of integrating collaboration, communication, and critical thinking skills into the curriculum. Dietetics educators face challenges of integrating these skills, while continuing to provide accurate, scientifically-based food and nutrition knowledge combined with opportunities for student reflection and consideration of multiple perspectives. As such, consideration of dietetics educators' perspectives regarding curriculum; pedagogy; and interprofessional collaboration was warranted.

Results of this study provided a snapshot of dietetics professors' curriculum ideological views, preferences for pedagogical techniques, and experiences with interprofessional collaboration. While curriculum ideology was not significantly associated with pedagogical technique or participation in collaborative activities, other key findings provided insights regarding teaching and collaboration in dietetics education. Research regarding dietetics educator's views on teaching and learning are limited. The researcher recommends additional research in the areas of curriculum development, implementation, and assessment; as well as the use of innovative pedagogical techniques that address curriculum integration of communication, critical thinking, collaboration, and creativity. As dietitians embrace evolving career opportunities of the 21st century, educators must work to ensure future dietitians are equipped with a diverse skill set to meet the changing needs of our profession and of the communities and individuals we serve.

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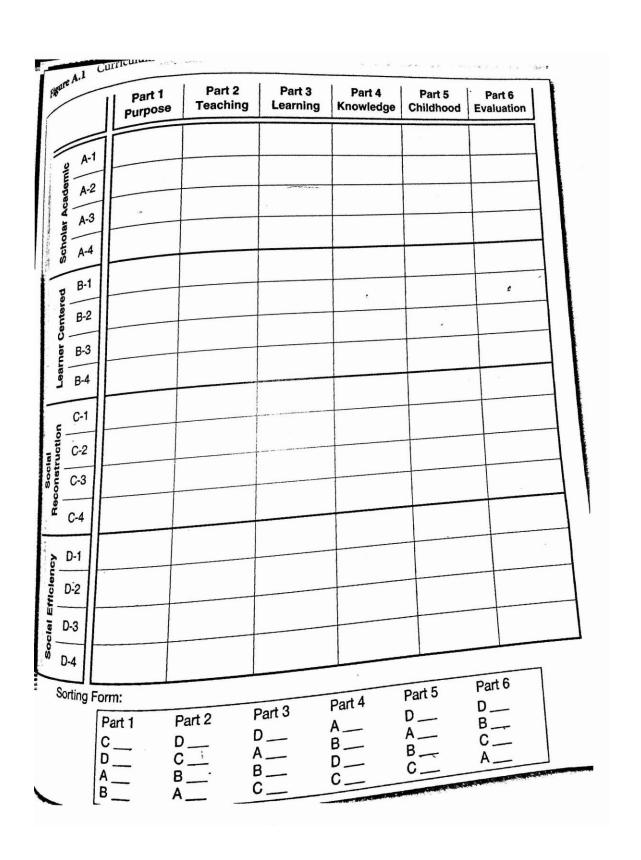
Schiro's Original Curriculum Ideology Inventory (2013)

Instructions:

In each of the following sections you will find four statements with a blank in front of each. Read each statement carefully and then rank the statements from 1 to 4, placing:

1 next to the statement that you like most

2 next to the statement that you like second most

3 next to the statement that you like third most

4 next to the statement that you dislike the most

Use each of the numbers (1, 2, 3, and 4) only once in each part of the inventory. Place the numbers on the lines to the left of each statement. This is not a test. There is no one right answer. Take your time.

Part 1

_____ Schools should provide children with the ability to perceive problems in society, envision a better society, and act to change society so that there is social justice and a better life for all people.

_____ Schools should fulfill the needs of society by efficiently training youth to function as mature constructive members of society.

_____ Schools should be communities where the accumulated knowledge of the culture is transmitted to the youth.

_____ Schools should be enjoyable, stimulating, child-centered environments organized around the developmental needs and interests of children as those needs and interests present themselves from day to day.

Part 2

_____ Teachers should be supervisors of student learning, utilizing instructional strategies that will optimize student learning.

_____ Teachers should be companions to students, using the environment within which the student lives to help the student learn.

_____ Teachers should be aids to children, helping them learn by presenting them with experiences from which they can make meaning.

_____ Teachers should be knowledgeable people, transmitting that which is known to those who do not know it.

Part 3

_____ Learning best proceeds when the student is presented with the appropriate stimulus materials and positive reinforcement.

_____ Learning best proceeds when the teacher clearly and accurately presents to the student that knowledge which the student is to acquire.

_____ Learning best takes place when children are motivated to actively engage in experiences that allow them to create their own knowledge and understanding of the world in which they live.

_____ Learning best occurs when a student confronts a real social crisis and participates in the construction of a solution to that crisis.

Part 4

_____ The knowledge of most worth is the structured knowledge and ways of thinking that have come to be valued by the culture over time.

_____ The knowledge of most worth is the personal meaning of oneself and of one's world that comes from one's direct experience in the world and one's personal response to such experience.

_____ The knowledge of most worth is the specific skills and capabilities for action that allow an individual to live a constructive life.

_____ The knowledge of most worth is a set of social ideals, a commitment to those ideals, and an understanding of how to implement those ideals.

Part 5

_____ Childhood is essentially a time of learning in preparation for adulthood, when one will be a constructive, contributing member of society.

_____ Childhood is essentially a period of intellectual development highlighted by growing reasoning ability and capacity for memory that results in ever greater absorption of cultural knowledge.

_____ Childhood is essentially a time when children unfold according to their own innate natures, felt needs, organic impulses, and internal timetables. The focus is on children as they are during childhood rather than as they might be as adults.

_____ Childhood is essentially a time for practice in and preparation for acting upon society to improve both oneself and the nature of society.

Part 6

_____ Evaluation should objectively indicate to others whether or not students can or cannot perform specific skills. Its purpose is to certify students' competence to perform specific tasks.

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_____ Evaluation should continuously diagnose children's needs and growth so that further growth can be promoted by appropriate adjustment of their learning environment. It is primarily for the children's benefit, not for comparing children with each other or measuring them against predetermined standards.

_____ Evaluation should be a subjective comparison of students' performance with their capabilities. Its purpose is to indicate to both the students and others the extent to which they are living up to their capabilities.

_____ Evaluation should objectively determine the amount of knowledge students have acquired. It allows students to be ranked from those with the greatest intellectual gain to those with the least.

Graph:

Part 1 Part 2 Part 3 Part 4 Part 5 Part 6

C ___ D ___ D ___ A ___ D ___ D ___

D ___ C ___ A ___ B ___ A ___ B ___

A ___ B ___ B ___ D ___ B ___ C ___

B ___ A ___ C ___ C ___ C ___ A ___

Figure A.1 Curriculum...

	Part 1 Purpose	Part 2 Teaching	Part 3 Learning	Part 4 Knowledge	Part 5 Childhood	Part 6 Evaluation
Scholar Academic A-1						
A-2						
A-3						
A-4						
Learner Centered B-1						
B-2						
B-3						
B-4						
Social Reconstruction C-1						
C-2						
C-3						
C-4						
Social Efficiency D-1						
D-2						
D-3						
D-4						

Sorting Form:

Part 1	Part 2	Part 3	Part 4	Part 5	Part 6
C __	D __	D __	A __	D __	D __
D __	C __	A __	B __	A __	B __
A __	B __	B __	D __	B __	C __
B __	A __	C __	C __	C __	A __

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Appendix B

Permission to use Schiro's Curriculum Ideology Inventory

License Number	4095640255507
License date	Apr 22, 2017
Licensed content publisher	SAGE College
Licensed content title	Curriculum theory : conflicting visions and enduring concerns
Licensed content date	Jan 1, 2013
Type of Use	Thesis/Dissertation
Requestor type	Author of requested content
Format	Electronic
Portion	chapter/article
Number of pages in chapter/article	6
Title or numeric reference of the portion(s)	I would like to use pgs. 263-268: Appendix, Curriculum Ideologies Inventory. I am unsure at this time whether I would use the inventory exactly as published, or whether I would slightly modify for my own survey that would be distributed to dietetics professors.
Title of the article or chapter the portion is from	Appendix
Editor of portion(s)	N/A
Author of portion(s)	Michael S. Schiro
Volume of serial or monograph.	N/A
Page range of the portion	263-268
Publication date of portion	2013
Rights for	Main product
Duration of use	Life of current edition

Creation of copies for the disabled	no
With minor editing privileges	yes
For distribution to	Worldwide
In the following language(s)	Original language of publication
With incidental promotional use	no
The lifetime unit quantity of new product	Up to 999
Made available in the following markets	higher education, professional
Specified additional information	Permission to use the Curriculum Ideologies Inventory in my dissertation.
The requesting person/organization is:	Cassondra Strawser, MS, RD
Order reference number	
Author/Editor	Cassondra Strawser
The standard identifier of New Work	DOI
Title of New Work	(Dissertation) An Exploration of Ideologies and the Curriculum Development Process of Dietetics Professors using an Explanatory Sequential Approach
Publisher of New Work	ProQuest
Expected publication date	Aug 2018
Estimated size (pages)	400
Total (may include CCC user fee)	0.00 USD

Appendix C

Survey Validation

IUP Department of Food and Nutrition – 4 Respondents

Comments/Suggestions	#1	#2	#3	#4
Informed Consent				
Include that I am a member of NDEP	X			
Increase number of paragraphs/insert more spaces	X			
Include "The purpose of this study…" at beginning	X			
Change wording to "Click on the arrow…"	X			
Mention random drawing in the introductory email and the informed consent		X		
Ideology questions 3-8				
Clarify this is what I *agree* with (like most), not necessarily what I *currently practice*	X	X		
Consider changing language to "students" versus "children" throughout	X		X	
Put headings above each question to provide context ("Teaching," "Evaluation," etc.)		X		
Pedagogy question 9				
Define/provide examples in parentheses of each technique	X	X	X	X
Make distinction between online, hybrid and face-to-face	X	X	X	X
Make it clear this is what I'm doing now versus in previous semesters/years	X	X		
Add options related to technology; flipped classroom; peer critique; videos; etc.		X		
Collaboration question 9.2				
Consider changing wording of "Developed…" to "Supervised"			X	
Specify referring to respondents and not their students		X		
Collaboration question 9.3				
Rephrase "like" to "intend/plan on doing in (x) months/years" – shows intent	X	X	X	
Demographic questions 9.4-9.11				
Double-check no other options besides 2 & 4-yr, public/private Teach by quarter versus semester?		X		
Ideology score feedback				
Insert definitions for (4) categories	X	X	X	X

Appendix D

Curriculum Ideology, Pedagogy, and Interprofessional Collaboration (CIPIC) Survey

1.
Informed Consent form
Curriculum Ideology, Pedagogy, and Interprofessional Collaboration: A Closer Look at Dietetics Educators' Views and Practices

Dear Educator,

The 2017 Accreditation Standards and evolving 21st century workplace challenges dietetics professors to take a closer look at curriculum development, implementation, and assessment; pedagogy; and interprofessional collaboration. Dietetics professors contribute to the socialization process of future Registered Dietitian Nutritionists (RDN); therefore, it is important to understand our ideological views as part of curriculum development, as well as the pedagogical techniques commonly utilized in the classroom. Interprofessional collaboration may contribute to curriculum ideological views and is therefore included as part of the scope of this study.

You have been chosen because you are members of the Nutrition and Dietetics Educators and Preceptors (NDEP) Dietetic Practice Group (DPG). In order to be eligible for participation, you must meet the following criteria: Currently teach (either part – or full-time) in a Coordinated Program in Dietetics (CPD) or undergraduate and/or graduate Didactic Program in Dietetics (DPD) as an Adjunct/Instructor/Lecturer; Assistant professor; Associate professor; or Professor.

The following information is provided to you so you can make an informed decision regarding your participation. There are no known risks for participation in this study. After reading this informed consent document, you may begin the online survey. Estimated time for completion of the survey is 20-25 minutes. Participation is completely voluntary; if you decide to withdraw from the survey prior to completion, simply exit the browser. Withdrawal from participation will not result in any penalties or loss of benefits. All responses are completely anonymous; no identifying information will be collected unless you (the respondent) provide consent to do so. If you prefer, you may be entered into a random drawing for (2) twenty-five dollar gift cards from Amazon. Any identifying information that is collected will not be related to survey data to protect anonymity. If the information from this study is presented in scientific journals or presented at scientific meetings, your identity will not be revealed. Data will be maintained for a period of three years to meet federal regulations.

Thank you for your assistance with this study! If you have any questions or concerns, please feel free to contact:
Lead Researcher: Cassondra Strawser, MS, RD
                Doctoral Candidate
                Department of Professional Studies in Education
                Indiana University of Pennsylvania
                Indiana, PA 15705
                724-464-7905
                c.l.strawser@iup.edu

Faculty Advisor: Dr. Crystal Machado
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                cmachado@iup.edu

THIS PROJECT HAS BEEN APPROVED BY THE INDIANA UNIVERSITY OF PENNSYLVANIA INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS (724-357-7730).

By clicking "Next" you agree to participate in the survey.

Criteria

2.1. Do you currently teach (either part – or full-time) in a Coordinated Program in Dietetics (CPD) or undergraduate and/or graduate Didactic Program in Dietetics (DPD) as an Adjunct/Instructor/Lecturer; Assistant professor; Associate professor; or Professor?

○ Yes

○ No

Admin

3.1. Do you currently hold an administrative position, such as DPD Director or Department Chair?

○ Yes

○ No

Part 1

4.1. "The following Curriculum Ideologies Inventory is republished with permission of SAGE College, from *Curriculum theory: Conflicting visions and enduring concerns*, by Michael Stephen Schiro, 2nd edition, 2013; permission conveyed through Copyright Clearance Center, Inc. "

For questions 4-9, you will find four statements. Read each statement carefully and then rank order the statements by clicking on each and dragging to order:

1 – for the statement that you like the most
2 – for the statement that you like the second most
3 – for the statement that you like the third most
4 – for the statement that you dislike the most

This is not a test. There is no one right answer. Please take your time.

- Schools should provide learners with the ability to perceive problems in society, envision a better society, and act to change society so that there is social justice and a better life for people.

- Schools should fulfill the needs of society by efficiently training learners to function as mature constructive members of society.

- Schools should be communities where the accumulated knowledge of the culture is transmitted to the learner.

- Schools should be enjoyable, stimulating, learner-centered environments organized around the developmental needs and interests of learners as those needs and interests present themselves from day to day.

Part 2

5.1.
Read each statement carefully and then rank order the statements by clicking on each and dragging to order:

1 – for the statement that you like the most
2 – for the statement that you like the second most
3 – for the statement that you like the third most
4 – for the statement that you dislike the most

- Teachers should be supervisors of student learning, utilizing instructional strategies that will optimize learning.

- Teachers should be companions to students, using the environment within which the student lives to help the student learn.

- Teachers should be aids to students, helping them learn by presenting them with experiences from which they can make meaning.

- Teachers should be knowledgeable people, transmitting that which is known to those who do not know it.

Part 3

6.1.
Read each statement carefully and then rank order the statements by clicking on each and dragging to order:

1 – for the statement that you like the most
2 – for the statement that you like the second most
3 – for the statement that you like the third most
4 – for the statement that you dislike the most

- Learning best proceeds when the student is presented with the appropriate stimulus materials and positive reinforcement.

- Learning best proceeds when the teacher clearly and accurately presents to the student that knowledge which the student is to acquire.

- Learning best takes place when students are motivated to actively engage in experiences that allow them to create their own knowledge and understanding of the world in which they live.

- Learning best occurs when a student confronts a real social crisis and participates in the construction of a solution to that crisis.

Part 4

7.1.
Read each statement carefully and then rank order the statements by clicking on each and dragging to order:

1 – for the statement that you like the most
2 – for the statement that you like the second most
3 – for the statement that you like the third most
4 – for the statement that you dislike the most

- The knowledge of most worth is the structured knowledge and ways of thinking that have come to be valued by the culture over time.

- The knowledge of most worth is the personal meaning of oneself and of one's world that comes from one's experience in the world and one's personal response to such experience.

- The knowledge of most worth is the specific skills and capabilities for action that allow an individual to live a constructive life.

- The knowledge of most worth is a set of social ideals, a commitment to those ideals, and an understanding of how to implement those ideals.

Part 5

8.1.
Read each statement carefully and then rank order the statements by clicking on each and dragging to order:

1 – for the statement that you like the most
2 – for the statement that you like the second most
3 – for the statement that you like the third most
4 – for the statement that you dislike the most

- Young adulthood is essentially a time of learning in preparation for adulthood, when one will be a constructive, contributing member of society.

- Young adulthood is essentially a period of intellectual development highlighted by growing reasoning ability and capacity for memory that results in ever greater absorption of cultural knowledge.

- Young adulthood is essentially a time when individuals unfold according to their own innate natures, felt needs, organic impulses and internal timetables. The focus is on individuals as they are at that moment rather than as they might be as adults.

- Young adulthood is essentially a time for practice in and preparation for acting upon society to improve both oneself and the nature of society.

Part 6

9.1.
Read each statement carefully and then rank order the statements by clicking on each and dragging to order:

1 – for the statement that you like the most
2 – for the statement that you like the second most
3 – for the statement that you like the third most
4 – for the statement that you dislike the most

- Evaluation should objectively indicate to others whether or not students can or cannot perform specific skills. Its' purpose is to certify students' competence to perform specific tasks.

- Evaluation should continuously diagnose student's needs and growth so that further growth can be promoted by appropriate adjustment of their learning environment. It is primarily for the student's benefit, not for comparing students with each other or measuring them against predetermined standards.

- Evaluation should be a subjective comparison of students' performance with their capabilities. Its' purpose is to indicate to both the students and others the extent to which they are living up to their capabilities.

- Evaluation should objectively determine the amount of knowledge students have acquired. It allows students to be ranked from those with the greatest intellectual gain to those with the least.

Class type

10.1. Please indicate the extent to which you disagree or agree with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

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	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The majority of my courses are taught online.	○	○	○	○	○	○	○
The majority of my courses are taught face-to-face.	○	○	○	○	○	○	○
The majority of my courses are taught using a hybrid approach (combination of online and face-to-face).	○	○	○	○	○	○	○

11.1. On average, how often do you use the following pedagogical strategies in your courses?

	Never used	Used 1-2 times per semester	Used monthly	Used weekly	Used daily/every class
Lecture	○	○	○	○	○
Open-class discussion	○	○	○	○	○
Small-group discussion	○	○	○	○	○
Simulation*	○	○	○	○	○
Flipped Classroom*	○	○	○	○	○
Writing-intensive/writing across curriculum	○	○	○	○	○
Individual presentations	○	○	○	○	○
Group presentations	○	○	○	○	○
Project-based learning*	○	○	○	○	○
Service-based learning*	○	○	○	○	○
Other	○	○	○	○	○

11.2. *Simulation - use of interactive, guided experiences to mimic real-world settings such as mannequins, computer-based, role-playing, case studies, etc.

*Flipped classroom - traditional instruction/content typically provided outside of the classroom (often online) while class time is devoted to hands-on activities/collaborative opportunities.

*Project-based learning- students work to solve open-ended problem or driving questions; collaborative.

*Service-based learning-combination of structured learning with community service opportunities; reflective.

Ideology

11.3. Have you participated in any of these activities?

	Yes	No
Co-authored a research proposal, grant, and/or journal article with a colleague from a profession other than my own	○	○
Co-taught a course or courses with a colleague from a profession other than my own	○	○

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Qualtrics Survey Software

	Yes	No
Provided guest speakers or lecturers for your course(s) from a profession other than my own	○	○
Developed or supervised a community-based nutrition intervention or program with a colleague from a profession other than my own	○	○
Presented at a conference whose audience included primarily members outside of food, nutrition, and dietetics	○	○

11.4. You indicated in the previous question that you had not participated in the following activities. Please indicate if you would like to participate in these activities in the future.

	Yes	No
Co-authored a research proposal, grant, and/or journal article with a colleague from a profession other than my own	○	○
Co-taught a course or courses with a colleague from a profession other than my own	○	○
Provided guest speakers or lecturers for your course(s) from a profession other than my own	○	○
Developed a community-based nutrition intervention or program with a colleague from a profession other than my own	○	○
Presented at a conference whose audience included primarily members outside of food, nutrition, and dietetics	○	○

11.5. Please select your current age range:

- ○ 20-29
- ○ 30-39
- ○ 40-49
- ○ 50-59
- ○ 60-69
- ○ 70+

11.6. Please select your current title:

- ○ Instructor/Adjunct Faculty
- ○ Assistant Professor
- ○ Associate Professor
- ○ Professor

11.7. **Please select the number of years you have taught in higher education:**

○ 0-5

○ 6-10

○ 11-15

○ 16-20

○ 21-25

○ 26+

11.8. **Please select at what levels do you currently teach? (Check all that apply)**

☐ Undergraduate

☐ Graduate

☐ Doctoral

11.9. **Please select one option which best describes the college or university that you currently teach in:**

○ 4-year, public

○ 4-year, private

○ 2-year, public

○ 2-year, private

11.10. **On average, what is your approximate class size?**

○ Less than 10 students

○ 10-20 students

○ 21-30 students

○ 31-40 students

○ 41-50 students

○ 51+ students

11.11. **On average, what is your teaching load?**

○ 3 credits per semester

○ 6 credits per semester

○ 9 credits per semester

○ 12 credits per semester

○ 13+ credits per semester

11.12. **Please select which NDEP region you are currently a member of:**

○ West Coast: WA, OR, ID, CA, NV, UT, AZ, AK, HI, International

○ West Central: MN, IA, ND, SD, NE, KS, OK, TX, NM, CO, WY, MT

https://iup.co1.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview

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○ North Central: WI, MI, IN, OH, WV, KY, TN

○ South Central: IL, MO, AR, LA, MS, AL, GA

○ North East: ME, NH, VT, NY, NJ, DE, CT, RI, MA

○ South East: PA, MD, VA, NC, SC, FL, PR 6

Most Favored

. You most strongly agreed with ${e://Field/Max Ideology}, ranking the associated statement(s) with a 1 or a 2 ${e://Field/Max}% of the time.

Least Favored

. You most strongly disagreed with ${e://Field/Min Ideology}, ranking the associated statement(s) with a 3 or a 4 ${e://Field/Min}% of the time.

No favored

. You did not favor any particular ideology more frequently than the others.

No Most disagreed With

. You did not strongly disagree with any particular ideology more frequently than the others.

Ideology Def.

.

Scholar Academic: Traditional ideology where educator assumes hierarchical position. The teacher is considered an expert in a particular field(s) and primarily serves to pass knowledge onto the learner. Curriculum emphasizes course content and sequence with less emphasis on the learning environment.

Social Efficiency: Considered more performance-based ideology. Curriculum includes specific learning objectives and performance-based skills that students must demonstrate. Emphasis is on modifying learner behavior; the idea that behavior change is a necessity for learning to take place.

Learner Centered: Emphasis is on the learner and meeting the learner's needs, while considering the developmental stage and the learning environment. The teacher assumes more of a facilitator role and plans for learning activities that build on the learner's current knowledge base and experiences. Curriculum emphasizes the development of creativity and critical thinking skills.

Social Reconstruction: Curriculum is designed from a social perspective; the idea that there is a problem or issue at a societal level, and the learners must work to develop potential solutions for the problem(s). Curriculum often designed around issues of poverty, race, pollution, or economic concerns. Stems from the belief that education is a function of society and so the curriculum must be considered within the context of a particular culture.

Interview

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17.1. In the future, would you be willing to participate in an individual interview focusing on curriculum development? If yes, you will be redirected to a different survey to enter in your contact information, so that your survey responses can not be tied to your personally identifying contact information.

○ Yes

○ No

Prize

18.1. Would you like to enter into a random drawing for (2) twenty-five dollar gift cards for Amazon? If yes, you will be redirected to a different survey to enter in your contact information, so that your survey responses can not be tied to your personally identifying contact information.

○ Yes

○ No

Appendix E

Invitation Email to Sample With Survey Link

Dear _____,
Thank you so much for agreeing to forward this email with survey link as an email blast to all NDEP members. Please forward the email below with the survey link on the following dates over a three-week period: Feb. __, __, and __:

Dear Fellow NDEP Member,

We as dietetics educators are constantly striving to balance professional trends and changes within our healthcare system with accreditation standards and the demands of our respective colleges and universities. The 2017 standards emphasize critical thinking and communication skills and interprofessional practice, which necessitates a closer look at our curriculum ideological views and pedagogical techniques. I am requesting your participation in an online survey. Your responses will provide valuable insights into how dietetics educators view these relevant aspects of teaching and learning. **In order to participate, you must meet the following criteria: be currently employed part- or full-time as an Adjunct/Instructor/Lecturer; Assistant professor; Associate professor; or Professor in a Coordinated Program in Dietetics (CPD) or an undergraduate and/or graduate Didactic Program in Dietetics (DPD).**

After reading the informed consent, you may either proceed with the survey or exit the browser. The estimated time for survey completion is 20 minutes. Participation is completely voluntary; you may decline to participate at any point during the survey by simply exiting the browser. Your responses will be completely anonymous. You have the opportunity to provide your contact information for a follow-up interview and to be enrolled in a random drawing for (2) twenty-five dollar gift cards to Amazon. If you elect to provide your contact information, this will be recorded separately and not be linked in any way to the survey data to protect anonymity. There are no known risks of participation.

You may click on the survey link below to begin:

https://iup.co1.qualtrics.com/jfe/form/SV_dmBaWoYLXYDiFmd

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I sincerely thank you for your participation! If you have any questions or concerns, please feel free to contact me.

Yours respectfully,

Cassondra Strawser, MS, RD
Doctoral Candidate

Department of Professional Studies in Education
Indiana University of Pennsylvania
Indiana, PA 15705
(724) 464-7905
c.l.strawser@iup.edu

Faculty Advisor:
Dr. Crystal Machado
Davis Hall, Room 307
Department of Professional Studies in Education
Indiana University of Pennsylvania
Indiana, PA 15705
(724) 357-2400
cmachado@iup.edu

Appendix F

Site Approval Request and Site Approval From NDEP Chair

Hello, Cassondra -
I have conferred with the NDEP Council regarding your request to survey NDEP members via email blast in order to ensure that all members will be provided with the opportunity to respond. NDEP Council agrees that you may have access to sending your survey to the NDEP membership after you have received IRB approval for both your survey and its accompanying Informed Consent.
Once you have received IRB approval for your proposal, your survey, and the Informed Consent, please let me know. I will then notify our Academy liaison so that she can proceed with providing our members with the necessary information to participate. You are welcome to use this email as part of your IRB application.

Please let me know if you have any questions, and best of luck with your proposal defense.

Sincerely,

NDEP Chair

-----Original Message-----
From: Cassondra L Strawser <c.l.strawser@iup.edu>
To: NDEP Chair personal email
Fri, Dec 8, 2017 08:07 AM
Subject: Request for permission to email NDEP members

Hello Dr. ____,

I just wanted to follow-up with you regarding my request last week to survey NDEP members. I am also an NDEP member, and would prefer to send the survey via email blast instead of posting to the listserve so that I may contact all members.

I've attached the survey link for you to preview. I will be defending my proposal on the 14th, and will be submitting the necessary documentation to the IRB that same day. There may be slight modifications to the survey and/or the informed consent letter following my defense, but otherwise there are no issues with my committee as far as sampling NDEP members.

https://iup.co1.qualtrics.com/jfe/form/SV_dmBaWoYLXYDiFmd

If you give permission for me to send the Academy liaison the introductory email with survey link and informed consent to NDEP members, may I use your response email as part of my IRB application?
Thank you so much for your time! I would be more than happy to address

any additional questions/concerns you may have.

Sincerely,

Cassondra Strawser, MS, RD
Doctoral Candidate
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Indiana University of Pennsylvania
Indiana, PA 15705
c.l.strawser@iup.edu
(724) 464-7905

Appendix G

Sample Forum Post Reminder to NDEP Members

Hello fellow NDEP members!

If you have already done so, thank you so much for taking the time to complete my survey!

So far, I've heard from the following regions:

NDEP Region Members **(as of Dec. 2017)**	Percentage of Survey Respondents*
West Coast & International 242 members	
West Central 208 members	
North Central 220 members	
South Central 212 members	
North East 213 members	
South East 237 members	
Total: 1,332	

*Survey item 11.12

If you haven't had an opportunity to take a peek, please consider providing your valuable input regarding curriculum ideology, pedagogy, and attitudes towards interprofessional collaboration by clicking on the survey link below:

https://iup.co1.qualtrics.com/jfe/form/SV_dmBaWoYLXYDiFmd

The estimated time for survey completion is 20 minutes. After reading the informed consent, you may decide to either proceed with the survey or simply exit. After completing the survey, you'll get an ideology profile as well as a chance to win (2) twenty-five dollar Amazon gift cards. Additionally, I'll donate a fifty-dollar check to the regional leader with the highest response rate. Please make your voices heard!

Thank you again for your time and cooperation!

Sincerely,

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